Attachment 3.10A
Habitat Mapping Report

Attachment 3.10A
To Study 3.10 Instream Flow
Upstream of USACE's Englebright Reservoir Study

Habitat Mapping Report

Summary

The Yuba County Water Agency (YCWA or Licensee) mapped habitat types and channel features along a total distance of 25.55 miles for the combined reaches of: 1) the North Yuba River downstream of New Bullards Bar Dam; 2) Middle Yuba River downstream of Our House Diversion Dam; 4) Oregon Creek, a tributary to the Middle Yuba River, downstream of Log Cabin Diversion Dam; and 4) the Yuba River from the North and Middle Yuba river confluence to the United States Army Corps of Engineer's (USACE) Englebright Reservoir (collectively referred to as the reaches).

Except for Oregon Creek, accessibility by foot to most sections of the reaches is limited. Therefore, except for Oregon Creek, the reaches were mapped using a low-altitude aerial video of the reaches, with ground-based ground-truth mapping conducted at five accessible locations. Oregon Creek was mapped entirely by ground-based mapping because it was accessible by foot and was not visible using the aerial video due to overhanging vegetation.

With the exception of Oregon Creek, the reaches are generally confined by bedrock and boulder slopes, with bedrock and boulders limiting vertical and lateral movement. There are few alluvial reaches (e.g., reaches that are composed of mobile and deformable substrate). Pocketwater and mid-channel pools are the dominant habitats, both in length and frequency. Freemans Crossing and Emory Island on the Middle Yuba River are notable exceptions and likely represent long-term sediment depositional sections. Large woody debris and spawning-sized gravel are uncommon, bank erosion is low, channel lateral and vertical stability is high, and there are numerous barriers to foot access. The lower mid-section of Oregon Creek is dominated by bedrock falls and steeper habitat types, but low gradient riffles and mid-channel pools within a more deformable substrate are common in the middle to upper section of Oregon Creek.

1.0 Introduction

YCWA intends to apply to the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the Yuba River Development Project (Project) by April 30, 2014. At the current time, YCWA intends to relicense the Project using FERC's Integrated Licensing Process (ILP), which requires YCWA file with FERC a Pre-Application Document (PAD), which would include existing, relevant and reasonably available information regarding resources that could potentially be affected by continued operation of the Project. YCWA will file the PAD with its Notice of Intent (NOI) to File an Application for a New License between five and five and one-half years before the existing license expires on April 30, 2016.

The purpose of this habitat mapping effort was to develop specific, comprehensive, and detailed information on aquatic habitat and channel morphology characteristics of all stream reaches affected by the Project upstream of the normal maximum water surface elevation of USACE's Englebright Reservoir. The report includes a brief description of habitat mapping and channel characterization objectives, the study area, methods, and results. Prior to this effort, there has been no previous coordinated approach to habitat map the reaches, though some habitat mapping occurred in sections of some reaches. Therefore, there are significant gaps in existing data for the purposes of assessing habitat quantity, quality, and distribution in the Project-affected reaches. An initial "desktop" channel characterization effort was done using gradient, confinement, geology and the aerial video, with no ground-truth effort. The initial classification results are presented in YCWA's Preliminary Information Package (YCWA 2009a).

Habitat mapping and channel characterization was conducted prior to filing the NOI and PAD because development of aquatic study plans depends on a common understanding among federal, state and local agencies, tribes, non-governmental organizations, interested businesses, unaffiliated members of the public (collectively referred to as Relicensing Participants) and Licensee of the general physical and biological character of the streams affected by the Project.

1.1 Existing Information

Licensee found sources of existing information related to habitat mapping and fish passage barriers.

Two sources of habitat mapping information were found, each of which were incorporated into the Licensee's habitat mapping described in this document. The first source was mapping in the Middle and North Yuba River conducted in 2003 as part of the Upper Yuba River Studies Program (SWS 2006). Both ground-truth data collection and video mapping were done. Licensee reviewed these 2003 data during the development of the habitat mapping results described in this document. However, in general, License considered the 2009 data collection more reliable because 7 years had passed since the 2003 data were collected and some changes may have occurred. For instance, the Middle Yuba River area was ground-truthed below Oregon Creek within Freemans Crossing. This section of stream is within a depositional area where gravel and cobble bars are common and heavy recreation and mining use occurs. So, the potential for change over 7 years is high. However, based on the comparison of the 2009 aerial video to the 2003 ground data, the results of the two mapping efforts are very similar. North Yuba was video mapped but the quality of the video was insufficient for accurate habitat assessment and the 2009 video and 2009 ground-truth data were used exclusively.

The second source of mapping information was in the area of Our House Diversion Dam. YCWA plans to consult with agencies to gain approval to pass gravel, cobble, and sediment through Our House Diversion Dam. If approved, the sediment pass-through (SPT) events would occur during storm events anticipated to produce sufficient flows to transport material through Our House Diversion Dam impoundment and distribute the material downstream of the dam, thereby eliminating the need for dredging, decreasing potential negative environmental effects, and reducing operation costs. To prepare for agency consultation regarding SPT and select

potential assessment sites, an evaluation of habitat conditions downstream of Our House Diversion Dam was done in November 2009. These data were collected using a very similar protocol to the habitat mapping done in summer 2009. Data collected during the November 2009 SPT habitat mapping were incorporated into the overall habitat mapping effort described in this document.

With regards to fish passage barriers in the main stems of the Yuba River and Middle Yuba River from USACE's Englebright Reservoir to Our House Diversion Dam, two sources of information occur. Both sources focused on barriers to upstream passage by Chinook salmon and steelhead, neither of which occur upstream of USACE's Englebright Dam. The first source is Vogel (2006) and titled *Assessment of Adult Anadromous Salmonid Migration Barriers and Holding Habitats in the Upper Yuba River – Appendix C.* In general, Vogel applied the physical parameters of Powers and Orsborn (1985) to determine how each potential barrier may affect upstream steelhead and salmon passage for spawning in spring (Vogel 2006.). In 2002, Vogel surveyed from a helicopter the mainstems of the Yuba River and Middle Yuba River above USACE's Englebright Reservoir to identify potential natural barriers to upstream steelhead and salmon passage for spawning in spring.[1] In August 2003 and 2005, he conducted field assessments of the potential barriers identified from the helicopter. Vogel identified high and low flow barriers and considered break the between the two to be flows of about 100 to 200 cfs.

The second source is Gast et al. (2005) and titled *Middle and South Yuba Rainbow Trout (Oncorhynchus mykiss) Distribution and Abundance Dive Counts August 2004 – Appendix.* The authors conducted mainstem fish distribution surveys in 2004 on the Middle Yuba River. All barriers encountered were photographed and qualitatively described, with estimated vertical heights and GPS positions recorded for each barrier.

Based on these studies[1] two potential natural barriers in the mainstem of the Middle Yuba River below Our House Diversion Dam were identified. No barriers were identified within the section of the Yuba River between USACE's Englebright Reservoir and the Middle Yuba River. The potential barriers identified by Vogel and Gast et al. are described in Table 1.1-1.

Table 1.1-1. Potential barriers to upstream passage by salmon and steelhead in the mainstem of the Middle Yuba River below Our House Diversion Dam as identified by Vogel (2006) and Gast et al. (2005).

Location (River Mile)	Feature	Comments
0.2	Low-Flow Barrier	Site visit, estimated 5 feet high, would only be low-flow barrier to upstream migration of small fish.
0.4	Low-Flow Barrier	site visit, 2 falls in series, lower falls 9 feet, upper falls 6 feet, shallow (<3 feet) plunge

[1] While Vogel and Gast, et al. focused on potential barriers to the upstream migration of larger salmon and steelhead, the barriers identified by Vogel and Gast, et al. would likely also impede or prevent upstream passage of resident fish, including hardhead and trout.

2.0 Methods

Habitat mapping generally followed standard methods similar to those applied in other recent relicensings in California, including the Yuba-Bear/Drum-Spaulding Project on the Middle and South Yuba rivers. Habitat was mapped using a combination of ground-based surveys and a low-altitude helicopter aerial video (YCWA 2009b). The video provided a cost effective means of habitat mapping the largely inaccessible reaches of the reaches. A portion of all Project-affected reaches mapped via the aerial video were also ground-truthed with ground-based mapping data to assure overall accuracy of the habitat mapping results.

Channel characterization of the reaches was performed as an initial effort, using available topographic,[2] geologic,[3] and ESRI/NAIP one-meter pixel color aerial imagery ortho-photos from 2005.[4] The effort approximated a Level 1 Rosgen classification (Rosgen 1996), but was not considered as such because there was no field checking because the initial effort used only remote-sensing data. Resulting data were provided in the Section 7.1 of the Preliminary Information Package (YCWA 2009a).

To prepare for the ground-based habitat mapping, Licensee reviewed the initial classification, longitudinal profile and geologic types of the reaches. Stream longitudinal profiles were measured using maps available from Terrain Navigator Pro© (V. 7) software. Distance between contour lines was measured and a longitudinal profile was created. Map-based gradient, while an estimate, is often a good indicator of stream energy and process. Geology was determined using the geologic map of the United States Geological Survey (USGS) Chico quadrangle. Geologic parent material is often important in sediment supply, substrate type, and channel form control.

Field data were collected under summer/fall 2009 low-flow conditions to maximize access and safety during fieldwork and evaluate habitat composition during the seasonal period of greatest habitat heterogeneity. The protocol was to assess habitat at the flow at which the survey occurred. Otherwise, anticipating habitat based on differences in discharge is too subjective.

2.1 Study Area

Habitat mapping occurred in the following reaches:

- Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches: 12.0 miles from the confluence with the North Yuba River to Our House Diversion Dam
- Oregon Creek Reach – Log Cabin Diversion Dam Reach: 4.1 miles from the confluence with the Middle Yuba River to the Log Cabin Diversion Dam

[2] Derived from Terrain Navigator Pro V.7 available from Maptech, Inc. ©
[3] Geologic Map of the Chico Quadrangle. 1992. California Department of Conservation, Division of Mines and Geology. Compiled by G.J. Saucedo and D.L. Wagner.
[4] http://casil.ucdavis.edu/casil/imageryBaseMapsLandCover/imagery/naip_2005/county_mosaics/

- North Yuba River – New Bullards Bar Dam Reach: 2.3 miles from the confluence with the Middle Yuba River to the New Bullards Bar Dam
- Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches: 7.5 miles. Normal maximum water surface elevation of USACE's Englebright Reservoir (RM 32.2) to Middle Yuba/North Yuba river confluence at RM 39.7

2.2. Meso-Habitat and Channel Classification

A three-tiered habitat mapping classification system developed by Hawkins et al. (1993) was used to assist in the identification of individual habitat units in the field. Level III categories are generally modified/adopted from McCain et al. (1990). Figure 2.2-1 shows the relationship among the three levels. At the broadest level, Level I categorizes habitats as "fast water" and "slow water." In Level II, fast water is subdivided into two categories: turbulent and non-turbulent; slow water is also subdivided into two categories: scour pool and dammed pool.

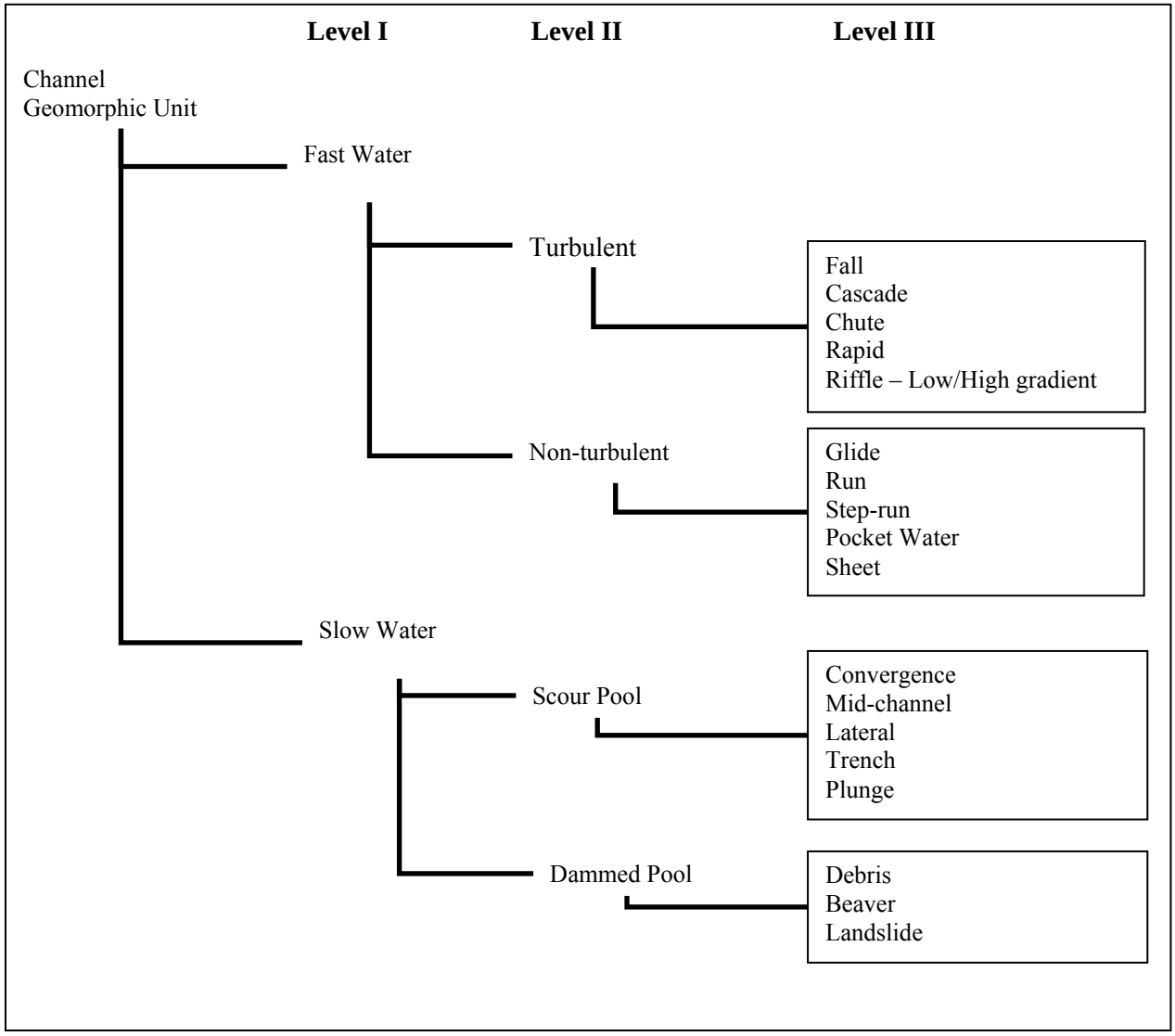

Figure 2.2-1. Key to habitat types used in Yuba County Water Agency Project streams.

Habitat mapping used methods developed by Hawkins et al. (1993), McCain et al. (1990) and Flosi and Reynolds (1994). Each distinct habitat unit was numbered consecutively in an upstream direction, beginning at the downstream end of a designated reach. Habitat type descriptions are listed in Table 2.2-1. Channel and habitat characteristics shown in Figure 2.2-1 and Table 2.2-1 were assessed in all ground surveys, and the aerial video was used to assess channel and habitat types when streams were clearly visible in the aerial video. Dammed pools were infrequent to non-existent and pools that were dammed by large woody debris or other strong downstream control were so noted with an asterisk and a description was added in the comments (e.g., there was not another pool type for dammed mid-channel pools in the data summary).

Table 2.2-1. Habitat types to be used in mapping for the Yuba County Water Agency Project (Adapted from McCain et al. 1990, Armantrout 1998, Payne 1992, McMahon et al. 1996, and Hawkins et al. 1993).

I. Fast Water:			Riffles, rapid, shallow stream sections with steep water surface gradient.
	A. Turbulent:		Channel units having swift current, high channel roughness (large substrate), steep gradient, and non-laminar flow and characterized by surface turbulence.
		1. Fall:	Steep vertical drop in water surface elevation. Generally not modelable.
		2. Cascade:	Series of alternating small falls and shallow pools; substrate usually bedrock and boulders. Gradient high (more than 4%). Generally not modelable.
		3. Chute:	Narrow, confined channel with rapid, relatively unobstructed flow and bedrock substrate.
		4. Rapid:	Deeper stream section with considerable surface agitation and swift current; large boulder and standing waves often present. Generally not modelable.
		5. Riffles:	Shallow, lower-gradient channel units with moderate current velocity and some partially exposed substrate (usually cobble). • Low gradient — Shallow with swift flowing, turbulent water. Partially exposed substrate dominated by cobble. Gradient moderate (less than 4%). • High gradient — moderately deep with swift flowing, turbulent water. Partially exposed substrate dominated by boulder. Gradient steep (greater than 4%). Generally not modelable.
	B. Non-turbulent:		Channel units having low channel roughness, moderate gradient, laminar flow, and lack of surface turbulence.
		1. Sheet:	Shallow water flowing over smooth bedrock.
		2. Run / Glide:	Shallow (glide) to deep (run) water flowing over a variety of different substrates.
		3. Step Run	A sequence of runs separated by short riffle steps. Substrates are usually cobble and boulder dominated.
		4. Pocket Water:	Swift flowing water with large boulder or bedrock obstructions creating eddies, small backwater, or scour holes. Gradient low to moderate.
II. Slow Water:			Pools; slow, deep stream sections with nearly flat water surface gradient.
	A. Scour Pool:		Formed by scouring action of current.
		1. Trench:	Formed by scouring of bedrock.
		2. Mid-channel:	Formed by channel constriction or downstream hydraulic control.
		3. Convergence	Formed where two stream channels meet.
		4. Lateral:	Formed where flow is deflected by a partial channel obstruction (streambank, rootwad, log, or boulder).
		5. Plunge:	Formed by water dropping vertically over channel obstruction.
	B. Dammed Pool:		Water impounded by channel blockage.
		1. Debris:	Formed by rootwads and logs.
		2. Beaver:	Formed by beaver dam.
		3. Landslide:	Formed by large boulders.
		4. Backwater:	Formed by obstructions along banks (Recorded as a comment or note to mapping).
		5. Abandoned Channel:	Formed along main channel, usually associated with gravel bars (Not part of the main active channel - Recorded as a comment or note to mapping).

2.3 Ground-Based Habitat Mapping

The extent of the ground-based habitat mapping surveys was determined based on the visibility of the stream from the aerial video, the length of the sub-reach within which the ground survey was to be done, and whether the reach was accessible. Ground-based mapping was conducted in those stream segments where habitat characteristics were not adequately discernible in the aerial video. Poor visibility in the video was usually due to thick overhead vegetation, steep topographic relief, or small channel size. Ground-based mapping was also conducted in stream segments that were conducive to mapping using aerial video. Ground-based mapping in streams

visible in the video was used to "calibrate the eye" by physically measuring and typing specific habitat units observed in the video, thereby "ground truthing." Meso-habitat units assessed on the ground were then "typed" in the remainder of the stream sub-reach using the video. The physical parameters (e.g., bankfull width, pool depth, substrate) measured for each meso-habitat unit during ground-based mapping are expected to be similar for those same meso-habitat units throughout the remainder of the sub-reach.

Except for Oregon Creek, the reaches were mapped using a combination of ground-based mapping and aerial video. Field measurements were necessarily limited because safe foot access was very limited (Table 2.3-1). There were only limited locations where the larger channels could be accessed, but Oregon Creek was fully accessible along the entire length.

Table 2.3-1. Access for YCWA's Project Reaches upstream of Englebright Reservoir.

Project Reach	Access / Difficulty	Description
Middle Yuba River (Our House Diversion Dam to Confluence with North Yuba River)	Fair/Moderately Easy	Five access locations: • Access to lower section of reach from junction with North Yuba River down YCWA access road. Follow Middle Yuba River upstream for about 0.3 mile through boulders and falls until vertical cliffs limit further access at higher flows. • Access to reach downstream of Hwy 49 via stream-adjacent road (Moonshine Road), but must cross or be adjacent to private property. Good access, low difficulty. • Access to reach upstream of Hwy 49/Oregon Creek through slightly difficult walk along Middle Yuba River Trail for a short distance. No limit to upstream access within at least the first 1-2 mi upstream of Oregon Creek. • Access to reach via private road. Unknown difficulty. We were not able to gain permission to cross this private land. • Access to reach downstream of Our House Diversion Dam. Moderate difficulty walking downstream/numerous crossings of boulder-dominated runs or cobble-dominated pool tails. Vertical cliffs limit further downstream access from this location within about 1 mile of dam.
Oregon Creek (Log Cabin Diversion Dam to Confluence with Middle Yuba River)	Good/Easy/Moderately Difficult	Most of the creek is accessible though blackberry vines, private property and some vertical walls limit access to certain locations (which can be avoided by going upstream or downstream). Most difficult is between the upper end of Celestial Valley, which is near the middle of the reach, and Log Cabin Diversion Dam – private property, no stream-adjacent road like in the remainder of creek, must walk downstream from Log House Dam or upstream via end of old log yard. Next difficult section is upstream of junction with Middle Yuba to gage site where creek is steepest and falls must be traversed (moderately difficult but nothing to stop one from walking entire stream).

Table 2.3-1. (continued)

Project Reach	Access / Difficulty	Description
North Yuba River New Bullards Bar Dam to Middle Yuba River) (continued)	Poor/Difficult/Limited Distances Accessible (continued)	Two access locations: • Access to lower reach at junction with Middle Yuba River only down YCWA access road, cross North Yuba River below junction and walk upstream through house-sized boulders and past deep pools. Access beyond 1-mi upstream from junction long and difficult walk • Access to upper reach below New Bullards Bar Dam from road below dam. Must have boat to cross pool at base of dam as vertical walls limit access. Once across pool, stream is crossable, moderate difficulty for about .75 mi where vertical cliffs limit further access downstream.
Yuba River (Confluence of Middle and north Yuba Rivers to USACE's Englebright Reservoir)	Good/Moderately Easy Though Limited Distance	Access is at Colgate PH and Rices Crossing: • Access upstream of New Colgate Powerhouse – relatively easy walking along stream for about 1 mile but further access limited by vertical cliffs. • Access downstream of New Colgate Powerhouse – relatively easy walking along stream; difficult to cross at time of survey. If flows drop, crossing at riffles and pool tailouts possible. • Rices Crossing – did not visit this section but video suggests possible access though this location is coincident with backwater effects from USACE's Englebright Reservoir and may not be dominated by riverine processes nor passable when flows high. • Limited access from Middle and North Yuba river confluence. Good access below junction for about 500 ft (high gradient riffle, cascades, and some step runs) then vertical cliffs.

For ground-based mapping in support of the video mapping, a minimum of 30 channel widths were assessed in each mapping segment, and generally at least four replicates of the major meso-habitat types were assessed. The aerial video was of excellent quality and provided the necessary coverage between ground-mapped sections for the reaches except for Oregon Creek, which was entirely ground-mapped.

Ground habitat mapping was conducted on foot by teams of two individuals. Habitat units were designated using the habitat types described in Table 2.2-1. Habitat units were separately identified where the unit length was at least equal to the active channel width (McCain et al. 1990, Flosi and Reynolds 1994), or if the unit is otherwise distinctive. Figure 2.3-1 is a copy of the field form used during ground-based habitat mapping. Teams recorded the length and width of each habitat type unit using a laser range finder. Mapping was contiguous (i.e., each habitat unit abuts the next unit, except for split channels, which had the length measured but individual habitat units within each split were not mapped). The beginning and ending of the mapped section, and every fifth mapped unit, and every tenth characterized habitat unit, had a Global Positioning System (GPS) reading recorded in UTM NAD83 datum.

STREAM HABITAT TYPING SURVEY DATA (YCWA - Yuba River Development Project)

Data Sheet # _____

Stream/Reach/Subreach:_____ Page _____ of _____

Team: _____ Date _____

UTM: _____ **NAD 83 (Habitat unit No_____)** PM _____ Map Gradient:_____

Habitat Unit #																				
Habitat Type [1]	**FALL**	**CAS**	**CHU**	**RAP**	**FALL**	**CAS**	**CHU**	**RAP**	**FALL**	**CAS**	**CHU**	**RAP**	**FALL**	**CAS**	**CHU**	**RAP**	**FALL**	**CAS**	**CHU**	**RAP**
	HGR	**LGR**	**GLI**	**RUN**	**HGR**	**LGR**	**GLI**	**RUN**	**HGR**	**LGR**	**GLI**	**RUN**	**HGR**	**LGR**	**GLI**	**RUN**	**HGR**	**LGR**	**GLI**	**RUN**
	STEP	**POW**	**SHT**	**COP**	**STEP**	**POW**	**SHT**	**COP**	**STEP**	**POW**	**SHT**	**COP**	**STEP**	**POW**	**SHT**	**COP**	**STEP**	**POW**	**SHT**	**COP**
*note if dammed pool	**MCP**	**LAP**	**TRP**	**PLP**	**MCP**	**LAP**	**TRP**	**PLP**	**MCP**	**LAP**	**TRP**	**PLP**	**MCP**	**LAP**	**TRP**	**PLP**	**MCP**	**LAP**	**TRP**	**PLP**
Length (ft)																				
Est. Avg. Width (ft)																				
Est. Avg. Pool Depth (ft)																				
Max. Pool Depth (ft)																				
Pooltail Embedded %																				
Significant Cover? [2]	**INSIGNIF**		**BLDR**		**INSIGNIF**		**BLDR**		**INSIGNIF**		**BLDR**		**INSIGNIF**		**BLDR**		**INSIGNIF**		**BLDR**	
	VEG		**WOOD**		**VEG**		**WOOD**		**VEG**		**WOOD**		**VEG**		**WOOD**		**VEG**		**WOOD**	
SUBSTRATE COMPOSITION																				
Dominant Substrate	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**
	GRV	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**
Subdominant Substrate	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**
	GRV	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**
Dominant Bank Substrate	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**	**BED**	**BLD**		**COB**
	GRV	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**	**GRV**	**SND**		**SLT**
Length of LB and RB Exposed Banks (feet)																				
Confinement [4]																				
Unit Flagged/ Labeled? (Y/N)																				
Tributary Inflow in cfs																				
Landmarks or photos																				
	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class
Large Woody Debris [5] within bankful width																				
No. of LWD Pieces within wetted width																				
Fish Migration Barrier [6] **(y/n)?**																				
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")																				
Maximum Spawning Gravel Patch Size (sq-ft) Est.																				
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.																				

[1] **FALL** = Falls, **CAS** = Cascade, **CHU** = Chute, **RAP** = Rapid, **GLI** = Glide, **RUN** = Run, **STEP** = Step Run, **HGR** = High Gradient Riffle (>4%), **LGR** = Low Gradient Riffle, **POW** = Pocket Water, **SHT** = Sheetflow;
Pools: COP = Convergence, **MCP** = mid-channel pool, **LAP** = Lateral, **TRP** = Trench, **PLP** = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.) **Q/C initials:**

[4] Channel Confinement: **1**=Confined Shallow; **2**=Confined Deep; **3**=Moderate Confined (<2x wetted channel width); **4**=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-**12",** 12-**24",** 24-**36",or** 36**"+ x** 3-**10',** 10-**25',** 25-**50',** 50-**75',** 75'**+** (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Figure 2.3-1. Field form used for ground-based habitat mapping.

Table 2.3.-1. Description of data collected during ground-based habitat mapping.

Stream/Reach	Note on every data sheet
Team	Note initials
T/R/S and UTM	Get UTM every 5th unit (NAD 83) - note if at top or bottom or unit
PM & Map Gradient	Note parent material in assessed reach from geologic map; measure gradient from Terrain Nav Pro (office, before or after).
Habitat Unit #	Numbered sequentially, usually from downstream to upstream. Note if this is not the case
Habitat Type	Circle one of the choices, or write something else in if necessary (e.g., "marsh")
Length (ft)	Measured in feet, with hip chain. Clean up your string periodically
Estimated Average Width (ft)	Average width of entire unit, estimated by eye, periodically checking your estimates with a stadia rod or tape
Estimated Average Pool Depth (ft)	Where practical, take some measurements across the channel to help develop your estimate. Particularly interested in whether most of the pool is greater than 3 ft deep or not.
Estimated Maximum Pool Depth (ft)	Measure where practical. Estimate otherwise
Pooltail Embedded	Degree to which gravel or larger substrates are vertically embedded in sand or smaller substrates.
Significant Cover?	Is cover a dominant feature of the unit? Or is it just a bit of veg overhang on the edges, and some boulder substrate?
Dominant Substrate	Dominant particle size, by area. Silt, Sand (<2mm or 1/8"), Gravel (2-64mm or 1/8-2.5"), Cobble (64-256mm or 2.5-10"), Boulder (>10"), Bedrock
Subdominant Substrate	Next most dominant particle size, by area
Dominant Bank Substrate	Dominant particle size, by area. Silt, Sand (<2mm or 1/8"), Gravel (2-64mm or 1/8-2.5"), Cobble (64-256mm or 2.5-10"), Boulder (>10"), Bedrock - for the bank.
Bank Erosion (ft)	If stream banks are exposed and actively eroding and provided sediment to the active stream channel, quantify the total length on both the right and left banks (cumulative distance) as you are walking along and total in this column.
Confinement	Channel Confinement: 1=Confined Shallow (<4'); 2=Confined Deep (>4'); 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (≥2 wetted channel widths)
Tributary Inflow in cfs	Estimate trib inflow, and get water temperature of the trib and mainstem upstream of it. GPS the location.
Unit Flagged/Labeled (Y/N)	Flag units frequently, near a unit boundary, indicating up and downstream unit numbers. Label with metal tags a little less frequently. Frequency depends on length of units. Think about a year from now, how far would you like to hike up and downstream with a group of stakeholders, looking for positive identification of which habitat unit you were in? Generally marking every 5 units is a good idea, but it really depends on how long the units are.
Landmarks	Note if landmarks are near unit, to help relocate it. e.g., trib confluences, roads, bridges, trails, unique rock formations or bedrock outcrops, large trees of an atypical species, man-made structures or quasi permanent debris, campgrounds, waterfalls, old car bodies, etc. "Big rock" or "tall tree" are not very helpful. GPS whenever possible and convenient, particularly if it has been awhile since you were at a good landmark. River Left or River Right is looking downstream.
Large Woody Debris (in bankfull)	Note all of it along the way, by habitat unit number. "All pieces of wood lying within the bankfull width of the channel that measure 1/2 bankfull width or longer. Wood must be both downed, and with a portion lying within the bankfull channel, and dead or dying to be considered LWD. Divide into average size classes, and tally the total number of LWD pieces in each size class." Size classes we will use are maximum diameters of 6-12 inches, 12-24, 24-36, or >36 inches. Lengths are <3 feet, 3-10, 10-25, 25-75, >75 feet. These are total lengths, not just length in the channel. Note: LWD has to measure 1/2 bankfull width or longer or longer to be counted, so which length classes you might use are dependent on stream width (e.g., a 30ft wide stream would only use classes from 10-25ft on up, because the log would have to be at least 15ft to be counted).
Large Woody Debris (in wetted width)	Separate category: the number of pieces found within the wetted width
Fish Migration Barrier?	Note significant waterfalls or high velocity chutes, or any weirs or other man-made obstacles. Note any feature with a vertical drop exceeding 2.5 ft. Be sure to GPS it.
Spawnable Gravel Area (sq. ft.)	Estimate area of spawnable gravel (1/4 inch to 2.5 inch) patches within the wetted channel. Note any significant deposits along stream margins or on floodplain. One purpose is to determine if spawnable gravel sites could be a possible limiting factor for trout populations.
Comments/Observations	
Fish? Wildlife? Amphibians? Backwater or side channel amphibian habitat? Riparian? Etc.	Did you see some adult or juvenile fish? Idea of species? Any wildlife, such as deer, otters, amphibians, etc. that the wildlife biologists would be interested in? Are there wet backwater or side channel areas, especially with nearby or overhanging cover, that provide good habitat for amphibians, that the amphibian biologists might want to consider for TES species surveys? If you find good amphibian habitat, GPS it. Is the riparian vegetation notably lush, or wide, or are you in a marsh area?
QA/QC	Non-notetaker check all columns and boxes after sheet is full to make sure everything is filled out.

The habitat attributes defined in Table 2.3-1 were quantified and recorded for each unit mapped. Two levels of ground-based mapping occurred:

- "Fully mapped" units which included quantified variables such as bankfull width, pool depth, substrate, large woody debris (LWD), substrate and bank material, etc. (Figure 2.3-1, Table 2.3-1)
- "Characterized" units which only noted the meso-habitat type, length, maximum pool depth, and some with photographs and/or comments of notable details such as the existence of frogs, access and mining activity.

Where field access allowed, crews identified potential barriers to upstream fish movement using professional judgment and used handheld GPS units to record the locations. Significant tributary junctions and potential fish passage barriers were noted within the habitat unit in which they occurred.[5]

Photographs were taken of each fully mapped and at many characterized habitat units, generally from the bank looking upstream. Occasionally, photos were taken from the banks or from the top of the unit looking downstream, but these differences were noted. Photographs were labeled by the original habitat unit number, and placed in folders by mapped section and/or sub-reach.

Photographs and summaries of the field data have been organized electronically within separate folders: Middle Yuba Data, North Yuba Data, Mainstem Yuba Data, and Oregon Creek Data. Due to the file size of the photographs, this information is available on DVD from YCWA upon request.

2.3.1 Aerial Video Mapping

Video mapping was used to quantify the frequency of meso habitats within entire reaches where visible. In combination, video mapping and ground mapping covers 100 percent of the reach length. The mapping data may be used to develop a habitat unit frequency analysis for potential instream flow (PHABSIM) studies. This cumulative frequency sampling approach is an extremely efficient way to inventory meso habitats over long distances (Bovee 1997).

The video was not used to measure channel dimensions. Habitat for an entire reach was assessed at a set interval of 3 seconds. The video was stopped at every interval and the habitat type that was directly across the channel at the middle of the computer screen was defined and documented. A line drawn across the video screen determined the dominant habitat at that "point." Ground-truth data from the habitat mapping data were used to "calibrate the eye" so that features seen in the video had a ground-based reference. Some reaches used both video and ground-based habitat mapping data to calculate meso-habitat frequency for the entire reach. Charts and tables were created exhibiting habitat distribution and frequency.

[5] Identification of potential natural upstream fish passage barriers was very general; criteria were vertical height exceeding 2.5', waterfalls, or high-velocity chutes. There may be additional barriers upstream and downstream of the mapped section, but the number of barriers within the mapped section is used as an indicator of the relative restrictions to upstream movement. The analysis was performed for resident rainbow trout.

Habitat frequency in reaches that use video mapping was based on the number of units that occur in a reach and was calculated as a percentage of the total number of units counted. Because canopy, topography, and size of stream can interfere with visibility, the sections that were not visible were analyzed the same as actual habitat and labeled "out of view." Both fully-mapped and characterization data were used to established habitat frequency. Streams segments that were split by vegetated islands or had distinctly different habitats separated by a medial bar were noted as "split channel." The habitat on each side of the stream was not classified separately, with the exception of Emory Island in the Middle Yuba River. The main channel along the left bank ascending was classified but it was a long and complex split channel.

Habitat frequency in Oregon Creek was developed using 100 percent ground-based mapping and is based on the total length of each habitat type as a percentage of the entire length mapped.

3.0 Results and Discussion

The type and location of mapping was determined largely by accessibility. Except for Oregon Creek, the reaches have very few locations where ground crews can access the channel. Access was limited to the following locations: above and below the New Colgate Powerhouse for the Yuba River; at the confluence of the Middle and North Yuba rivers, above and below Highway 49, and below Our House Diversion Dam for the Middle Yuba River; and at the confluence of the Middle and North Yuba rivers and below New Bullards Bar Dam for the North Yuba River. Oregon Creek was accessible along its entire length, and the reach was completely invisible from the aerial video, so this reach was 100 percent ground-mapped. Figure 3.0-1 shows a map of the reaches and river miles.

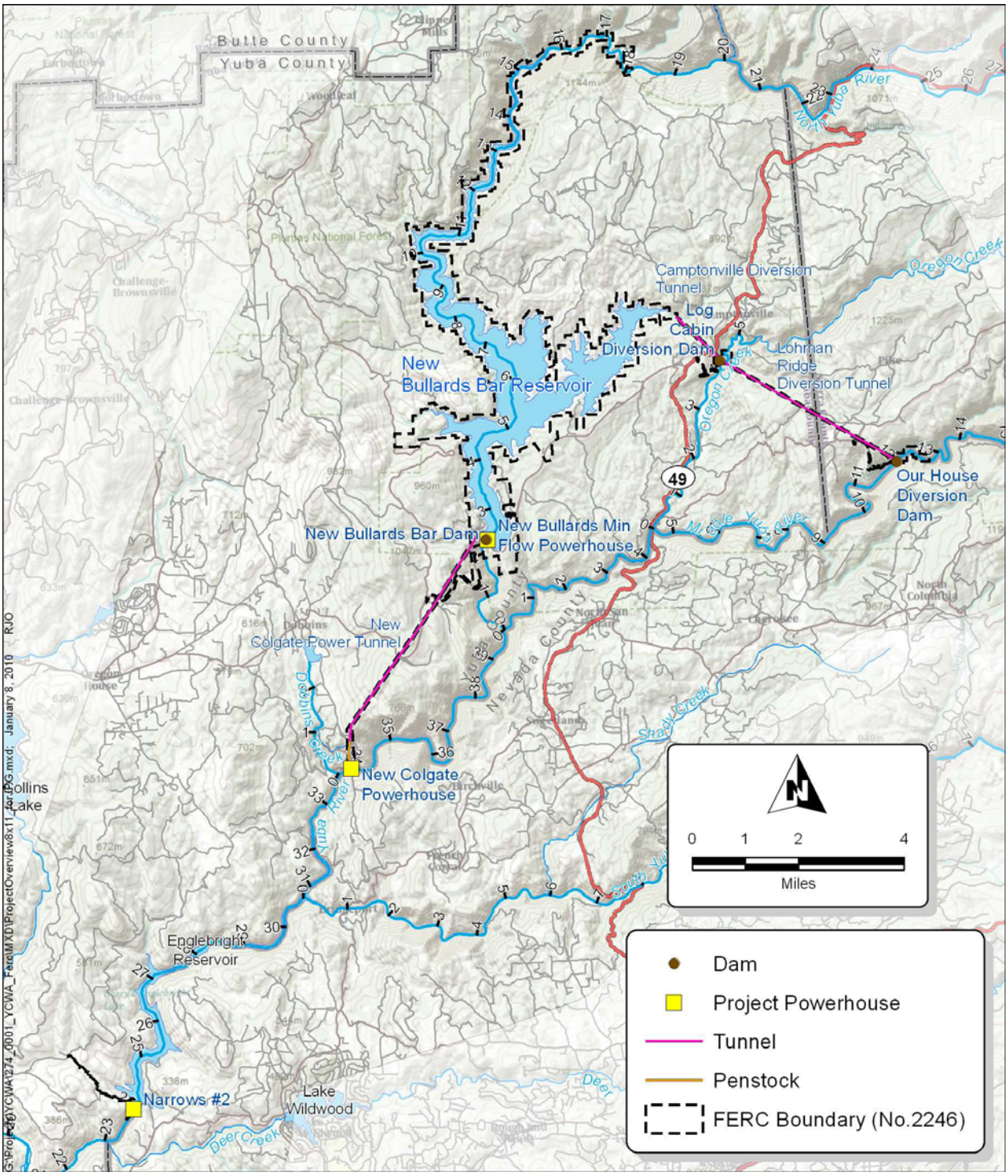

Figure 3.0-1. Map of reaches and river miles.

3.1 Middle Yuba River – Oregon Creek and Our Diversion Dam Reaches

The 12.0 mile Middle Yuba River Reach flows through a variety of parent materials, most notably resistant granitic rocks, and is bisected by the Big Bend-Wolf Creek fault within 1 mile of the junction with the North Yuba River. The overall gradient is 1.2 percent, with one break at the Big Bend/Wolf Fault (2.5% below the fault, and 1.1% above). There are numerous lower gradient sections, many of which are upstream of sharp bends that form "knickpoints." A knickpoint is a term used to describe a location in a river or channel where there is a sharp change, resulting from differential rates of erosion above and below the knickpoint. However, in any of these lower gradient sections where it appears that there is floodplain and side-channel development, sinuosity never exceeds 1.1 (i.e., valley length and channel length through the valley are approximately equal). There is a hydrologic break at Oregon Creek, separating the reach into Our House Diversion Dam Reach (Middle Yuba River upstream of Oregon Creek) and the Oregon Creek Reach (Middle Yuba River downstream of Oregon Creek).

This is a confined channel, with extensive sections of bedrock forming the channel; specifically, RM 9-10.2, and RM 11.4-11.7 where the channel is almost exclusively bedrock. Trench pools (Figure 3.1-1) are indicative of the bedrock-dominated sections, though shallow, mid-channel pools also form in the bedrock sections. Cobble or boulder bars and resistant bedrock and boulder banks resist lateral and vertical movement of the channel.

Freemans Crossing is within a valley that has an overall gradient of about 1 percent (Figure 3.1-1). Heavy recreation, rural housing, and mining have modified the channel and riparian zone in this area. Through this low gradient section, the channel is very wide and shallow, and has substantial amounts of finer material (e.g., gravel in the channel and sand on the banks). A multi-thread channel splits around an area known as "Emory Island" (~RM 6.5), though sinuosity is still fairly low at 1.1, and map-based gradient is about 1 percent. The habitat was mapped within the main channel, but it is a split channel and at high flow, about 30 percent of the flow will divert to the right channel (ascending). This area has a road to the Middle Yuba Reach, but it is privately owned and access for ground-based mapping was not granted.

Ground-based habitat mapping was performed at four locations within the Middle Yuba Reach: at the junction with the North Yuba (RM 0); above and below the Oregon Creek (RM 4.5); and below Our House Diversion Dam (RM 12.2). Table 3.1-1 summarizes the habitat frequency for the reach and Table 3.1-2 provides data on various habitat parameters. The habitat frequency is based on the total number of "hits" on a habitat using the aerial video method, with the ground-based data (16% of the reach) used to interpret the habitat. Habitat is dominated by mid-channel pools, low gradient riffles, and runs (Table 3.1-1 and 3.1-2); additional habitat types that exceed 5 percent include high gradient riffles, lateral pools and trench pools. Instream cover (Table 3.1-3) is limited to boulders. Table 3.1-4 also summarizes the data for physical parameters measured in the field. There is over 2,000 square feet (sq ft) of trout spawning-sized gravel accumulations within the mapped sections. There was very limited large woody debris identified during ground-based assessments. Two potential natural barriers to upstream movement of resident trout were mapped on the ground and Vogel (2006) also identified 2 low-flow barriers in this

reach. The ground-based data collected in the Middle Yuba River Reach indicate there are spawning-sized gravel accumulations. Upstream trout migration may by limited by permanent falls or other barriers, and that large woody debris is an uncommon element, and does not modify channel form or fish habitat in the active channel.

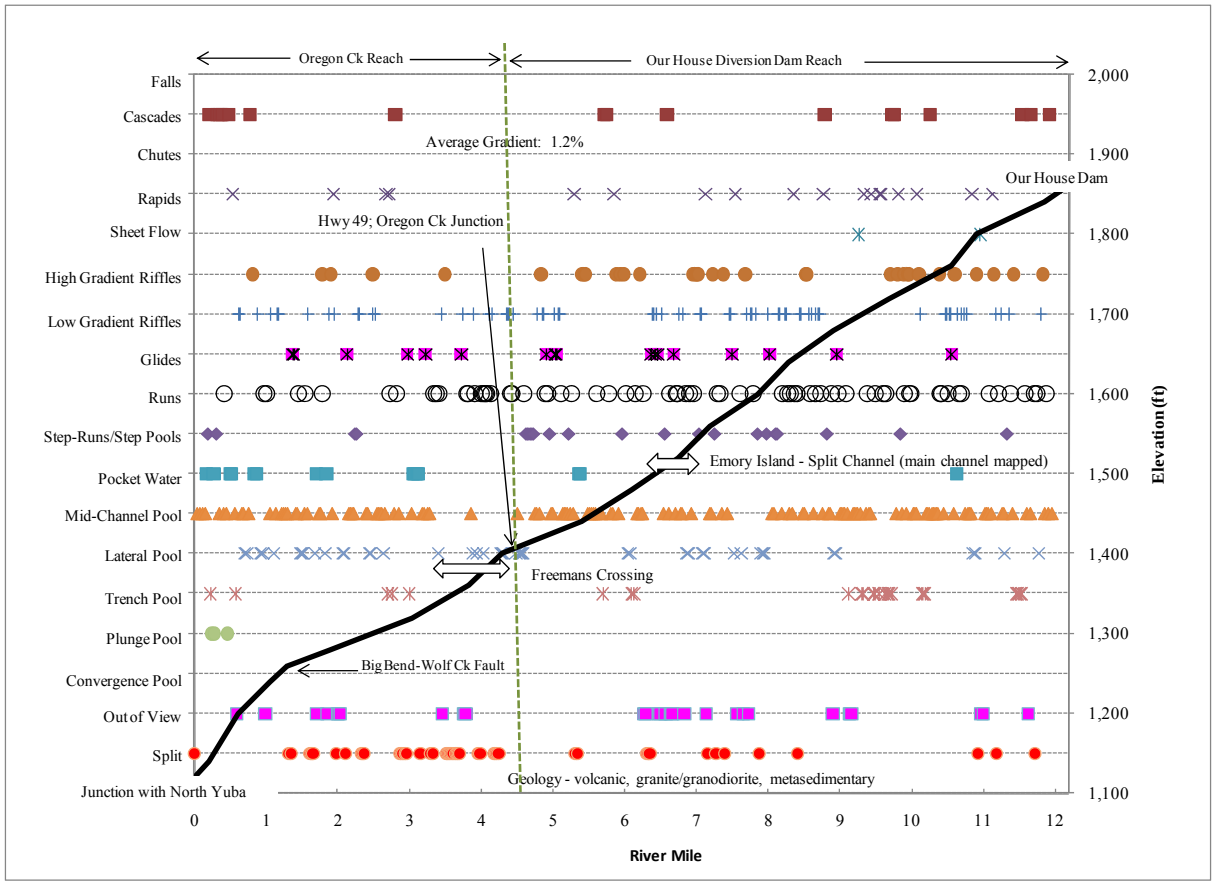

Figure 3.1-1. Longitudinal profile and habitat units (based on video-mapped data) of the Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches (between the junction with North Yuba River to Our House Diversion Dam).

Table 3.1-1. Meso-habitat frequency data based on aerial video analysis for the Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches (between the junction with North Yuba River to Our House Diversion Dam).

Meso-Habitat Type	Number	Percent Frequency
Falls	0	0%
Cascades	17	3%
Chutes	0	0%
Rapids	18	3%
High Gradient Riffles	34	6%
Low Gradient Riffles	67	12%
Glides	17	3%
Runs	71	13%
Step-Runs/Step-Pools	23	4%

Table 3.1-1. (continued)

Meso-Habitat Type	Number	Percent Frequency
Pocket Water	15	3%
Sheetflow	2	0%
Convergence Pool	0	0%
Mid-Channel Pool	135	25%
Lateral Pool	44	8%
Trench Pool	25	5%
Plunge Pool	3	1%
Out of View	28	5%
Split Channel	48	9%
Total	**547**	**100%**

Table 3.1-2. Length, frequency, width and depth of ground-mapped habitat units in the Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches (between the junction with North Yuba River to Our House Diversion Dam). The shaded cells are characteristics of pools that do not apply to non-pool habitat types.

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall								
Cascade	421	2.7%	7	6.4%	63.4			
Chute	47	0.3%	1	0.9%	22.3			
Rapid	70	0.5%	1	0.9%	26.5			
High Gradient Riffle	1014	6.5%	9	8.2%	53.1			
Low Gradient Riffle	1997.5	12.9%	17	15.5%	62.0			
Glide	531	3.4%	2	1.8%	53.8			
Run	2269	14.6%	23	20.9%	52.9			
Step Run	1225	7.9%	8	7.3%	69.2			
Pocket Water	654	4.2%	5	4.5%	55.5			
Sheet								
Convergence Pool								
Mid-Channel Pool	6182.5	39.8%	30	27.3%	56.8	3.7	6.9	7.9
Lateral Scour Pool	469	3.0%	2	1.8%	101.9	1.8	3.5	25.0
Trench Pool	216	1.4%	1	0.9%	75.3	4.0	8.0	
Plunge Pool	446	2.9%	4	3.6%	53.3	5.8	7.0	5.0
TOTAL	**15542**	**100.0%**	**110**	**100.0%**	**58.9**	**3.8**	**6.3**	**12.6**

Table 3.1-3. Instream cover identified during ground-mapping in the Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches (between the confluence with North Yuba River to Our House Diversion Dam).

Dominant Cover Type	Number	Relative Frequency
Insignificant	6	7%
Boulder	77	93%
Vegetation	0	--
Wood	0	--
Total	**55**	**100%**

Table 3.1-4. Reach summary of ground mapped data for the Middle Yuba River – Oregon Creek and Our House Diversion Dam Reaches (between the junction with North Yuba River to Our House Diversion Dam).

Total Reach Length:	**12.2 m**i.
Total Ground Mapped Length:	2.94 mi. (16.0%)
Average Bankfull Width:	58.9 ft.
Average Bankfull Depth:	**2.5** ft.
Average Width:Depth:	24
Total Spawnable Gravel:	2,311 ft^2 - trout
Average Largest Patch Size:	44 ft^2 - trout
LWD Density:	5/ mile (within bankfull width)
Wetted LWD Density:	4/ mile (within wetted width)
Parent Material:	Volcanic, granite/granodiorite, metasedimentary
Bank Erosion % of Reach:	0.0%
Total No. Passage Barriers:	2

3.2 Oregon Creek – Log Cabin Diversion Dam Reach

There are three gradient breaks within the 4.2 mile Oregon Creek Reach, between which fluvial processes vary (Figure 3.2-1). Oregon Creek flows mostly through resistant plutonic granitic material, though there is a short, steep section near the upstream end that is composed of competent metasedimentary material. There is a short 4.6 percent gradient section just above the confluence with the Middle Yuba River, and a 3.7 percent gradient section upstream of Celestial Valley. Celestial Valley appears to be a long-term depositional area and has an overall gradient of 1.6 percent. It is highly modified by human settlement, and channel location has been modified by roads, grazing, berms, and sub-urban development. It is also heavily vegetated with blackberry vines.

Initial classification of this stream characterized two types: the steeper 3-8 percent confined channel type near the downstream end and below Log Cabin Dam, and the lower gradient, 1-3 percent confined section through Celestial Valley. There is also a short 1-3 percent gradient confined section between the confluence with the Middle Yuba River and the steeper 3-8 percent gradient section. Following habitat mapping, these characterizations are revealed as good approximations. The stream is confined throughout between either terraces or steep valley walls. The steeper sections are dominated by cascades, falls, and plunge pools, whereas the Celestial Valley section is dominated by long planar runs and low gradient riffles, with little three-dimensional heterogeneity. Table 3.2-1 shows the occurrence of all the habitat types as a percentage of the total length. Habitat is dominated by low gradient riffles, pocketwater, and mid-channel pools (Table 3.2-1). Instream cover is dominated by boulders (Table 3.2-2). There is little trout spawning-size accumulations of gravel, and only sparse quantities of large woody debris (Table 3.2-3). Table 3.2-4 summarizes the number of large woody debris pieces within each size and diameter class of the nine pieces that were found in the reach within the bankfull channel. Seven of these nine pieces were located within the wetted channel.

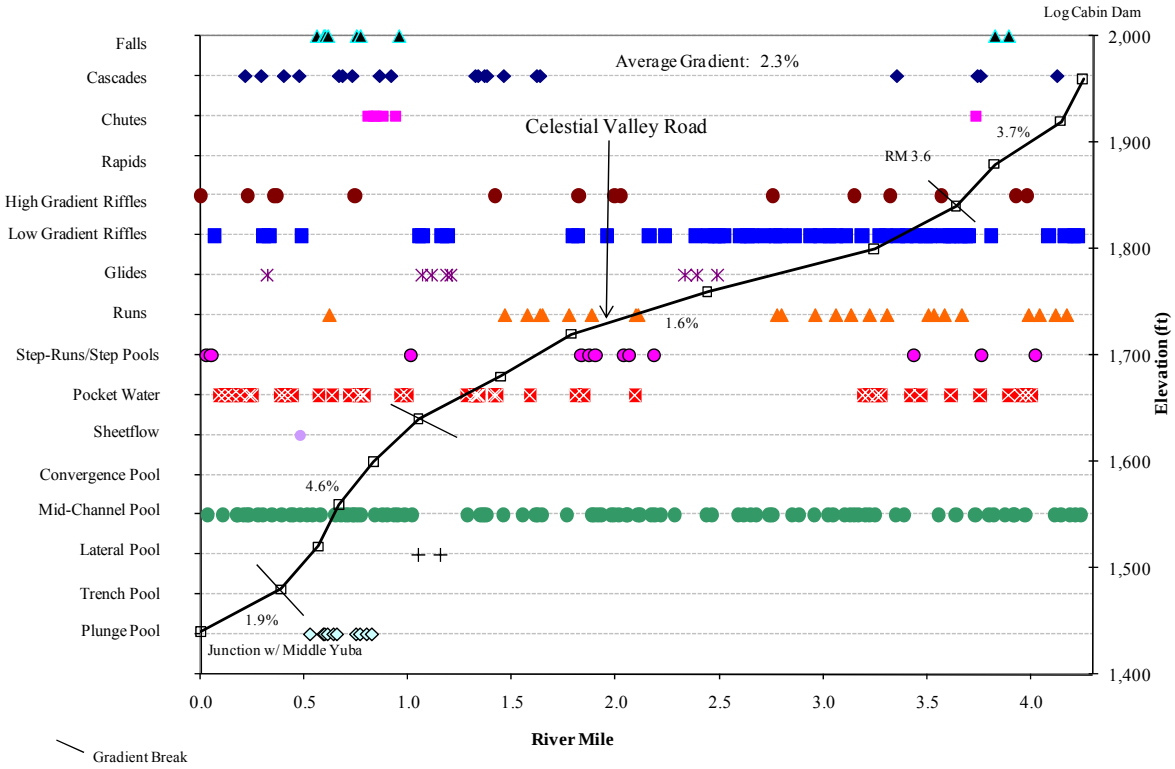

Figure 3.2-1. Longitudinal profile and habitat types (based on ground-mapped data) of Oregon Creek - Log Cabin Diversion Dam Reach.

Table 3.2-1. Total length of habitat types identified in the Oregon Creek – Log Cabin Diversion Dam Reach, and as a percentage of total reach length.

Meso-Habitat Type	Total Length (ft)	Percent of Total Reach Length
Falls	133	1%
Cascades	867	4%
Chutes	158	1%
Rapids	0	0%
High Gradient Riffles	673	3%
Low Gradient Riffles	4,170	19%
Glides	946	4%
Runs	1,245	6%
Step-Runs	808	4%
Pocket Water	2,661	12%
Sheetflow	92	0%
Convergence Pool	25	0%
Mid-Channel Pool	8,507	38%
Lateral Pool	207	1%
Trench Pool	0	0%
Plunge Pool	503	2%

Table 3.2-1. (continued)

Meso-Habitat Type	Total Length (ft)	Percent of Total Reach Length
Out-of-View	0	0%
Split Channel	1,342	6%
Total	**22,336**	**100%**

Table 3.2-2. Instream cover identified during ground-mapping in Oregon Creek – Log Cabin Diversion Dam Reach.

Dominant Cover Type	Number	Relative Frequency
Insignificant	16	14%
Boulder	93	82%
Vegetation	5	4%
Wood	0	--
Total	**114**	**100%**

Table 3.2-3. Summary of ground mapped data for Oregon Creek – Log Cabin Diversion Dam Reach.

Total Reach Length:	**4.2 mi**.
Total Ground-Mapped Length:	4 mi. (95.0%)
Average Bankfull Width:	29.4 ft.
Average Bankfull Depth:	**1.7** ft.
Average Width:Depth:	17
Total Spawnable Gravel:	255 ft^2 - trout
Avg Largest Patch Size:	12 ft^2 - trout
LWD Density:	2 / mile (within bankfull width)
Wetted LWD Density:	2 / mile (within wetted width)
Parent Material:	Granite pluton, metasedimentary
Bank Erosion % of Reach:	0.0%
Total No. Passage Barriers:	8

Table 3.2-4. Summary of large woody debris data for Oregon Creek – Log Cabin Diversion Dam Reach.

Number	Diameter Class (inches)	Length Class (feet)
1	6-12	3-10
3	6-12	10-25
3	12-24	10-25
1	6-12	25-50
1	12-24	25.50

3.3 North Yuba River – New Bullards Bar Dam Reach

While the channel of the North Yuba River - New Bullards Bar Dam Reach is dominated by gradients below 3 percent (average gradient of 2%), there is one short section where the gradient

is greater than 3 percent and one short section that is above 5 percent (Figure 3.3-1). Just above the 5 percent section, the gradient flattens to less than 1 percent. The geology is composed of Mesozoic volcanic rocks of the Smartville Complex. Most of the reach is composed of bedrock and car and house-sized boulders that separate large mid-channel pools. There are very short and infrequent areas of cobble-size deposits, but most of the substrate is large and immobile. There is no apparent floodplain or terrace development.

This 2.3-mile reach is largely inaccessible. Two areas were ground-mapped: North Yuba upstream of the Middle Yuba River junction and just dowstream of New Bullards Bar Dam; the remainder was mapped using the aerial video. This is a very rugged stream with large boulders that often cover the channel, and large, deep pools bounded by bedrock. The middle steeper section cannot be safely accessed by foot from upstream due to a deep bedrock gorge with vertical cliff walls blocking the way. The lower section is a rugged path through very large boulders that cover pocket water and separate deep pools.

Pocketwater and mid-channel pool habitat types dominate (Table 3.3-1). Both video mapping and ground-based mapping were combined for the habitat mapping results. The video of the upper section near New Bullards Bar Dam missed most of the habitat that was ground-mapped, so the ground-mapped data (49% of the reach) was used in lieu of the video. Table 3.3-2 shows the characteristics for various habitat parameters measured during ground-based mapping. Habitat is dominated by pocketwater and mid-channel pools (Table 3.3-1 and 3.3-2). Identified cover is exclusively boulders (Table 3.3-3), but the depth of pools can also provide cover to resident trout (Table 3.3-2). Trout spawning-sized gravel accumulations were rare (511 sq ft), as was large woody debris (one log in the diameter class 12-24 inches, length class 25-50 ft, within the wetted channel), and potential natural barriers to resident trout upstream movement likely are very common in the confined, steep channel. Bank erosion was rare, given the bedrock/boulder channel margins (Table 3.3-4).

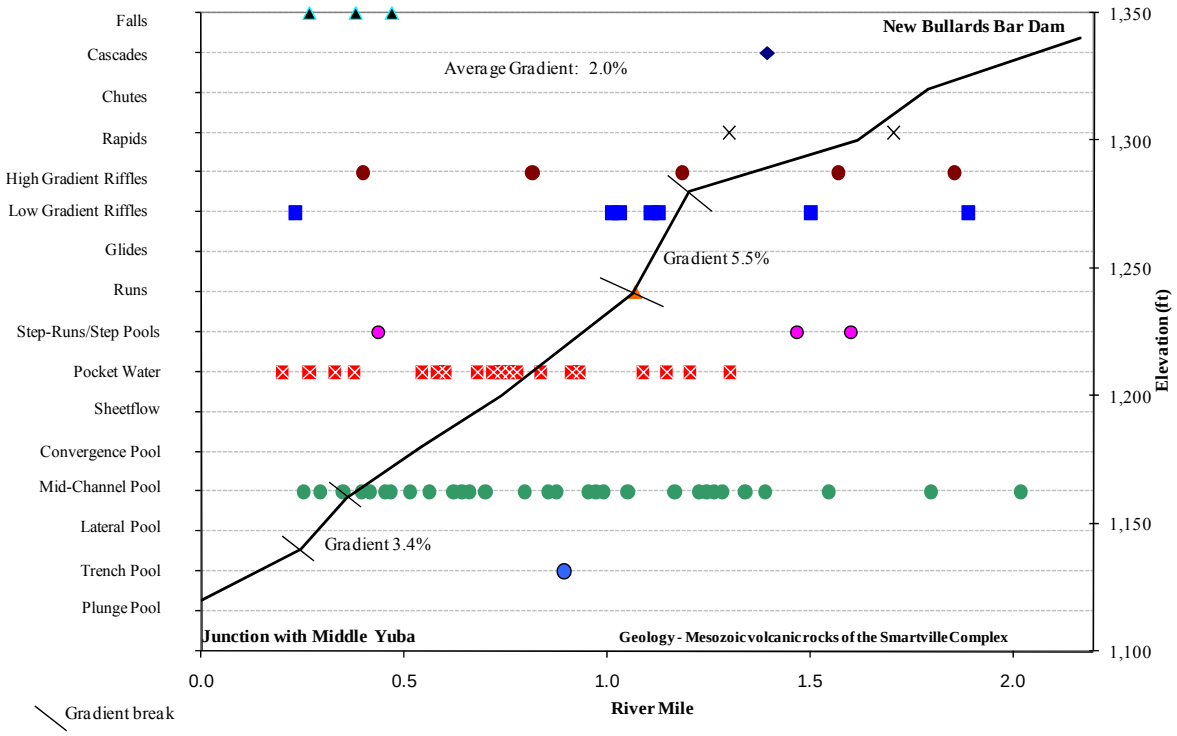

Figure 3.3-1. Longitudinal profile and habitat types (based on video and ground-mapped data) of the North Yuba River – New Bullards Bar Dam Reach (between the Middle Yuba River and New Bullards Bar Dam).

Table 3.3-1. Meso-habitat frequency using ground and aerial video data for the North Yuba River – New Bullards Bar Dam Reach (between the Middle Yuba River and New Bullards Bar Dam).

Meso-Habitat Type	Number	Percent Frequency
Falls	3	4%
Cascades	1	1%
Chutes	0	0%
Rapids	2	3%
High Gradient Riffles	5	7%
Low Gradient Riffles	7	10%
Glides	0	0%
Runs	1	1%
Step-Runs/Step-Pools	3	4%
Pocket Water	19	26%
Sheetflow	0	0%
Convergence Pool	0	0%
Mid-Channel Pool	30	42%
Lateral Pool	0	0%
Trench Pool	1	1%
Plunge Pool	0	0%

Table 3.3-1. (continued)

Meso-Habitat Type	Number	Percent Frequency
Out of View	0	0%
Split Channel	0	0%
Total	**72**	**100%**

Table 3.3-2. Length, frequency, width and depth of ground-mapped habitat units for the North Yuba River – New Bullard Bar Reach (between the junction with the Middle Yuba River and New Bullards Bar Dam). The shaded cells are characteristics of pools that do not apply to non-pool habitat types.

Unit Type	Total Length (ft)	Length (frequency)	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall	63	1.1%	3	8.8%	66.0			
Cascade	22	0.4%	1	2.9%	55.0			
Chute	--	--	--	--	--			
Rapid	778	13.1%	2	5.9%	81.5			
High Gradient Riffle	455	7.7%	3	8.8%	66.2			
Low Gradient Riffle	399	6.7%	3	8.8%	59.8			
Glide	---	---	---	---	---			
Run	---	---	---	---	---			
Step Run	639	10.8%	3	8.8%	76.1			
Pocket Water	687	11.6%	5	14.7%	49.3			
Sheet	--	--	--	--	--			
Convergence Pool	--	--	--	--	--	--	--	--
Mid-Channel Pool	2894	48.7%	14	41.2%	72.7	3.8	7.3	--
Lateral Scour Pool	--	--	--	--	--	--	--	--
Trench Pool	--	--	--	--	--	--	--	--
Plunge Pool	--	--	--	--	--	--	--	--
Total	**5937**	**100.0%**	**34**	**100.0%**	**70.0**	**3.8**	**7.3**	--

Table 3.3-3. Instream cover identified during ground-mapping in the North Yuba River – New Bullard Bar Reach (between the junction with the Middle Yuba River and New Bullards Bar Dam).

Dominant Cover Type	Number	Relative Frequency
Insignificant	0	--
Boulder	34	100%
Vegetation	0	--
Wood	0	--
Total	**34**	**100%**

Table 3.3-4. Summary of ground mapped data for the North Yuba River – New Bullard Bar Reach (between the junction with the Middle Yuba River and New Bullards Bar Dam).

Total Reach Length:	**2.3 mi**.
Total Ground Mapped Length:	1.12 mi. (49.0%)
Average Bankfull Width:	70 ft.
Average Bankfull Depth:	**3.5** ft.
Average Width:Depth:	20
Total Spawnable Gravel:	511 ft^2 - trout
Avg Largest Patch Size:	31 ft^2 - trout
LWD Density:	1 / mile (bankfull)
Wetted LWD Density:	1 / mile (wetted width)
Parent Material:	Mesozoic rocks of the Smartville Complex
Bank Erosion % of Reach:	0.0%
Total No. Passage Barriers:	4

3.4 Mainstem Yuba River - Middle/North Yuba River Reach

The 7.1 mile channel of the Yuba River – Middle/North Yuba River and New Colgate Powerhouse Reaches - is dominantly bedrock-controlled, with only very short boulder/cobble sections. The channel is laterally and vertically stable due to dominant bedrock control. Sinuosity is very low as there are no plan and profile sections strongly influenced by alluvial deposition. Pools are large and deep, and separated by long sections of pocketwater that runs through and under very large boulders. Finer sediment (cobble and finer) accumulations are not common.

This confined bedrock-dominated reach is very inaccessible. Though not very steep, according to the mapped gradient of 1.8 percent, high gradient riffles dominate the gradient "steps." The river flows through bedrock canyons, and the vertical walls inhibit ground access. The only location that was ground-mapped was the area just above and below New Colgate Powerhouse (25% of the reach). Habitat is dominated by mid-channel pools and pocket water formed between large boulders (Table 3.4-1 and 3.4-2). Boulders are the only instream cover identified (Table 3.4-3); though deep pools likely also provide cover. Large woody debris was not found and trout spawning-sized gravel accumulations were uncommon (Table 3.4-4). While there were no natural barriers to upstream resident trout movement noted during ground-based habitat mapping, in this steep, confined, bedrock-controlled reach, barriers are likely to occur. However, Vogel (2006) did not identify any barriers in this reach during aerial review of barriers.

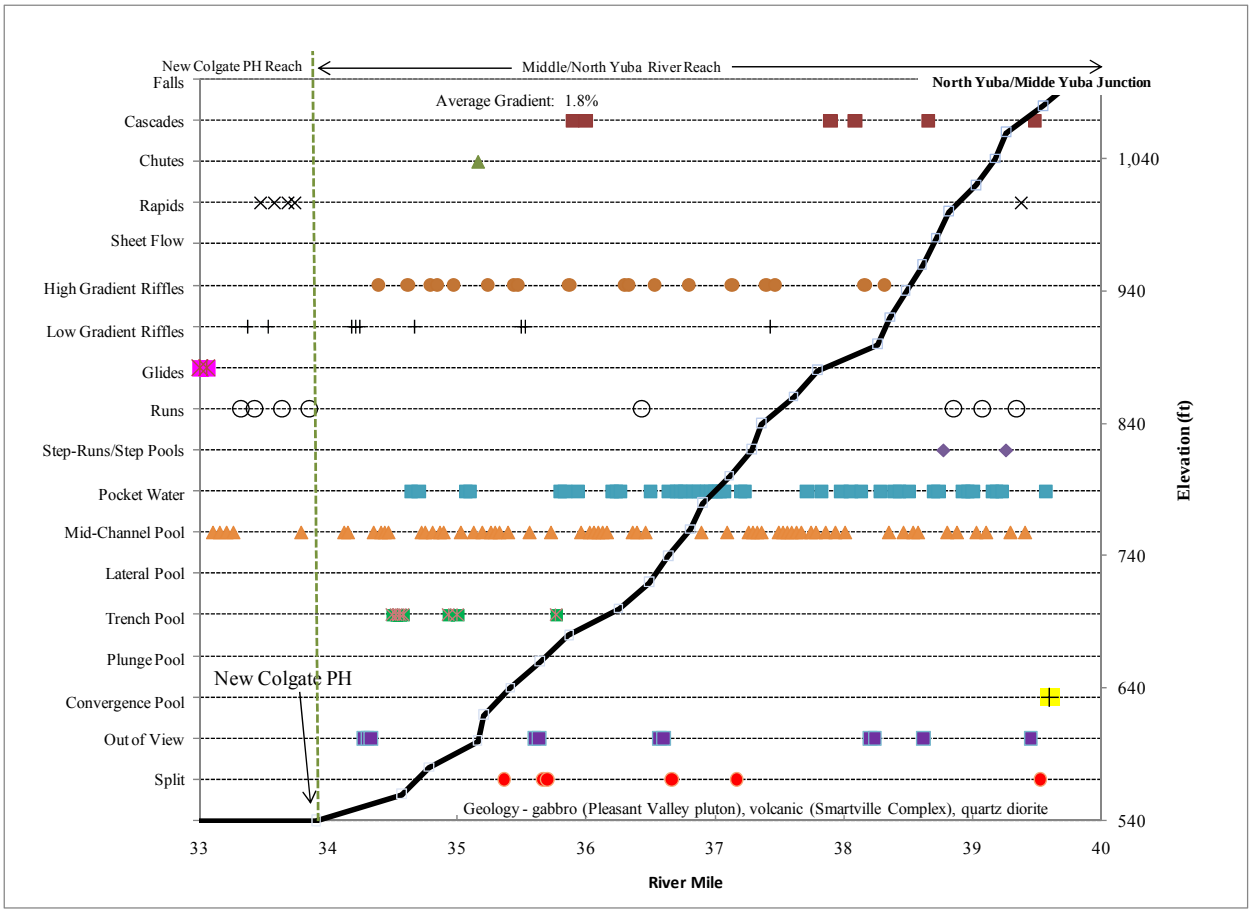

Figure 3.4-1. Longitudinal profile and habitat types (based on video-mapped data) of the Mainstem Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches (between the New Colgate Powerhouse and the Middle/North Yuba junction).

Table 3.4-1. Meso-habitat frequency using ground and aerial video data for the Mainstem Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches (between the New Colgate Powerhouse and the Middle/North Yuba junction) between RM 33.55 (approximate upstream end of backwater effect from Englebright Reservoir) and Middle Yuba/North Yuba junction (RM 39.6).

Meso-Habitat Type	Number	Frequency
Falls	0	0%
Cascades	6	3%
Chutes	0	0%
Rapids	9	5%
High Gradient Riffles	18	9%
Low Gradient Riffles	11	6%
Glides	4	2%
Runs	10	5%
Step-Runs/Step-Pools	2	1%
Pocket Water	42	21%
Sheetflow	0	0%
Convergence Pool	1	1%
Mid-Channel Pool	61	31%

Table 3.4-1. (continued)

Meso-Habitat Type	Number	Frequency
Lateral Pool	6	3%
Trench Pool	7	4%
Plunge Pool	0	0%
Out of View	13	7%
Split Channel	6	3%
Total	**196**	**100%**

Table 3.4-2. Length, frequency, width and depth of ground-mapped habitat units for the Mainstem Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches (between the New Colgate Powerhouse and the Middle/North Yuba junction). The shaded cells are characteristics of pools that do not apply to non-pool habitat types.

Unit Type	Total Length (ft)	Length (frequency)	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall	--	--	--	--	--			
Cascade	--	--	--	--	--			
Chute	--	--	--	--	--			
Rapid	989	10.1%	4	12.1%	117.5			
High Gradient Riffle	791	8.1%	5	15.2%	73.3			
Low Gradient Riffle	845	8.6%	6	18.2%	92.4			
Glide	235	2.4%	1	3.0%	176.5			
Run	1148	11.7%	5	15.2%	121.3			
Step Run	--	--	--	--	--			
Pocket Water	812	8.3%	3	9.1%	89.5			
Sheet	--	--	--	--	--			
Convergence Pool	--	--	--	--	--	--	--	--
Mid-Channel Pool	4978	50.8%	9	27.3%	104.7	6.6	11.1	Too deep
Lateral Scour Pool	--	--	--	--	--	--	--	--
Trench Pool	--	--	--	--	--	--	--	--
Plunge Pool	--	--	--	--	--	--	--	--
Total	**9798**	**100.0%**	**33**	**100.0%**	**104.8**	**6.6**	**11.1**	**Likely not**

Table 3.4-3. Instream cover identified during ground-mapping in the Mainstem Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches (between the New Colgate Powerhouse and the Middle/North Yuba junction).

Dominant Cover Type	Number	Relative Frequency
Insignificant	2	6%
Boulder	31	94%
Vegetation	0	---
Wood	0	---
Total	**33**	**100%**

Table 3.4-4. Summary of ground mapped data for the Mainstem Yuba River – New Colgate Powerhouse and Middle/North Yuba River Reaches (between the New Colgate Powerhouse and the Middle/North Yuba junction).

Total Reach Length:	**7.5 mi**.
Total Ground-Mapped Length:	1.86 mi. (24.7%)
Average Bankfull Width:	104.8 ft.
Average Bankfull Depth:	**6.5** ft.
Average Width:Depth:	16
Total Spawnable Gravel:	1,405 ft^2 - trout
Average Largest Patch Size:	93 ft^2 - trout
LWD Density:	0 / mile (bankfull)
Wetted LWD Density:	0 / mile (wetted width)
Parent Material:	Volcanic (Smartville Complex), gabbro (Pleasant Valley Pluton), quartz diorite
Bank Erosion % of Reach:	0.0%
Total No. Passage Barriers:	0

4.0 Attachments

There is one attachment of the habitat mapping data that includes photographs, raw data, and charts and graphs summarizing the raw data ("… Habitat Mapping Data"). Data are organized as follows:

YCWA HM Data – [1 Adobe PDF file: 29 MB; 151 pages formatted to 8-1/2" x 11"

- Mainstem Yuba HM Data
  - Mainstem Yuba below Colgate HM Photos
  - Mainstem Yuba HM Raw Data
  - Mainstem Yuba – Habitat Mapping Data
- Middle Yuba HM Data
  - 1 MY above North Yuba Junction HM Photos
  - 2 MY below HWY 49 HM Photos
  - 3 MY above Oregon Ck HM Photos
  - 4 MY below Our House Dam HM Photos
  - MY HM Raw Data
  - Middle Yuba - Habitat Mapping Data
- North Yuba HM Data
  - 1 N Yuba above M Yuba Junction HM Photos
  - 2 N Yuba below New Bullards Bar HM Photos
  - North Yuba HM Raw Data
  - North Yuba – Habitat Mapping Data
- Oregon Creek HM Data
  - Oregon Creek HM Photos
  - Oregon Ck HM Raw Data
  - Oregon Creek Habitat Mapping Data

5.0 References Cited

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Habitat Mapping Report

Attachments

Mainstem Yuba River below New Colgate Powerhouse
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246

Mainstem Yuba River below New Colgate Powerhouse Habitat Mapping Photographs

Habitat Mapping Unit 1 – Run

Habitat Mapping Unit 2 – Glide

Habitat Mapping Unit 3 –Mid-Channel Pool

Habitat Mapping Unit 4 – Run

Habitat Mapping Unit 5and 6 – Low Gradient Riffle

Habitat Mapping Unit 7 – Rapid

Habitat Mapping Unit 8 – Rapid

Habitat Mapping Unit 9 – Run

Habitat Mapping Unit 1 – Rapid

Habitat Mapping Unit 11 – Mid-Channel Pool

Habitat Mapping Units 12 and 13 – Rapid and Run

Mainstem Yuba River below New Colgate Powerhouse
Habitat Mapping Raw Data

Yuba River Development Project
FERC No. 2246

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. Yuba below Colgate PH — Data Sheet # 1

Team: Patty Hardesty & Gaea Bailey — Page 1 of 3

UTM: 0655061/4353986 NAD 83 (Habitat unit No. 1, based) — Date 10/5/09

PM _____ Map Gradient: _____

Habitat Unit #	1	2	3	4	5
Habitat Type [1]	FALL CAS CHU **RAP** HGR LGR GLI **RUN** STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR **GLI** RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP **MCP** LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI **RUN** STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR **LGR** GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	~~352~~	235	1080	110	163
Est. Avg. Width (ft)	180	183, 170	133, 135, 109, 106	120,	105, 150
Est. Avg. Pool Depth (ft)	no clear BED	2	1/8, 16, 12, 12, 2		
Max. Pool Depth (ft)	est@ 5 ft		18ft Unable to sample	18	≈3.5 BED
Pooltail Embedded %					
Significant Cover? [2]	**INSIGNIF** VEG **BLDR** WOOD	**INSIGNIF** VEG **BLDR** WOOD	INSIGNIF VEG **BLDR** WOOD	INSIGNIF VEG **BLDR** WOOD	INSIGNIF VEG **BLDR** WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD **COB** GRV SND SLT	BED BLD **COB** GRV SND SLT	BED **BLD** COB GRV SND SLT	BED **BLD** **COB** GRV SND SLT	BED **BLD** COB GRV SND SLT
Subdominant Substrate	BED **BLD** COB GRV SND SLT	BED **BLD** COB GRV SND SLT	BED BLD **COB** GRV SND SLT	BED BLD **COB** GRV SND SLT	BED BLD **COB** GRV SND SLT
Dominant Bank Substrate	BED BLD **COB** GRV SND SLT	BED BLD **COB** GRV SND SLT	BED **BLD** COB GRV SND SLT	BED **BLD** COB GRV SND SLT	BED **BLD** COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	2	1	1
Unit Flagged/ Labeled? (Y/N)	yes - top	no	no	no	yes - top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	DTA 2: LDS #2198,	2199	LDS 2200, LDS 2201	2203	2204
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class US 2202	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	All too deep Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Too deep to be glide, especially RBA; uniform cobble substrate only occasionally visible		Weak control at base, pool tail into glide; Looks to be 20ft deep but can't gage well.	Too many [illegible]	1% 0655314, 4354371

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Start 15 units below dam; walking LBA no more access due to rocky cliff-outs & heavy veg. Flags @ base mislabled as "bottom" of HMU 1

#3 - POOL long! Looks like maybe slight control in middle (2 pools?) but too deep to determine... One pool ....

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. YUBA below Colgate PH | Data Sheet # 2 | Page 2 of 3 | Date 10/5/09

Team: Patty Hardesty & Gwen Bailey

UTM: 0655314, 4354371 NAD 83 (Habitat unit No. 6 base) | PM _____ | Map Gradient: _____

Habitat Unit #	6	7	SPLIT	8	9
Habitat Type [1]	FALL CAS CHU (RAP) / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU (RAP) / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU (RAP) / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	436	171	140	310+120=430	—
Est. Avg. Width (ft)	126, 103	104, 127		142, 139	77, 90,
Est. Avg. Pool Depth (ft)					
Max. Pool Depth (ft)	BFD ≈ 5.5	≈ 6 ft		BFD ≈ 7	BFD ≈ 9
Pooltail Embedded %					
Significant Cover? [2]	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	(BED) (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB / GRV SND SLT	(BED) (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅		∅	∅
Confinement [4]	1	1		1	
Unit Flagged/ Labeled? (Y/N)	yes - base	no		no	no
Tributary Inflow in cfs	no	no		no	no
Landmarks or photos	2204	LDS - 2205	2206	2207, 2208	2209
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	∅	∅		∅	∅
Fish Migration Barrier [6] (y/n)?	no	no		no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	maybe 4x6 RBA, too deep (ctfw)	none		1x3	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	∅ N/A	N/A		1x3	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	glide-like in some areas, but deep, fast, variable substr. Not much pool min.		RBA - run 2 BA - rapid	Run-like in middle, but still standing waves	

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: PKH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Several Willow sp., Robinia, Alder, big leaf maple, brickellia, through boulder banks — upland community change a bruhtø change into steep 40-60% slopes; sandy deposition at boulder base, wetted edge. Riparian community fairly well established, especially where the huge ø boulders are absent.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. Yuba below Colgate Powerhouse

Team: Patty Hardesty & Gaea Bailey

UTM: 0655503, 4354838 NAD 83 (Habitat unit No. top 10)

Data Sheet # 3

Page 3 of 3

Date 10/5/09

PM _____ Map Gradient: _____

Habitat Unit #	10	SPLIT	11	12	13
Habitat Type [1]	FALL CAS CHU (RAP) / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	~~12~~ 313	101	600	250	95
Est. Avg. Width (ft)	84, 103, 77,	110, 70	130, 150	110, 130, 80	155, 190
Est. Avg. Pool Depth (ft)	BF Data	—	—	—	—
Max. Pool Depth (ft)	—	—	—	—	—
Pooltail Embedded %	—	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG / (BLDR WOOD)	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / (BLDR WOOD)	INSIGNIF VEG / (BLDR WOOD)	INSIGNIF VEG / (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	BED BLD (COB) / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV (SND) SLT	BED BLD COB / GRV (SND) SLT	BED BLD COB / GRV (SND) SLT
Dominant Bank Substrate	BED (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	RB 0	—	6	0	0
Confinement [4]	1	—	2	1	1
Unit Flagged/ Labeled? (Y/N)	yes, top	yes, bot	no	no	no
Tributary Inflow in cfs	no	no	no 22.12, 22.13	no	no
Landmarks or photos	22.10	22.11	LOS from Road	LUS from road 22.14 bottom/RAP	
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	0
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	out of water (2) 1x1 (3)	—	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	1 x 2.	—	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	run like in middle but still standing water	at corner length & width measurements oblique	non-modelable due to corner!		Power house at pool next unit above rapid

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow,
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

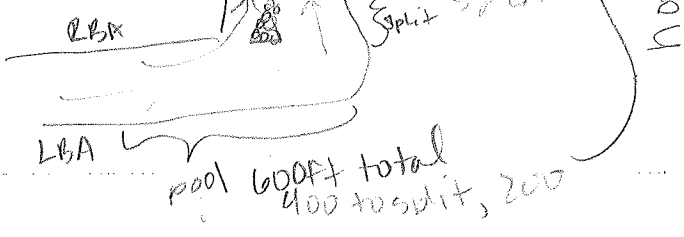
[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Split is at corner w/pool from HMU #11 pool extending ~~to~~ past split



STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: North Yuba above Colgate PH
Team: Pittardesty, E. Bailey
UTM: 0655938 / 4355021 NAD 83 (Habitat unit No._____)
Data Sheet # 1
Page 1 of 4
Date 10/16/09
PM _____ Map Gradient: _____

Habitat Unit #	1	2	3	4	5
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	530	452	291	318	1036
Est. Avg. Width (ft)	81, 115	80, 135, 116, 134	107, 123, 131	134, 141, 130	175, 142, 120, 73, 99, 56
Est. Avg. Pool Depth (ft)	6+	—	3+	—	6+
Max. Pool Depth (ft)	6+	—	6+	—	6+
Pooltail Embedded %	TOO DEEP	—	7-0%	—	too deep
Significant Cover? [2]	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	3	X 3	3	1	2
Unit Flagged/ Labeled? (Y/N)	Y @ TOP	Y @ BOTTOM	N	N	Y @ TOP
Tributary Inflow in cfs	—	NA	NA	NA	NA
Landmarks or photos	—	—	*	—	—
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	N	N	—	—	—
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	NA	(1x1) x 5 (2x2) x 2	(1x1) x 3 2 1/2 wide out 1x4 out wide/LBA	(1x1) x 4 (2x1) x 2	(5x5) x 2 (3x4) x 1 (20x15) x 1 (5x5) x 1
Maximum Spawning Gravel Patch Size (sq-ft) Est.	NA	2x2	1x1	2x1	20x15
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	POOL @ base of PH.	2.5% gradient	MCP with POW characteristics at pool tailout	4% gradient (WATER TEMP MONITOR LBA)	POOL TAILOUT HAS POW CHARACTERISTIC BUT DEEP, WATER NOT MOVING, NO SCOUR SO MCP

Above wetted LBA

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials:

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Murkey water
* Camera w/o charge

END. UTM: 0656505 4355144
page.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1
Page 2 of 4
Date 10/16/09

Stream/Reach/Subreach: N. Yuba above Colgate PH
Team: P. Hardesty G. Kridley
UTM: 0656505 / 4355144 NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #	6	7	8	9	10
Habitat Type [1]	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	(FALL) CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP	(FALL) CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	91	107	52	177	85
Est. Avg. Width (ft)	51 54 56	45, 51	62, 73	55 67 66	75, 80, 59
Est. Avg. Pool Depth (ft)	—	—	—	—	—
Max. Pool Depth (ft)	—	—	—	—	—
Poolfail Embedded %	—	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV (SND) SLT	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	—	—	—	—	—
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	Ye bottom	N	N	N	Ye TOP
Tributary Inflow in cfs	NA	NA	NA	NA	NA
Landmarks or photos	—	—	—	—	—
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	—	—	—	—	—
Fish Migration Barrier [6] (y/n)?	N	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	—	—	8x2	20x4	—
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	8x2	20x4	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan: amphib habitat? Riparian? Landmarks, Photo #s, Etc.	2.5% gradient	11% grad	1% gradient		9% gradient

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

No good indicators of HW. line, Water deep so no BFD measurements.

END UTM: 0656536 4355528

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 2

Stream/Reach/Subreach: N. Yuba above Colgate PH

Page 3 of 4

Team: P. Hardesty, G. Bailey

Date 10/6/09

UTM: 0656536/4355528 NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #	11	12	13	14	15
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	257	33	122	54	592
Est. Avg. Width (ft)	96, 101, 57	56	68, 109, 91	133	100, 108, 60, 81
Est. Avg. Pool Depth (ft)	6+				6+
Max. Pool Depth (ft)	6+				6+
Pooltail Embedded %	TOO DEEP				Too Deep
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	1	1 & 2	2	2	2
Unit Flagged/ Labeled? (Y/N)	Y @ bottom	N	N	N	Y @ TOP
Tributary Inflow in cfs	NA	NA	NA	NA	.5 cfs
Landmarks or photos					
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	N	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	NA	NA	NA	NA	NA
Maximum Spawning Gravel Patch Size (sq-ft) Est.	NA	NA	NA	NA	NA
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	6+ deep @ edge LBA	1.5% grad.		2% gradient	Depth is over 6 ft! @ edge LBA

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: GB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

END PAGE UTM:
0656670
4355787

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. YUBA above Colgate P.H. Data Sheet # 3
Team: P. Hardesty, G. Bailey Page 4 of 4
UTM: 0656670/4355787 NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____
Date 10/16/09

Habitat Unit #	16	17	18	19	20
Habitat Type [1]	FALL CAS CHU RAP / (HGR) LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL CAS CHU RAP / (HGR) LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP (POW) SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP
*note if dammed pool					
Length (ft)	105	110	216	412	~380 *
Est. Avg. Width (ft)	40 55	68 60	80 86 88	116, 117	100, 115, 105
Est. Avg. Pool Depth (ft)	—	6+	—	—	6+
Max. Pool Depth (ft)	—	6+	—	—	6+
Pooltail Embedded %	—	100 DEEP	—	—	No Access
Significant Cover? [2]	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD	INSIGNIF VEG / (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Subdominant Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	2	2	2	2	2
Unit Flagged/ Labeled? (Y/N)	Y@ bottom	N	N	N	Y@ bottom
Tributary Inflow in cfs	—	—	—	—	—
Landmarks or photos	—	—	—	—	—
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	N	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	(2x2) x5	NA	10x8 20x3 15x2 (1x1)x11	20X30	NA
Maximum Spawning Gravel Patch Size (sq-ft) Est.	2x2	NA	3x2 4x6 10x8	20X30	NA
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	9% gradient	characteristics of POW but no divergent flow & deep	4% gradient	Moved away from river to climb banks	* est. from above - cliffed out, both sides

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

UTM 0656850 4355960

NEXT UNITS AS SEEN FROM CLIFF-OUT:
HGR @ ~9% & looks like gradient continues to increase from here & up.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba above N. Yuba junction

Team: Kathi Peacock, Gaea Bailey

UTM: 0660581, 4359336 NAD 83 (Habitat unit No 1 base

Data Sheet # 1

Page 1 of ~~24~~ 24

Date 9/14/09

PM _____ Map Gradient: _____

Habitat Unit #	1	2	3	4	5
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	463	185	~~73~~ 110	90	~~35~~
Est. Avg. Width (ft)	66, 59, 58	60, 64, 75	73, 73, 79, 73	75, 55, 58	80
Est. Avg. Pool Depth (ft)	10?	—	—	—	—
Max. Pool Depth (ft)	10, 6, 3.0	—	—	—	—
Pooltail Embedded %	15%	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	~~Ø~~ Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes, base	no	no	no	yes top
Tributary Inflow in cfs	Ø	Ø	Ø	Ø	Ø
Landmarks or photos DSA	1368	1369	1370	1371	1372
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	~~Y~~ 0660693/ 4359349	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø Barrier upstream	Ø Barrier at upstream pool/downs	2X5	6X3 2.X4	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	n/a	~~2X5~~ 2X5	~~6X3~~ 6X3	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	could be trench pool, but slow, 50 mpc	True cascade huge boulders 12% grad. Barrier 4-6 ft perm	12"+ brn trout! Narrow run-like @ top w/ lateral pools, still boulder & scour holes, heterogen. subst. more pool-like at bottom, run in middle	step-run: distinct steps separated by short cascades 4% gradient	15% gradient

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: SKP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#1 - pool at helicopter landing

#3 ~~not explicit~~ → slightly diverg channel around big rocks! ~~Abut~~ Short rapid forms a control between 2 sections of pocket water

#5

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: Middle Yuba above N. Yuba Junction

Page 2 of ~~4~~

Team: KP, GB

Date 9/14/09

UTM: 066078, 4359472 NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	6	7	8	9	10
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	216	101	28	105	125
Est. Avg. Width (ft)	98, 60, 68	52, 75, 23	75	75, 60	~~35~~, 77, 55
Est. Avg. Pool Depth (ft)	8, 5, 3, 0	9, 5, 3, 0	—	—	10, 6, 4, 0
Max. Pool Depth (ft)	8	~~9, 5, 3, 0~~ 9	—	—	10+
Pooltail Embedded %	Ø	20%	Ø	—	can't tell — inaccessible
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	no	no	no	no	yes ~~top~~ mid
Tributary Inflow in cfs	no	no	hole from LBA / no	no LBS → LBA	
Landmarks or photos	1373	1374	1375, 1376 LHP	1378 LBS from LBA	1377 LHS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	~~3~~ Ø	~~Ø~~	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	yes 0660710 4359581	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	2x6 out of water or margin	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	2x6	N/A	N/A 5 ft. perm barrier	NA	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	sandy bank RBA w/ pooling from high flows		~~Some SM. woody debris clogging, many potential areas for fish to pass making barriers~~ 15% grad.		Deep & inaccessable — Est. depth from afar Low End UTM 0660691 4359613

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it. but mostly narrow chutes/falls w/ no holding pools

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Q/C initials: KP

see KP notes

looking toward ←

coming from →

Notes regarding access points (road condition, bridge crossings, trails, etc.)

- photo 1377 transition between HAB #9 and #10 — poor control, but different pool types
- Very difficult access to HAB #9 and #10; deep waters & sheer bedrock walls
- #10 flagged on RBA cliff lip above pool (only area accessable) also UTMs see above

P3of4

middle yuba > N. Yuba mctn. 9/14/09 KP/GB

stopped @ HMV 10 – too steep & dangerous to continue
0660691/4359615 (on LBA cliff)

rough measure from cliff

#11	60' long	40' wide	15% grad.	CAS
#12	95' long	75' wide		STEP
#13	50'	75'		CAS
#14	ground cover			POL

photo # 1380 shows entire sequence
Flag tied where stopped on cliff above #10
labeled "MY +NY HMV10"
(MY > NY)

=

below MY/NY junction

CAS
POW) deep, fast, steep.
TRP) vert. walls / bldg size bldrs.
not study site material.

no assess.
DTA1 1406 → LOS ← TCE
1407 → across str. CAS
1410 sand 1408 CAS → short rm. tails [illegible]
1409 LOS → CAS

Bldr dom. sm. patches of sp gravel under bldrs where shoot's thru.
lots pocket pools, ~~[illegible]~~ stable bed [illegible]
Chnl

Middle/N. Yuba Junc. p4of4 9/14/09
(below pctn - rip. zone) GB

Limited Riparian veg. community due to sheer rock slopes of river canyon - no soils/transitional zone for established community. Plenty of riparian/mesic OBL plants, such as Salix lucida, S. exigua, Alder incanus, Populus trem(some), at bars and base of canyon walls where wider. Typical riparian herbs: 2 asters (to be keyed later) brickellia, and occas. Carex nudata scattered throughout boulders at water's edge. carex good indicator of turbulent flows & established depositis (see Sedges of Pac. NW. book as reference)

Upland species general, ~35-50 ft above boulder bar & includes canyon live oak as dominant some grey pine, ponderosa & occ. black oak on. Some areas ~~On S-facing~~ have grasses (too far to id) and Arctostaphylos patula as under & mid story.

Hyp per (Klamath weed), Scotch broom dominate @ base of access road to main road. Also spreading for short dist at River junction.

Mainstem Yuba River below New Colgate Powerhouse Habitat Mapping Data

Yuba River Development Project
FERC No. 2246

Yuba Mainstem above and below Colgate Powerhouse – Ground-based Habitat Mapping Data

Stream: Yuba River **Date:** Oct-09 **Parent Material:** volcanic (Smartville Complex), gabbro (Pleasant Valley)
Reach: Yuba Mainstem above and below Colgate PH **Map Gradient (%):** 1.8%

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
10/5/2009	Yuba < Colgate		1	RUN	352	352	32.90	180	no clear BFD		5		INSIGNIF	COB	BLD	COB			1	y	at top		DTA2 2198 LDS			n			655061	4353986		too deep to be glide, especially RBA, uniform cobble substrate only occasional boulders
10/5/2009	Yuba < Colgate		2	GLI	235	587	33.01	176.5					INSIGNIF	COB	BLD	COB			1	n			DTA2 2199			n						
10/5/2009	Yuba < Colgate		3	MCP	1080	1667	33.22	120.75		13	18		BLDR	BLD	COB	BLD			2	n			DTA2 2200, 2201 LDS			n						weak control at base, pool tail into glide. Looks to be 20 ft deep but can't gauge well. Unable to see tail for embeddedness
10/5/2009	Yuba < Colgate		4	RUN	110	1777	33.24	120					BLDR	BLD	COB	BLD			1	n			DTA2 2203			n						
10/5/2009	Yuba < Colgate		5	LGR	163	1940	33.27	127.5	5.5				BLDR	BLD	COB	BLD			1	y	at top		DTA2 2204			n			655314	4354371		1% gradient
10/5/2009	Yuba < Colgate		6	RUN	436	2376	33.35	116.5	5.5				BLDR	BLD	BED	BLD			1	y	at base		DTA2 2204			n	24	24	655314	4354371		spawning gravel maybe too deep because it was estimated. Unit glide like in some areas, but deep, fast, variable substrate not sheet pool min.
10/5/2009	Yuba < Colgate		7	RAP	171	2547	33.38	115.5	6				BLDR	BLD	BED	BLD			1	n			DTA2 2205 LDS			n						
10/5/2009	Yuba < Colgate		SPLIT		140	2687	33.41																DTA2 2206									RBA - run, LBA - rapid
10/5/2009	Yuba < Colgate		8	RAP	430	3117	33.49	117.33	7				BLDR	BLD	COB	BLD			1	n			DTA2 2207, 2208			n	3	3				run-like in middle, but still standing waves
10/5/2009	Yuba < Colgate		9	RUN		3117	33.49	83.5	9				BLDR	BLD	COB	BLD				n			DTA2 2209			n						
10/5/2009	Yuba < Colgate		10	RAP	313	3430	33.55	74.67	6				BLDR	BLD	COB	BLD			1	y	at top		DTA2 2210			n	5	2	655503	4354838		run-like in middle but still standing waves
10/5/2009	Yuba < Colgate		SPLIT		101	3531	33.57	90												y	at base		DTA2 2211			n						at corner length and width measurements oblique
10/5/2009	Yuba < Colgate		11	MCP	600	4131	33.68	140					BLDR	BLD	SND	BLD			2	n			DTA2 2212, 2213 LDS from road									non-modelable due to corner!
10/5/2009	Yuba < Colgate		12	RUN	250	4381	33.73	106.67					BLDR	BLD	SND	BLD			1	n			DTA2 2214 LUS from road bottom RUN/RAP			n						
10/5/2009	Yuba < Colgate		13	RAP	75	4456	33.90	162.5					BLDR	BLD	SND	BLD			1	n			DTA2 2214 LUS from road bottom RUN/RAP			n						Power house at pool next unit above rapid. Several willow sp., Robinia, Alder, big leaf mapple, Brickellia, through boulder banks. Upland community change aburpt at change into steep 40-60% sloeps; sandy deposition at boulder base, wetted edge. Riparian community fairly well-estblaihsed, especially where the largest boulders are absent.
10/16/2009	Yuba > Colgate		1	MCP	532	4988	34.00	98		6	10	too deep	BLDR	BLD	COB	BLD			3	y	at top		not charged			n			655938	4355021		POOL @ base of PH
10/16/2009	Yuba > Colgate		2	LGR	452	5440	34.09	116.25					BLDR	BLD	COB	BLD			3	y	at base					n	13	4				2.5% gradient
10/16/2009	Yuba > Colgate		3	MCP	391	5831	34.16	140.33		3	10	70	BLDR	BLD	COB	SND			3	n						n	3	1				MCP with POW characteristics at pool tailout. 2x6 & 1x4 patches of spawning gravel out of water RBA
10/16/2009	Yuba > Colgate		4	HGR	318	6149	34.22	135					BLDR	BLD	COB	SND			1	n						n	8	2				4% gradient (water temp monitor LBA)
10/16/2009	Yuba > Colgate		5	MCP	1036	7185	34.42	102.5		6	10	too deep	BLDR	BLD	BED	SND			2	y	at top					n	422	300	656505	4355144		pool tailout has POW characteristic but deep water not moving, no scour so MCP
10/16/2009	Yuba > Colgate		6	LGR	91	7276	34.43	53.67					BLDR	BLD	BED	SND			1	y	at base								656505	4355144		2.5% gradient
10/16/2009	Yuba > Colgate		7	HGR	67	7343	34.45	48					BLDR	BLD	BED	BLD			1	n						n						11% gradient
10/16/2009	Yuba > Colgate		8	LGR	52	7395	34.46	68					BLDR	BLD	BED	COB			1	n						n	16	16				1% gradient
10/16/2009	Yuba > Colgate		9	POW	177	7572	34.49	62.67					BLDR	BLD	BED	COB			1	n						n	80	80				
10/16/2009	Yuba > Colgate		10	HGR	85	7657	34.51	51.33					BLDR	BLD	BED	BLD			1	y	at top					n			656536	4355528		9% gradient
10/16/2009	Yuba > Colgate		11	MCP	257	7914	34.55	84.67		6	10	too deep	BLDR	BLD	BED	BLD			1	y	at base					n			656536	4355528		6+ deep @ edge LBA
10/16/2009	Yuba > Colgate		12	LGR	33	7947	34.56	56					BLDR	BLD	BED	BLD			2	n						n						1.5% gradient
10/16/2009	Yuba > Colgate		13	POW	223	8170	34.60	89.33					BLDR	BLD	BED	BLD			2	n						n						
10/16/2009	Yuba > Colgate		14	LGR	54	8224	34.61	133					BLDR	BLD	BED	BLD			2	n						n						2% gradient
10/16/2009	Yuba > Colgate		15	MCP	592	8816	34.73	87.25		6	10	too deep	BLDR	BED	BLD	BLD			2	y	at top	0.5 cfs				n			656670	4355787		depth is over 6 ft! at edge LBA
10/16/2009	Yuba > Colgate		16	HGR	105	8921	34.75	47.5					BLDR	BLD	BED	BLD			2	y	at base					n	20	4	656670	4355787		9% gradient
10/16/2009	Yuba > Colgate		17	MCP	110	9031	34.77	64		6	10	too deep	BLDR	BLD	BED	COB			2	n						n						characteristics of POW but no divergent flow and deep
10/16/2009	Yuba > Colgate		18	HGR	216	9247	34.81	84.67					BLDR	BLD	COB	BED			2	n						n	211	80				4% gradient
10/16/2009	Yuba > Colgate		19	POW	412	9659	34.89	116.5					BLDR	BED	BLD	BED			2	n						n	600	600				moved away from river to climb banks
			20	MCP	380	10039	34.96	80		6	10	no access	BLDR	BED	BLD	BED			2	y	at base					n			656850	4355960		estimated length and width from above - cliffed out both sides

Stream: **Yuba River**
Reach: **Yuba Mainstem above and below Colgate PH**

Table 1a. Summary Statistics - Mapped Units

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall								
Cascade								
Chute								
Rapid	989	10.1%	4	12.1%	117.5			
High Gradient Riffle	791	8.1%	5	15.2%	73.3			
Low Gradient Riffle	845	8.6%	6	18.2%	92.4			
Glide	235	2.4%	1	3.0%	176.5			
Run	1148	11.7%	5	15.2%	121.3			
Step Run								
Pocket Water	812	8.3%	3	9.1%	89.5			
Sheet								
Convergance Pool								
Mid-Channel Pool	4978	50.8%	9	27.3%	104.7	6.6	11.1	#VALUE!
Lateral Scour Pool								
Trench Pool								
Plunge Pool								
TOTAL	**9798**	**100.0%**	**33**	**100.0%**	**104.8**	**6.6**	**11.1**	**#VALUE!**
QC			**0**		**Weighted Average By Length (ft)**			

Table 2. Stream Cover

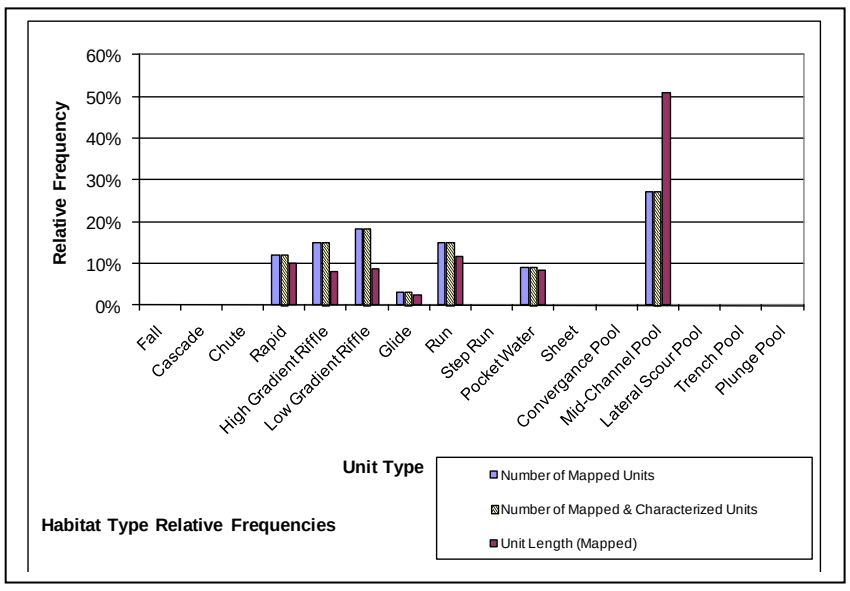
Dominant Cover Type	Number	Relative Frequency
Insignificant	2	6%
Boulder	31	94%
Vegetation	0	
Wood	0	
SUM	33	100%
QC	**OK**	

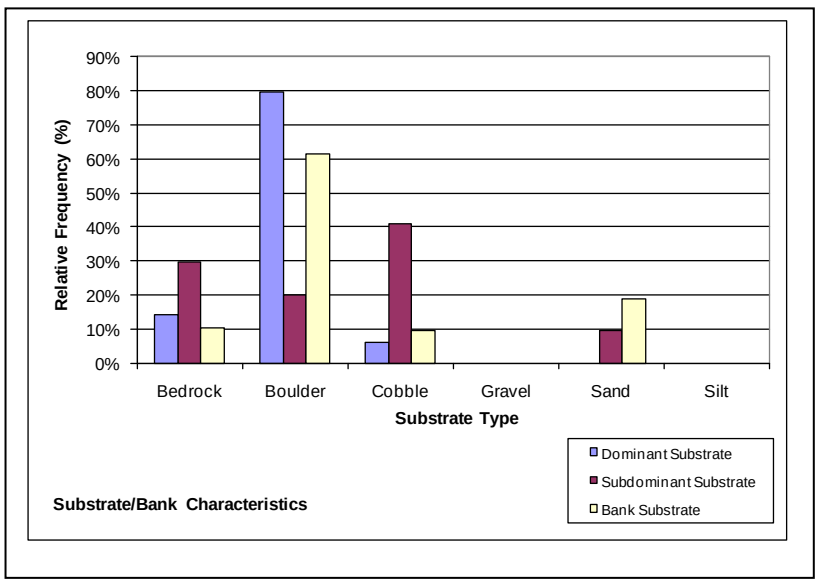
Table 3. Reach Summary

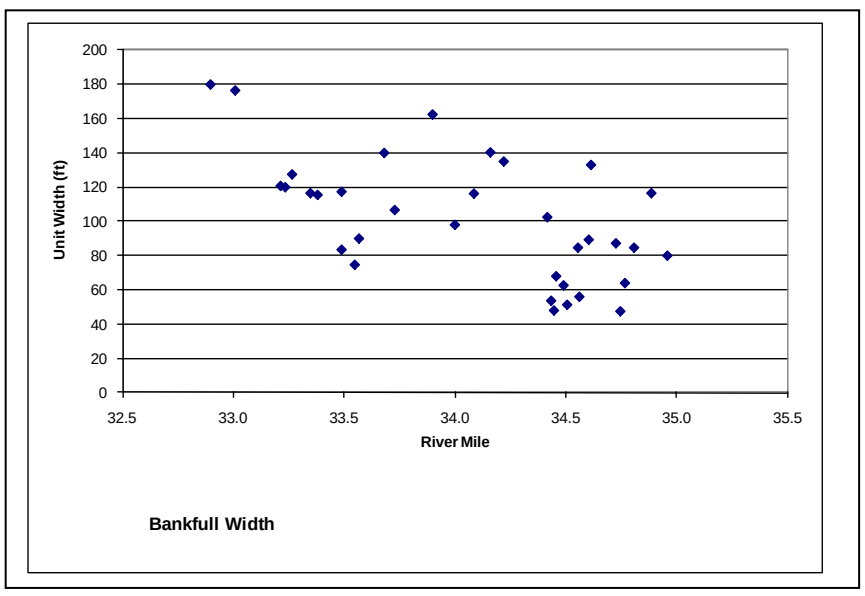
Total Reach Length:	**7.5** mi.	
Total Mapped Length:	1.86 mi.	24.7% mapped
Average Bankfull Width:	104.8 ft.	0.00 mi. charac
Bankfull Depth:	**6.5** ft.	24.74% Total m & c
Width:Depth:	16	
Flood Prone Width:	**0** ft.	
Entrenchment Ratio:	0.0	
Total Spawnable Gravel:	1,405 ft^2 - trout	
Avg Largest Patch Size:	93 ft^2 - trout	
LWD Density:	0 / mile (bankful)	
Wetted LWD Density:	0 / mile (wetted width)	
Parent Material:	volcanic (Smartville Complex), gabbro (Pleasant Valley Pluton), quartz diorite	
Bank Erosion % of Reach:	0.0%	
Tot No. Passage Barriers:	0	

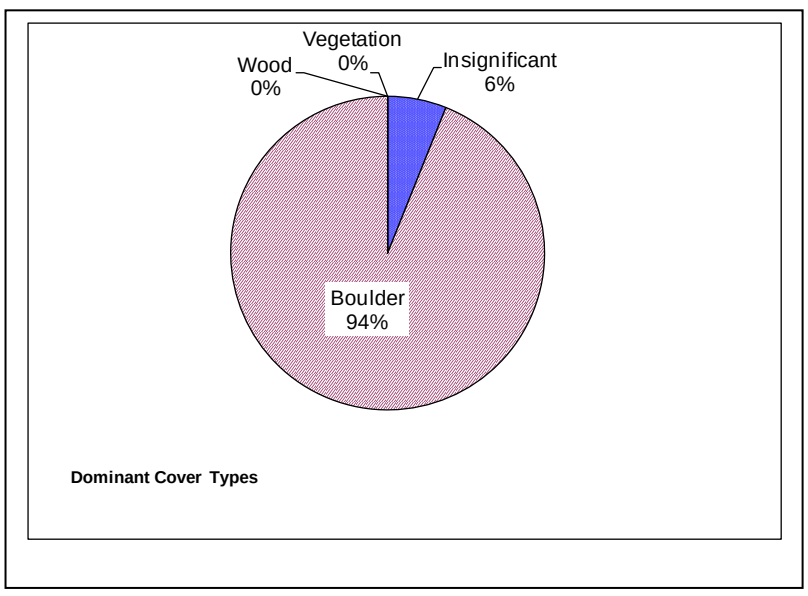
Table 4. Reach Summary - Substrate and Bank Characteristics

	Dominant Substrate		Subdominant Substrate		Bank Substrate		Bank Substrate Erosion	
	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency
Bedrock	1384	14.1%	2897	29.6%	1008	10.3%	0	
Boulder	7827	79.9%	1971	20.1%	6028	61.5%	0	
Cobble	587	6.0%	4005	40.9%	926	9.5%	0	
Gravel	0		0		0		0	
Sand	0		925	9.4%	1836	18.7%	0	
Silt	0		0		0		0	
SUM	**9798**	**100.0%**	**9798**	**100.0%**	**9798**	**100.0%**	**0**	**0.0%**


Relative Frequency
60%
50%
40%
30%
20%
10%
0%
Fall
Cascade
Chute
Rapid
High Gradient Riffle
Low Gradient Riffle
Glide
Run
Step Run
Pocket Water
Sheet
Convergance Pool
Mid-Channel Pool
Lateral Scour Pool
Trench Pool
Plunge Pool
Unit Type
Number of Mapped Units
Number of Mapped & Characterized Units
Unit Length (Mapped)
Habitat Type Relative Frequencies

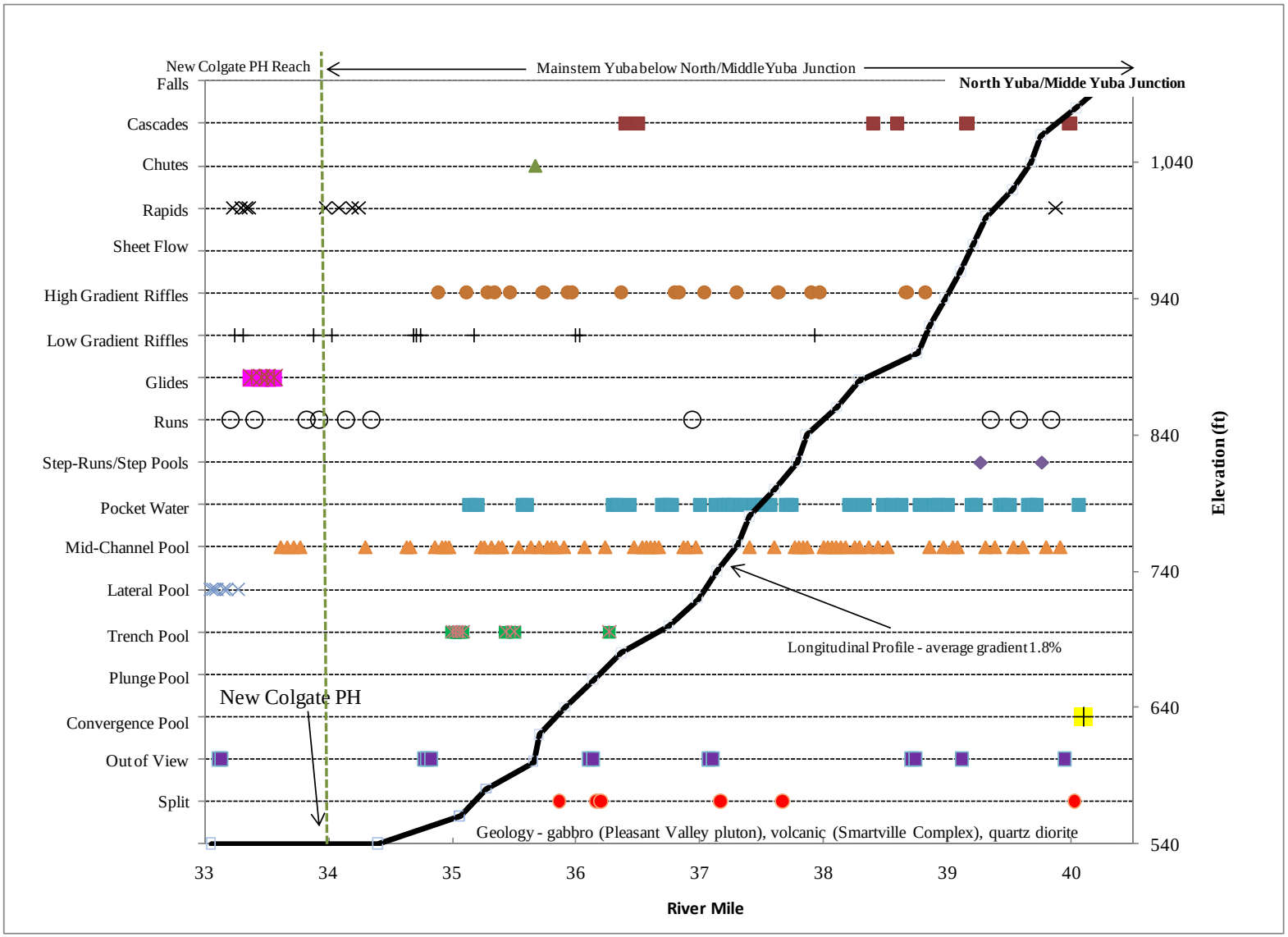

Relative Frequency (%)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Bedrock
Boulder
Cobble
Gravel
Sand
Silt
Substrate Type
Dominant Substrate
Subdominant Substrate
Bank Substrate
Substrate/Bank Characteristics


Unit Width (ft)
200
180
160
140
120
100
80
60
40
20
0
32.5
33.0
33.5
34.0
34.5
35.0
35.5
River Mile
Bankfull Width


Vegetation
0%
Wood
0%
Insignificant
6%
Boulder
94%
Dominant Cover Types

Mainstem Yuba River – Habitat Mapping Data – Video based – From high water influence of Englebright Reservoir to North Yuba/Middle Yuba Junction

Time	RM	Habitat	Habitat	HM Unit
0:28:34	32.55	13	LAP	
0:28:37	32.57	13	LAP	
0:28:40	32.59	13	LAP	
0:28:43	32.62	17	OOV	
0:28:46	32.64	17	OOV	
0:28:49	32.66	13	LAP	
0:28:52	32.68	13	LAP	
0:28:55	32.70	9	RUN	
0:28:58	32.73	4	RAP	
0:29:01	32.75	7	LGR	
0:29:04	32.77	13	LAP	
0:29:07	32.79	4	RAP	French Bar
0:29:10	32.81	7	LGR	
0:29:13	32.83	4	RAP	
0:29:16	32.86	4	RAP	
0:29:19	32.88	8	GLI	split
0:29:22	32.90	9	RUN	1
0:29:25	32.95	8	GLI	2
0:29:28	33.01	8	GLI	2
0:29:31	33.06	8	GLI	2
0:29:34	33.11	12	MCP	3
0:29:37	33.16	12	MCP	3
0:29:40	33.22	12	MCP	3
0:29:43	33.27	12	MCP	3
0:29:46	33.32	9	RUN	4
0:29:49	33.37	7	LGR	5
0:29:52	33.43	9	RUN	6
0:29:55	33.48	4	RAP	7
0:29:58	33.53	7	LGR	split at low flow
0:30:01	33.58	4	RAP	8
0:30:04	33.64	9	RUN	9
0:30:07	33.69	4	RAP	10
0:30:10	33.74	4	RAP	10
0:30:13	33.79	12	MCP	11
0:30:16	33.85	9	RUN	12
0:30:19	33.90	#N/A		Colgate PH
0:30:22	33.93	#N/A		Penstock
0:30:25	33.96	#N/A		Colgate PH
0:30:28	33.99	#N/A		Colgate PH
0:30:31	34.01	#N/A		Tailrace
0:30:34	34.04	#N/A		Tailrace
0:30:37	34.07	#N/A		Tailrace
0:30:40	34.10	#N/A		Tailrace
0:30:43	34.13	12	MCP	1
0:30:46	34.16	12	MCP	1
0:30:49	34.19	7	LGR	2
0:30:52	34.21	7	LGR	2
0:30:55	34.24	7	LGR	2
0:30:58	34.27	17	OOV	
0:31:01	34.30	17	OOV	
0:31:04	34.33	17	OOV	
0:31:07	34.36	12	MCP	3
0:31:10	34.39	6	HGR	4
0:31:13	34.41	12	MCP	5
0:31:16	34.44	12	MCP	5
0:31:19	34.47	12	MCP	5
0:31:22	34.50	14	TRP	
0:31:25	34.53	14	TRP	
0:31:28	34.56	14	TRP	
0:31:31	34.59	14	TRP	
0:31:34	34.61	6	HGR	7
0:31:37	34.64	11	POW	9
0:31:40	34.67	7	LGR	12
0:31:43	34.70	11	POW	13
0:31:46	34.73	12	MCP	15
0:31:49	34.76	12	MCP	15
0:31:52	34.79	6	HGR	16
0:31:55	34.81	12	MCP	17
0:31:58	34.84	6	HGR	18
0:32:01	34.87	12	MCP	20
0:32:04	34.90	12	MCP	20
0:32:07	34.93	14	TRP	
0:32:10	34.97	6	HGR	
0:32:13	35.00	14	TRP	
0:32:16	35.03	12	MCP	
0:32:19	35.07	11	POW	
0:32:22	35.10	11	POW	
0:32:25	35.13	12	MCP	
0:32:28	35.17	3	CHU	
0:32:31	35.20	12	MCP	
0:32:34	35.23	6	HGR	
0:32:37	35.27	12	MCP	
0:32:40	35.30	12	MCP	
0:32:43	35.33	12	MCP	
0:32:46	35.37	18	SPLIT	
0:32:49	35.40	12	MCP	
0:32:52	35.43	6	HGR	
0:32:55	35.47	6	HGR	
0:32:58	35.50	7	LGR	
0:33:01	35.53	7	LGR	
0:33:04	35.57	12	MCP	
0:33:07	35.60	17	OOV	
0:33:10	35.63	17	OOV	
0:33:13	35.67	18	SPLIT	
0:33:16	35.70	18	SPLIT	
0:33:19	35.73	12	MCP	
0:33:22	35.77	14	TRP	
0:33:25	35.80	11	POW	
0:33:28	35.83	11	POW	
0:33:31	35.87	6	HGR	
0:33:34	35.90	2	CAS	
0:33:37	35.93	11	POW	
0:33:40	35.97	12	MCP	
0:33:43	36.00	2	CAS	
0:33:46	36.03	12	MCP	
0:33:49	36.07	12	MCP	
0:33:52	36.10	12	MCP	
0:33:55	36.13	12	MCP	
0:33:58	36.17	12	MCP	
0:34:01	36.20	11	POW	
0:34:04	36.23	11	POW	
0:34:07	36.27	11	POW	
0:34:10	36.30	6	HGR	
0:34:13	36.33	6	HGR	
0:34:16	36.37	12	MCP	
0:34:19	36.40	12	MCP	
0:34:22	36.43	9	RUN	
0:34:25	36.47	12	MCP	
0:34:28	36.50	11	POW	
0:34:31	36.53	6	HGR	
0:34:34	36.57	17	OOV	
0:34:37	36.60	17	oov	
0:34:40	36.63	11	POW	
0:34:43	36.67	18	SPLIT	
0:34:46	36.70	11	POW	
0:34:49	36.73	11	POW	
0:34:52	36.77	11	POW	
0:34:55	36.80	6	HGR	
0:34:58	36.83	11	POW	
0:35:01	36.87	11	POW	
0:35:04	36.90	12	MCP	
0:35:07	36.93	11	POW	
0:35:10	36.97	11	POW	
0:35:13	37.00	11	POW	
0:35:16	37.03	11	POW	
0:35:19	37.07	11	POW	
0:35:22	37.10	12	MCP	
0:35:25	37.13	6	HGR	
0:35:28	37.17	18	SPLIT	
0:35:31	37.20	11	POW	
0:35:34	37.23	11	POW	
0:35:37	37.27	12	MCP	
0:35:40	37.30	12	MCP	
0:35:43	37.33	12	MCP	
0:35:46	37.37	12	MCP	
0:35:49	37.40	6	HGR	
0:35:52	37.43	7	LGR	
0:35:55	37.47	6	HGR	
0:35:58	37.50	12	MCP	
0:36:01	37.53	12	MCP	
0:36:04	37.57	12	MCP	
0:36:07	37.60	12	MCP	
0:36:10	37.64	12	MCP	
0:36:13	37.68	12	MCP	
0:36:16	37.71	11	POW	
0:36:19	37.75	12	MCP	
0:36:22	37.79	12	MCP	
0:36:25	37.83	11	POW	
0:36:28	37.86	12	MCP	
0:36:31	37.90	2	CAS	
0:36:34	37.94	12	MCP	
0:36:37	37.98	11	POW	
0:36:40	38.02	12	MCP	
0:36:43	38.05	11	POW	
0:36:46	38.09	2	CAS	
0:36:49	38.13	11	POW	
0:36:52	38.17	6	HGR	
0:36:55	38.20	17	OOV	
0:36:58	38.24	17	OOV	
0:37:01	38.28	11	POW	
0:37:04	38.32	6	HGR	
0:37:07	38.35	12	MCP	
0:37:10	38.39	11	POW	
0:37:13	38.43	11	POW	
0:37:16	38.47	12	MCP	
0:37:19	38.51	11	POW	
0:37:22	38.54	12	MCP	
0:37:25	38.58	12	MCP	
0:37:28	38.62	17	OOV	
0:37:31	38.66	2	CAS	
0:37:34	38.69	11	POW	
0:37:37	38.73	11	POW	
0:37:40	38.77	10	STEP	
0:37:43	38.81	12	MCP	
0:37:46	38.85	9	RUN	
0:37:49	38.88	12	MCP	
0:37:52	38.92	11	POW	
0:37:55	38.96	11	POW	
0:37:58	39.00	11	POW	
0:38:01	39.03	12	MCP	
0:38:04	39.07	9	RUN	
0:38:07	39.11	12	MCP	
0:38:10	39.15	11	POW	
0:38:13	39.18	11	POW	
0:38:16	39.22	11	POW	
0:38:19	39.26	10	STEP	
0:38:22	39.30	12	MCP	
0:38:25	39.34	9	RUN	
0:38:28	39.37	4	RAP	
0:38:31	39.41	12	MCP	
0:38:34	39.45	17	OOV	
0:38:37	39.49	2	CAS	
0:38:40	39.52	18	SPLIT	
0:38:43	39.56	11	POW	
0:38:46	39.60	16	COP	North Yuba/Middle Yuba Junction



Mainstem Yuba River – Habitat Mapping Units using video-mapped data and longitudinal profile.

Middle Yuba above North Yuba Junction
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246


Habitat Mapping Unit 1 – Mid Channel Pool


Habitat Mapping Unit 2 – Cascade


Habitat Mapping Unit 3 –Pocket Water

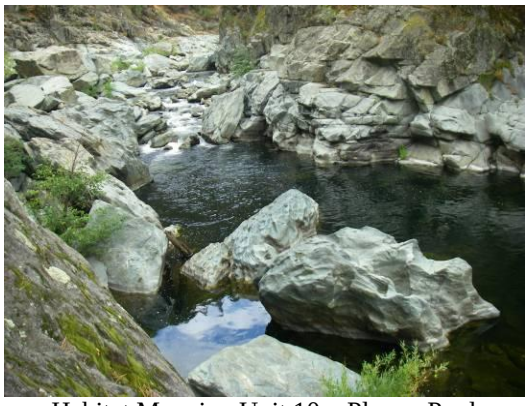

Habitat Mapping Unit 4 – Step-Run


Habitat Mapping Unit 5 – Cascade


Habitat Mapping Unit 6 – Trench Pool


Habitat Mapping Unit 7 and 8 – Plunge Pool and Cascade


Habitat Mapping Unit 9 – Pocket Water



Habitat Mapping Unit 10 – Plunge Pool

Middle Yuba below Highway 49
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246

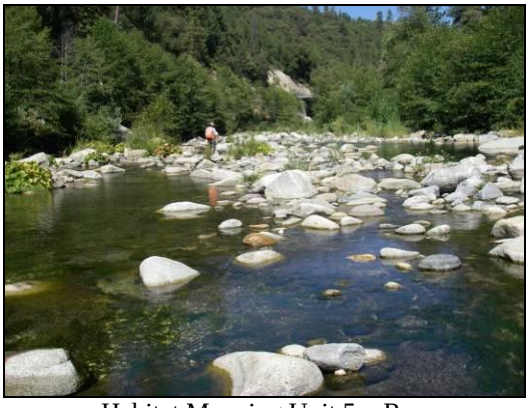
Middle Yuba River below Highway 49 Habitat Mapping Photographs

Habitat Mapping Unit 1 – Run

Habitat Mapping Unit 2 – Low Gradient Riffle

Habitat Mapping Unit 3 –Lateral Pool

Habitat Mapping Unit 4 – Low Gradient Riffle



Habitat Mapping Unit 5 – Run

Habitat Mapping Unit 6 – Low Gradient Riffle

Habitat Mapping Unit 7 –Run

Middle Yuba above Oregon Creek
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246

Middle Yuba above Oregon Creek Habitat Mapping Photographs

Habitat Mapping Unit 1 – Step-Run

Habitat Mapping Unit 2 – Mid-Channel Pool

Habitat Mapping Unit 3 –Low Gradient Riffle

Habitat Mapping Unit 3 – Mid-Channel Pool

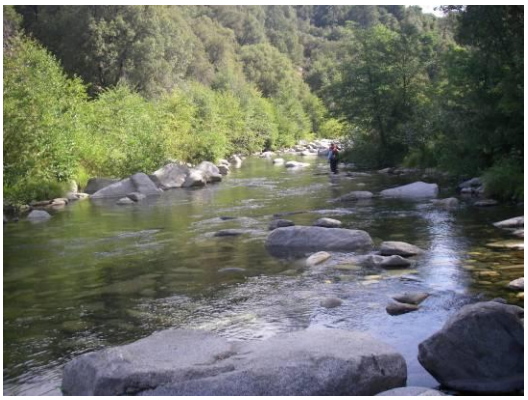
Habitat Mapping Unit 4 – High Gradient Riffle

Habitat Mapping Unit 5 – Low Gradient Riffle

Habitat Mapping Unit 6 –High Gradient Riffle

Habitat Mapping Unit 7 –Mid-Channel Pool

Habitat Mapping Unit 8 – Run



Habitat Mapping Unit 9 – Glide

Habitat Mapping Unit 10 –Step-Run

Habitat Mapping Unit 11 – Mid-Channel Pool

Habitat Mapping Unit 12 – Low Gradient Riffle

Habitat Mapping Unit 13 – Glide

Habitat Mapping Unit 14 –Low Gradient Riffle

Habitat Mapping Unit 15 –Run


Habitat Mapping Unit 16 – Low Gradient Riffle


Habitat Mapping Unit 17 – Mid-Channel Pool


Habitat Mapping Unit 18 –Mid-Channel Pool

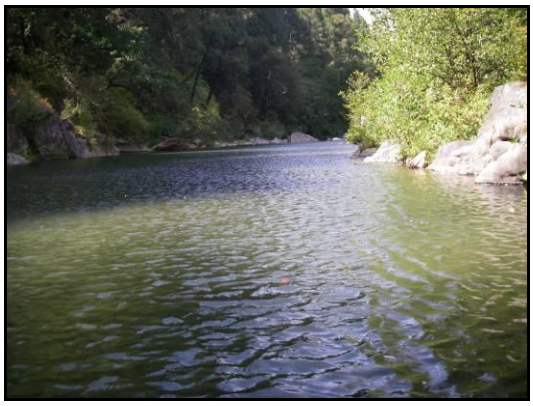

Habitat Mapping Unit 19 – Step-Run


Habitat Mapping Unit 20 – Mid-Channel Pool


Habitat Mapping Unit 24 – Rapid


Habitat Mapping Unit 25 –Chute


Habitat Mapping Unit 27 –High Gradient Riffle



Habitat Mapping Unit 28 – Mid-Channel Pool

Middle Yuba below Our House Dam
Habitat Mapping Photographs

Yuba County Water Agency Hydroelectric Project
FERC 2246

Middle Yuba below Our House Dam Habitat Mapping Photographs

Habitat Mapping Unit 1 – Mid-Channel Pool

Habitat Mapping Unit 2 – Cascade

Habitat Mapping Unit 3 – Run

Habitat Mapping Unit 4 – Mid-Channel Pool

Habitat Mapping Unit 5 – Run

Habitat Mapping Unit 6 – Lateral Pool

Habitat Mapping Unit 7 –Low Gradient Riffle

Habitat Mapping Unit 8 –High Gradient Riffle

Habitat Mapping Unit 9 – Mid-Channel Pool

Habitat Mapping Unit 10 – Run

Habitat Mapping Unit 11 –Mid-Channel Pool

Habitat Mapping Unit 12 – Run

Habitat Mapping Unit 13 – Mid-Channel Pool

Habitat Mapping Unit 14 – Cascade

Habitat Mapping Unit 14 –Low Gradient Riffle

Habitat Mapping Unit 15 –Mid-Channel Pool

Middle Yuba above North Yuba Junction
Habitat Mapping Raw Data

Yuba River Development Project
FERC No. 2246

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba above N. Yuba junction

Team: Kathi Peacock, Gaea Bailey

UTM: 0660581, 4359336 NAD 83 (Habitat unit No 1 base

Data Sheet # 1

Page 1 of ~~24~~ 24

Date 9/14/09

PM _____ Map Gradient: _____

Habitat Unit #	1	2	3	4	5
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	463	185	~~73~~ 110	90	~~35~~
Est. Avg. Width (ft)	66, 59, 58	60, 64, 75	73, 73, 79, 73	75, 55, 58	80
Est. Avg. Pool Depth (ft)	10?	—	—	—	—
Max. Pool Depth (ft)	10, 6, 3.0	—	—	—	—
Pooltail Embedded %	15%	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	~~Ø~~ Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes, base	no	no	no	yes top
Tributary Inflow in cfs	Ø	Ø	Ø	Ø	Ø
Landmarks or photos DSA	1368	1369	1370	1371	1372
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	~~Y~~ 0660693/ 4359349	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø Barrier upstream	Ø Barrier at upstream pool/downs	2X5	6X3 2.X4	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	n/a	~~2X5~~ 2X5	~~6X3~~ 6X3	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	could be trench pool, but slow, 50 mpc	True cascade huge boulders 12% grad. Barrier 4-6 ft perm	12"+ brn trout! Narrow run-like @ top w/ lateral pools, still boulder & scour holes, heterogen. subst. more pool-like at bottom, run in middle	step-run: distinct steps separated by short cascades 4% gradient	15% gradient

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: SKP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#1 - pool at helicopter landing

#3 ~~not explicit~~ → slightly diverg channel around big rocks! ~~Abut~~ Short rapid forms a control between 2 sections of pocket water

#5

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: Middle Yuba above N. Yuba Junction

Page 2 of ~~4~~

Team: KP, GB

Date 9/14/09

UTM: 066078, 4359472 NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	6	7	8	9	10
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	216	101	28	105	125
Est. Avg. Width (ft)	98, 60, 68	52, 75, 23	75	75, 60	~~35~~, 77, 55
Est. Avg. Pool Depth (ft)	8, 5, 3, 0	9, 5, 3, 0	—	—	10, 6, 4, 0
Max. Pool Depth (ft)	8	~~9, 5, 3, 0~~ 9	—	—	10+
Pooltail Embedded %	Ø	20%	Ø	—	can't tell — inaccessible
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	no	no	no	no	yes ~~top~~ mid
Tributary Inflow in cfs	no	no	hole from LBA / no	no LBS → LBA	
Landmarks or photos	1373	1374	1375, 1376 LHP	1378 LBS from LBA	1377 LHS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	~~3~~ Ø	~~Ø~~	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	yes 0660710 4359581	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	2x6 out of water or margin	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	2x6	N/A	N/A 5 ft. perm barrier	NA	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	sandy bank RBA w/ pooling from high flows		~~Some SM. woody debris clogging, many potential areas for fish to pass making barriers~~ 15% grad.		Deep & inaccessable — Est. depth from afar Low End UTM 0660691 4359613

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it. but mostly narrow chutes/falls w/ no holding pools

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Q/C initials: KP

see KP notes

looking toward ←

coming from →

Notes regarding access points (road condition, bridge crossings, trails, etc.)

- photo 1377 transition between HAB #9 and #10 — poor control, but different pool types
- Very difficult access to HAB #9 and #10; deep waters & sheer bedrock walls
- #10 flagged on RBA cliff lip above pool (only area accessable) also UTMs see above

P3of4

Middle Yuba > N. Yuba nctn. 9/14/09
KP/GB

Stopped @ HMU 10 - too steep & dangerous to continue
0660691/4359615 (On LBA cliff)

rough measure from cliff

#11	60' long 40' wide 15% grad.	CAS
#12	95' long 75' wide	STEP
#13	50' — 75'	CAS
#14	ground cover	POOL

photo # 1380 shows entire sequence
Flag tied where stopped on cliff above #10
labeled "MY + NY HMU10"
(MY > NY)

=

below MY/NY junction

CAS
POW) deep, fast, steep
TRP vert. walls / bldg size bldrs.

not study site material.

no assess.

DTA1 1406 → LOS ← TCE
1407 → across str. CAS
1410 STND 1408 CAS → short run. tails [illegible]
1409 LOS → CAS

Bldr dom sm. patches of sp gravel under
bldrs where shoots thru.
lots pocket pools, ~~[illegible]~~ stable bed [illegible]
Clnt

Middle/N. Yuba Junc. p4of4 9/14/09
(below pctn - rip. zone) GB

Limited Riparian veg. community due to sheer rock slopes of river canyon - no soils/transitional zone for established community. Plenty of riparian/mesic OBL plants, such as Salix lucida, S. exigua, Alder incanus, Populus trem(some), at bars and base of canyon walls where wider. Typical riparian herbs: 2 asters (to be keyed later) brickellia, and occas. Carex nudata scattered throughout boulders at water's edge. carex good indicator of turbulent flows & established depositis (see Sedges of Pac. NW. book as reference)

Upland species general, ~35-50 ft above boulder bar & includes canyon live oak as dominant some grey pine, ponderosa & occ. black oak on. Some areas ~~On S-facing~~ have grasses (too far to id) and Arctostaphylos patula as under & mid story.

Hyp per (Klamath weed), Scotch broom dominate @ base of access road to main road. Also spreading for short dist at River junction.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: MY < MY49 (Freemans x-ing) Data Sheet # _____

Team: KP / LAB Page 1 of 2

UTM: 0664876/4361724 NAD 83 (Habitat unit No. 1) base Date 9-16-09

PM _____ Map Gradient: _____

Habitat Unit #	1	2	SPLIT *	3	4
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP (LAP) TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	74	163	470	382	223
Est. Avg. Width (ft)	49 39 37	38 38 48		136 143 149 138	115 107 119
Est. Avg. Pool Depth (ft)	—	—		3.5, 3, 1, 0 +0.5	—
Max. Pool Depth (ft)	BHD=2.25	—		3.5	—
Pooltail Embedded %	—	—		50%	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD	(INSIGNIF VEG) BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD COB (GRV) SND SLT	BED BLD (COB) GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD COB (GRV) SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	—	—	—
Confinement [4]	4	4	1	1	1
Unit Flagged/ Labeled? (Y/N)	N (pvt. land)	N	N	N	N
Tributary Inflow in cfs	Ø	Ø	Ø	Ø	Ø
Landmarks or photos	DTA1 LWS 1466 LWS 1467	#1468 LWS	#1469 LWS	#1470 LWS	#1471 LWS
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	N	N	N	N	
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	1X1	6x2 (4Bx12) 20x6 OBF 18x12 7WS. 6x3 40x6 6x3 "	too imbicated + embedded	12x3 12x6 6x3 6x3 6x2 3x3
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	1X1	14x3 12x4 (1x1, 1x1, 1x1, 2x2, 1x1, 1x2) LBA RBA	—	12x6
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	modified tail + artificial dam	3%	LGL→ LGR→ GLI GLI→ LGL→ GLI LGR→ LGR Prop→ gr. algae.	GLI @ tail but still scour on LBD so not organized. Goes grizzly in split also cattails RBD	Artificial pool + mining diddy + gr. algae. split but + mining. LGR channelization 42%

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials:

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.) U/S of 1st property on RBD (w/in USFS?)

* split looks like was Constr. Sp. Ch. on LBD.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba below Hwy 49 | Data Sheet # _____ | Page 2 of 2

Team: _____ | Date 9-16-09

UTM: 0664908/4302124 NAD 83 (Habitat unit No. 5 cup) | PM _____ | Map Gradient: _____

Habitat Unit #	5	6	7	8	
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI (RUN) / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	88	129	140	85	
Est. Avg. Width (ft)	120 117	105 127 115	103 87 81	79 69 101	pool under bridge Hwy 49
Est. Avg. Pool Depth (ft)	—	—	Ind. w/sc. of 20'	— BFD=2	
Max. Pool Depth (ft)	—	—	—	—	
Pooltail Embedded %	—	—	—	—	
Significant Cover? [2]	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED (BLD) COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	
Confinement [4]	1	1	1	1	
Unit Flagged/ Labeled? (Y/N)	Y @ top	Y @ bottom	N	N	
Tributary Inflow in cfs	—	—	—	0	
Landmarks or photos	#1472 LUS	#1473 LUS	#1474 LUS	#1475	
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	
Fish Migration Barrier [6] (y/n)?	N	N	N	N	
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	18x6 2x3 1x3 1x2	3x1 6x1 2x1 1.5x6 1x6	3x1 6x6	1.5x12 2x6 1x1 2x3 2x2 2 1x1	
Maximum Spawning Gravel Patch Size (sq-ft) Est.	18x6	6x1	6x6	1.5x12	
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	DUG, modified, split but overall form run NM	run like on LGO but overall LGR surf. agitation 1% NM - splits, multi thread	split nr top w/ some riffle LBA HF Ch. rba	1.5% bldrs1 on LBA - more run-like	

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: YB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

+ location

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Best gravels due to mining digging out & separating - good size + sorting appropriate for sp. LOTS mining modification. Very few modelable habitats due to multiple wse, splits, artificial pools, artificial d/s controls. Not representative of habitat but of mining.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba above Oregon Creek Data Sheet # 1

Team: Kathi Peacock, Patty Hardesty, Sara Bailey Page 1 of 6

UTM: 0665105, 4362264 NAD 83 (Habitat unit No. 1 (base)) Date 9/13/09

PM _____ Map Gradient: _____

Habitat Unit #	1	2	3	3	4
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / **STEP** POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / **MCP** LAP TRP PLP	FALL CAS CHU RAP / HGR **LGR** GLI RUN / STEP **POW** SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / **MCP** LAP TRP PLP	FALL CAS CHU RAP / **HGR** LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	~~12~~ 388	256	49	107	102
Est. Avg. Width (ft)	53,45,57,42,59	70,62,66	60,63	44,63,65	43,41
Est. Avg. Pool Depth (ft)	1½-2	6,3,2.5,0	—	7,5,3,2,0	—
Max. Pool Depth (ft)	—	6	—	7	—
Pooltail Embedded %	—	15%	—	Ø - too modified	—
Significant Cover? [2]	INSIGNIF VEG / **BLDR** WOOD	INSIGNIF VEG / **BLDR** WOOD	**INSIGNIF** VEG / BLDR WOOD	INSIGNIF VEG / **BLDR** WOOD	INSIGNIF VEG / **BLDR** WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT
Subdominant Substrate	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT	BED BLD **COB** / GRV SND SLT	BED BLD COB / **GRV** SND SLT	**BED** BLD COB / GRV SND SLT
Dominant Bank Substrate	BED **BLD** COB / GRV SND SLT	BED **BLD** COB / GRV SND SLT	BED BLD COB / GRV SND SLT	**BED** BLD COB / GRV SND SLT	**BED** BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet) Erosion	Ø	Ø	Ø	Ø	Ø LBA BLD RBA BED
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	yes-top
Tributary Inflow in cfs	—	—	—	—	—
Landmarks or photos DA1	1333	1334	1335	1336	1337
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?					
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	3x1.5, 2x1, 2x3, 1x1, 1x2, 6x4, 2x6, 6x4 out of water, 4x6	Ø	Ø	42x12,	
Maximum Spawning Gravel Patch Size (sq-ft) Est.	12x6	Ø	Ø	42x12	
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	gradient 4.5%, step run w/riffle-step characteristics on 1/2 or less of channel punctuating. Diff. to model due to oblique flows & mult water surfaces	Artificial downstream control - boulder dam, 15% embedded; Staff gage w/no housing - out of water ½ thru habitat; Top of pool greatly modified for slough-boxes not charact. of entire pool	Spawning gravels in this habitat, but frequent mod for slough-boxes, so unmeasurable & gradient	tail of pool very modified, but lots spawn gravel.	Modelable sections, 7% gradient

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Begin upstream of conjunction @ end of first pool - near campgrounds

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba ~~below~~ above Oregon Cr.

Data Sheet # 1

Page 2 of 6

Team: KP, PH, GB,

Date 9/13/09

UTM: 0665372, 4362171 NAD 83 (Habitat unit No. 5 base

PM _____ Map Gradient: _____

Habitat Unit #	5	6	7*	8	9
Habitat Type [1]	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR (GLI) RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	170.5	40	88.5	124	210
Est. Avg. Width (ft)	46, 36, 37	45, 43, 39	55, 51	65, 48, 59	55, 48, 43, 54
Est. Avg. Pool Depth (ft)	—	—	5, 4, 1.75, 0	—	—
Max. Pool Depth (ft)	—	—	5	—	—
Pooltail Embedded %	—	—	0	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV (SND) SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD (COB) GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	sand subdom banks 10ft.
Confinement [4]	3	3	3	3	1
Unit Flagged/ Labeled? (Y/N)	yes-bottom	no	no	no	yes-top
Tributary Inflow in cfs	—	—	~~bank~~ = 1343, 1344	—	—
Landmarks or photos	1338	1339	1442 pool control dam = 1341	1345	1346
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	—	—	—	1x1	1x1, 1x1, 1x4
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	—	1x1	1x4
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	High-flow side channel; 4% gradient, excellent modelability; Cover mudata-great bank stabilizer, establishes, sed in high turb areas both banks 70% coverage	Highly modified riffle-crest-dammed above pool w/ boulders & cob, 8% gradient	Damned pool* do NOT model* destabilized banks-dug-out banks creating positive feed back mechanism	see below (#8)	deeper section in middle of glide- obviously modified; some erosion due to modification; run like at top, pool-like in middle narrow cobble bar LBA — elevated flood plain

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials:

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#5 - elevated flood plane LBA (same size as wetted channel)
- some tree-root exposure due to long-term erosion/modifications - not an active erosional feature
- High-flow side channel on LBA
- 3% gradient

#8 - Run, but because of dams & dug out banks, creating pools at banks, and step pool for length of run
Highly modified; after high flows remove dams, will prob be a run!

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba ~~below~~ above Oregon Creek

Team: KP, PH, GB

UTM: 0660552, 4362234 NAD 83 (Habitat unit No. 10 base

Data Sheet # 2

Page 3 of 6

Date 9/13/09

PM _____ Map Gradient: _____

Habitat Unit #	10	11	12	13	14
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / (STEP) POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR (GLI) RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP (POW) SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	118	~~280~~ 280	117	231	225
Est. Avg. Width (ft)	47, 54, 33,	62, 52, 69, 66	57, 55	58, 65, 50	72, 65, 58
Est. Avg. Pool Depth (ft)	—	4, 75, 3, 2, 0	—	—	—
Max. Pool Depth (ft)	—	4.75	—	— 3.5	—
Pooltail Embedded %	—	40%	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	(INSIGNIF) VEG BLDR WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	BED BLD (COB) / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB / GRV (SND) SLT	(BED) BLD COB / GRV (SND) SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅ LBA RBA	∅	∅	∅
Confinement [4]	1	2	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes-bas	no	no	no	yes top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	1347	1348	1349	1350	1351
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	/	/	/	/	/
Fish Migration Barrier [6] (y/n)?	no	no	no	no	/
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	1x1, 1x1	3x1, 2x2, 1x1	1x5, 1x2, 1x1, 2x3, 5x3. out of water	(1x1, 1x1, 1x1, 1x1, 2x1, 1x1, 1x1, 2x2, 3x1, 2x2	2x1, 2x2 out of water. 8x2 on channel margin 1x1, 1x4, 2.5x1.5, 1x1
Maximum Spawning Gravel Patch Size (sq-ft) Est.	1x1	3x1	5x3	2x2	~~8x2~~ 12x6
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Step-Run w/short HGR separating steps – lots of laterals	10" brown trout; head of Pool 25' run - ambiguous start	3% gradient, some sandy deposits along shoreline	3 inch fish; 2 scour holes 3.5 ft deep LBA - artificially scoured; end of glide oblique - mid-ft taken	Some indistinct stepping, but lots of surface agitation so calling it a run – slight scour pool RBA

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#15 - Spawn gravel count: 2x1.5, 1x1, 1x1, 2x1, 1x1, 2x2 channel margin, bankful depth 1.75
12x6 above bankful (next page)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba ~~below~~ above Oregon Creek

Data Sheet # 2

Page 4 of 6

Team: KP, PH, CB

Date 9/13

UTM: 0665849, 4362162 NAD 83 (Habitat unit No. 15 base

PM _____ Map Gradient: _____

Habitat Unit #	15	16	17	18	19
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN HGR POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN (STEP) POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	80	119	226	74	112
Est. Avg. Width (ft)	62, 61, 48	45, 47, 65	58, 46, 67	43, 51, 34	38, 40, 22
Est. Avg. Pool Depth (ft)	—	—	8, 5, 3, 0	3.5, 2.75, 1.5, 0	→
Max. Pool Depth (ft)	—	—	8	3.5	—
Pooltail Embedded %	—	—	30%	0-scour	—
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Subdominant Substrate	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD COB GRV (SND) SLT	(BED) BLD COB (GRV) SND SLT	BED BLD (COB) GRV (SND) SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD COB GRV (SND) SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	1 — FPW 120	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	Yes-base	no	no	no	yes
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	1352	1353	1354	1355	1356
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	see note prev pg	6 x 6 above BF 2x2 chan. margin 2x1, 1x1	12x6 above BF 30x6 - chan marg, good flow!	1x2 →	6x3 above BF 1x1, 1x1
Maximum Spawning Gravel Patch Size (sq-ft) Est.	12x6	6x6	12x6	30 x 6	6x3
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Almost pocket water but too much surface agitation	Some flat sections - esp at top (not modeled) 3% gradient	Scour-hole 1/3 width of channel (12x12) @ base of channel	Pinch-point making ds control	Lower 2/3 wider & slower, upper 1/3 narrow w/ fast step-run, lots veg on banks - riparian comm'n.

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

19 - sm. rapid (2 waves at top of 1ST step, rapid separates steps

End Survey, begin characterization 0666029, 4362161

Middle Yuba ~~below~~ above Oregon Creek

P 5 of 6

9/13/09
KP, DH, GB

unit #	HAB	length	width	(pools only) Mx depth	notes photo#
20	MCH	105	50,47	5	1357

Big hole (pool) @ base ~5 ft deep; max depth main 3', w/scour hole @ bottom
3x1, 6x2 spawn gravel

unit #	HAB	length	width	Mx depth	photo#
21	LGR	54	43,40,42	—	

3% gradient 3

unit #	HAB	length	width	Mx depth	photo#
22	RUN	133	51,53		

1X1, 1X1, 2X1 above BF, 6x3, 18x6
deep boulder run w/some scour, slight control creates pool

unit #	HAB	length	width	Mx depth	photo#
23	MCP	92	29,43	7	

bedrock side LBA

unit #	HAB	length	width	Mx depth	photo#
24	RAP	70	31,22	—	1358
25	CHU	47	27,18,22	—	1359
—	SPLIT	245			

~~RBA HDR~~, LBA = RIF/RUN, RBA = RIF/Run

unit #	HAB	length	width	Mx depth	photo#
26	POW	298	83,68		

6x4 spawn grav. 2x2, 1x1, 3 1x1, 5 x10, 6x6

unit #	HAB	length	width	Mx depth	photo#
27	HGR	325	58,96,74		#1360

4% grad; non-modable multiple water surfaces and blow lines

unit #	HAB	length	width	Mx depth	photo#
28	MCP	918	97,119,104,97	8	1364 LDS 1365 LUP

6X1 spawn grav.
long tail w/some surface ag
dead metamorph 1362 - probably FYF - 1363
lateral deep RBA to MCP w/no control
⇨

middle yuba > oregon ck 9/13/09

P6of6

anit

this pool becomes unwalkable, too deep w/few to no places to get out; very deep, wide, bedrock walls w/ full riparian veg. community where soils allow

29 RUN 90 65

30 trench/MCP 433 65 10'+ depth

CAS

END @ base 30 The measured L. of pool

0666588/4361973

=

Frog sighting - #1367 + 1366

0665734/4362260

[illegible] baby frogs [illegible]

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: Middle Yuba below Our House — Page 1 of 4

Team: Kathi Peacock, Gaea Bailey Dam — Date 9/16/09

UTM: 0671924/4363951 NAD 83 (Habitat unit No. 1 top) — PM _____ — Map Gradient: _____

Habitat Unit #	1	2	3	SPLIT	4
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool	MCP	MCP	MCP	MCP	MCP
Length (ft)	130	73	68	70	50
Est. Avg. Width (ft)	50, 70, 60	46, 58, 63	56, 46, 40	49, 62, 62	55, 70
Est. Avg. Pool Depth (ft)	10, 6, 4,	—	—	—	4, 3, 2, 0, 1.75
Max. Pool Depth (ft)	10	—	BFD=3	—	4
Pooltail Embedded %	no access	—	—	—	∅
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	1	1	1, FBW=90	1	1 2
Unit Flagged/ Labeled? (Y/N)	yes - top	no	no	no	no
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	DSTA 1 = 1442, LDS	1444	1445	1446	1447 LWS, looking DS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	∅	∅	∅	∅	∅
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	∅	∅	4x2, 6x2, 3x2	2x3 out of water, 1x2 out of water, 2x2, 2x2	2x3, 2x3, 1x1, 1x1 out of water
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/a	N/a	6x2	2x3	2x3
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	difficult access to bottom - lot	11% gradient	log boulders on margin	5% gradient 1/2 channel is step run, half is HGR.	small flow around boulders RBA 2 foot long boulder step top of pool

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: ICP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#1 - UTMs taken at top of pool - between #1 and #2
- 1443 LDS from near top of unit #1

#4 - 1449 photo of step at top of #4 from LBA LDS

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba below OurHouse Dam

Data Sheet # 1

Page 2 of 4

Team: KP, GB

Date 9/16/09

UTM: 06 720 25 / 4364028 NAD 83 (Habitat unit No. top 06 5

PM _____ Map Gradient: _____

Habitat Unit #	5	6	7	SPLIT	8
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP (LAP) TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	111 101	97	109	35	95
Est. Avg. Width (ft)	61, 58, 55	58, 61, 68	60, 58	—	75, 77, 75
Est. Avg. Pool Depth (ft)	—	3.5'	—	—	—
Max. Pool Depth (ft)	— BFD=3	3.5', 3, 1.75'	BFD = 3	—	BFD = 2
Pooltail Embedded %	—	0	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	INSIGNIF (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	BED BLD COB GRV (SND) SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes - top	yes base	no	no	no
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	1450	1451	1452	1453 from LBA	1454 LDS
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	∅	∅	∅	∅	∅
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	2x2, 6x1.5	∅	2x1, 2x2, 3x2	∅	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	6x1.5	N/a	3x2	n/a	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Sandy deposition LBA, scour hole meets min pool requirements	control @ base low # make inconsequential a high flows 0672025/ 4364028	35% gradient - Mixed able -	1/2 channel run; 1/2 pow	5%

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

* dirt found from #1 up to dam; thick enough to make rocks slippery, but not more than 1/4" near top 3" of rocks (submerged) at most

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba below Our House dam

Team: Kathi Peacock & Gaea Bailey

UTM: 0672124/4364111 NAD 83 (Habitat unit No. base 10)

Data Sheet # 2

Page 3 of 4

Date 9/16/09

PM _____ Map Gradient: _____

Habitat Unit #	9	10	11	12	13
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP
Length (ft)	104	163	165	40	125
Est. Avg. Width (ft)	65, 55, 55, 56	68,	56, 61, 64,	55	75, 86, 88
Est. Avg. Pool Depth (ft)	3, 7.5, 2.5, 1.75, 0	—	5.5	—	6.5, 3.5, 0
Max. Pool Depth (ft)	3.75	—	5.5, 2, 7.5, 2.25, 0	BDE = 3	6
Pooltail Embedded %	40%.	—	40%.	—	40%
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV (SND) SLT	BED BLD COB GRV (SND) SLT	BED BLD COB GRV (SND) SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV (SND) SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	2	1	2	1	2
Unit Flagged/ Labeled? (Y/N)	yes top	yes base	no	no	no
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	1455	1456	1457	1458	1459
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	0
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	2x1, 2x2,	0	0	Bar is BE (2ft above wetted) 18x6 6v3 - active, 3x3, 3x'
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	2x2	0	N/A	18x6 / saw 3 fished
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		some surface agitation, but too deep to be riffle	Top of pool is run-like, but no control, so included in pool	some surface agitation, but very deep	Run-like constriction at mid pool, but still deep; weak control; Top of LBA bar w/in BF

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

From #1 to dam: good riparian (yes) community established considering how narrow the canyon & steep the slopes — not much area to collect fines, etc. Rip. veg consists of Alnus rhombifolia, Salix lucida & Salix exigua rang from 5 to 20 ft tall on boulder bar margins, many areas 15-25 ft deep (from water surface). Herbaceous layer includes cattails, Carex nudata, some Juncus, Stachys, sp.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Middle Yuba below Our House Dam

Data Sheet # 2

Page 4 of 4

Team: KP, GM

Date 9/16/09

UTM: _____ NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	14	SPLIT	16	17	18
Habitat Type [1]	FALL (CAS) CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	50	140	162		
Est. Avg. Width (ft)	45, 58				
Est. Avg. Pool Depth (ft)	—		See below start characterize		
Max. Pool Depth (ft)	—				
Pooltail Embedded %	—				
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	(BED) BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø				
Confinement [4]	1				
Unit Flagged/ Labeled? (Y/N)	no	yes-top	yes-base		
Tributary Inflow in cfs	no				
Landmarks or photos	1460	none	1461		
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)	/				
No. of LWD Pieces within wetted width	Ø				
Fish Migration Barrier [6] (y/n)?	no				
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	2x2, 1x1, 1x2 4x6			
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A				
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	11% grad	step-run on one side, split on the other			

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Characterize

#	HAB	L	W	Max dept	NOTES
16	MCP	162	50	6.5	7-5" suckers dark striped down back photo 1461
17	MCP	178	50, 87	8	Separated by step-ro lower pool
	Photo of dam LUS #1461				Stat. gage reads 17.10 on
	photo WDS #1462				

Middle Yuba River
Habitat Mapping Data

Yuba River Development Project
FERC No. 2246

Middle Yuba – Ground-based Habitat Mapping Data

Stream: Middle Yuba River **Date:** 9/1/2009 **Parent Material:** Volcanic, granite/granodiorite, metasedimentary
Reach: Entire **Map Gradient (%):** 1.2%

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
9/14/2009	MY > NY jnctn		1	MCP	463	463	0.00	61.67		4.75	10	15	BLDR	BLD	COB	BED			1	Y	base	N	DTA1 1368			N			660581	4359336		U1 pool at helicopter landing. Could be trenchpool, but slow, so MCP
9/14/2009	MY > NY jnctn		2	CAS	125	588	0.11	66.33					BLDR	BLD	BLD	BED			1	N		N	DTA1 1369			Y			660693	4359389		Barrier 4-8' + permanent (Barrier UTM: 0660693/ 4359389) True cascade, huge boulders 12% gradient.
9/14/2009	MY > NY jnctn		3	POW	110	698	0.13	74.5					BLDR	BLD	SND	BED			1	N		N	DTA1 1370			N	10	10				U3 slightly divergent channel around big rocks! Short rapid forms a control between 2 sections of pocket water. 12" brown trout! Still boulder and scour holes, hetorogenous substrate, more pool-like at bottom, run in middle.
9/14/2009	MY > NY jnctn		4	STEP	90	788	0.15	62.67					BLDR	BLD	BLD	BED			1	N		N	DTA1 1371			N	26	18				step-run: distinct steps separated by short cascades, 4% gradient.
9/14/2009	MY > NY jnctn		5	CAS	35	823	0.16	80					BLDR	BLD	BLD	BLD			1	Y	top	N	DTA1 1372			N						15% gradient.
9/14/2009	MY > NY jnctn		6	TRP	216	1039	0.20	75.33		4	8	0	BLDR	BED	BLD	BED			1	N		N	DTA1 1373			N	12	12	66078	4359472		sandy bank; RBA with pooling from high flows
9/14/2009	MY > NY jnctn		7	PLP	10	1049	0.20	50		4.25	9	20	BLDR	BLD	BLD	BLD			1	N		N	DTA1 1374			N						
9/14/2009	MY > NY jnctn		8	CAS	28	1077	0.20	75					BLDR	BED	BLD	BED			1	N		N	DTA1 1375 hole from LBA, 1376 LUS			Y			660710	4359581		5' permanent barrier (barrier UTM: 0660710/ 4359581), 15% gradient
9/14/2009	MY > NY jnctn		9	POW	105	1182	0.22	67.5					BLDR	BLD	COB	BED			1	N		N	DTA1 1378 LDS to LBA			N						
9/14/2009	MY > NY jnctn		10	PLP	125	1307	0.25	66		10	5		BLDR	BED	BLD	BED			1	Y	mid	N	DTA1 1377 LUS			N			660691	4359615		Deep and inaccessable - estimated depth from above. Photo DTA1 1379 of transition between HAB #9 and #10 - poor control but different pool types. Very difficult to access HAB #9 & #10; deep waters & sheer bedrock walls. #10 flagged on RBA cliff lip above pool (only area accessable) also UTM's see above.
9/14/2009	MY > NY jnctn		11	CAS	60	1367	0.26	40																								stopped at HMU #10 - too steep and dangerous to continue, 15% gradient.
9/14/2009	MY > NY jnctn		12	STEP	95	1462	0.28	75																								
9/14/2009	MY > NY jnctn		13	CAS	50	1512	0.29	75																								
9/14/2009	MY > NY jnctn		14	MCP		1512	0.29																DTA1 1380 shows entire sequence									flag red where stopped on cliff above #10 labelled "MY +NY HMU 10"
9/16/2009	< Hwy 49		1	RUN	74	74	4.20	41.67	2.25				BLDR	BLD	COB	BLD			4	N	private land	N	DTA1 1466, 1467 LDS			N	0	0	664876	4361734		modified tail from artificial dam
9/16/2009	< Hwy 49		2	LGR	63	137	4.21	41.33					INSIGNIF	COB	BLD	BLD			4	N		N	DTA1 1468			N	1	1				3%
9/16/2009	< Hwy 49			SPLIT	470	607	4.30						BLDR	COB	GRV	BLD			1	N		N	DTA1 1469			N	1046 LBA, 149 RBA	480 LBA, 120 RBA				LBA = LGR > GLI > LGR, RBA = LGR > GLI > LGR > GLI > LGR frog, green algae
9/16/2009	< Hwy 49		3	LAP	382	989	4.37	141.5		1.5	3.5	50	INSIGNIF	GRV	COB	BLD			1	N		N	DTA1 1470			N	too embeded					GLI @ tail but still scour on LBD so not separated. Goes quickly into cat tails RBD
9/16/2009	< Hwy 49		4	LGR	223	1212	4.42	113.67					INSIGNIF	COB	BLD	BLD			1	N		N	DTA1 1471			N	165	72				Artificial pool from mining; didymo and green algae; split but from minning; LGR 2%, character dom.
9/16/2009	< Hwy 49		5	RUN	88	1300	4.43	118.5					INSIGNIF	COB	BLD	BLD			1	Y	at top	N	DTA1 1472			N	119	108	664908	4362124		dug out, modified split, but overall form run (not modelable)
9/16/2009	< Hwy 49		6	LGR	129	1429	4.46	115.67					BLDR	BLD	COB	BLD			1	Y	at base	N	DTA1 1473			N	26.5	6				run on LBD, surface agitation but generally LGR, 1% NM - SPLITS, multi thread
9/16/2009	< Hwy 49		7	RUN	140	1569	4.48	90.33					BLDR	BLD	COB	BLD			1	N		N	DTA1 1474			N	39	36				Split near top with some riffle LBA, HF Ch. RBA
9/16/2009	< Hwy 49		8	LGR	85	1654	4.50	89.67	2				BLDR	COB	BLD	BLD			1	N		N	DTA1 1475			N	42	18				1.5%, boulders on LBA - more run-like, next unit pool under bridge HWY 49
9/13/2009	> Oregon Creek		1	STEP	388	2042	4.50	51.2		1.75			BLDR	BLD	BLD	BLD			1	Y	at base	N	DTA1 1333	0	0	N	163.5	72	665105	4362264		gradient 4.5%, step-run with riffle - step characteristics on half or less of channel punctuating. Difficult to model due to oblique flow and multiple water surfaces
9/13/2009	> Oregon Creek		2	MCP	258	2300	4.55	66		2.875	6	15	BLDR	BLD	BLD	BLD			1	N		N	DTA1 1334	0	0	N	0	0				artificial downstream control - boulder dam, 15% embedded; staff gauge with no housing - out of water half thru habitat; top at pool greatly modified for slough-boxes not characteristic of entire pool
9/13/2009	> Oregon Creek		3	LGR	49	2349	4.56	61.5					INSIGNIF	BLD	COB	BLD			1	N		N	DTA1 1335	0	0	N	0	0			selected boulder as bank substrate since the field was left blank on original data sheet	spawning gravels in this habitat but frequent modification for slough - boxes, so unmeasurable, 2% gradient
9/13/2009	> Oregon Creek		3	MCP	167	2516	4.59	57.33		3.4	7	na	BLDR	BLD	GRV	BED			1	N		N	DTA1 1336	0	0	N	504	504				tail of pool very modified, but lots of spawning gravel
9/13/2009	> Oregon Creek		4	HGR	102	2618	4.61	42					BLDR	BLD	BED	BED			1	Y	at top	N	DTA1 1337	0	0	N	0	0				modelable sections, 7% gradient
9/13/2009	> Oregon Creek		5	LGR	170.5	2788.5	4.64	39.67					BLDR	BLD	SND	BLD			3	Y	at base	N	DTA1 1338	0	0	N	0	0	665372	4362171		High-flow side channel, 4% gradient; excellent modelability; Carex nudata - great bank stabilizer, establishes sediment in high turbidity areas both banks 70% coverage. Elevated flood plain LBA (same size as wetted channel). Some tree-root exposure due to long-term erosion/modifications - not an active erosional feature. High flow side channel on LBA. 3% gradient.
9/13/2009	> Oregon Creek		6	HGR	40	2828.5	4.65	42.33					BLDR	BLD	BLD	BLD			3	N		N	DTA1 1339	0	0	N	0	0				Highly modified riffle-crest - damned above pool with boulders and cobble, 8% gradient
9/13/2009	> Oregon Creek		7	MCP	88.5	2917	4.67	53		2.6875	5		BLDR	BLD	BLD	BLD			3	N		N	DTA1 1341 = control/dam, 1342 pool, 1343, 1344 = bank	0	0	N	0	0				Damned pool *DO NOT MODEL*, destabilized banks - dug-out banks creating positive feed-back mechanism
9/13/2009	> Oregon Creek		8	RUN	124	3041	4.69	57.33					BLDR	BLD	BLD	BLD			3	N		N	DTA1 1345	0	0	N	1	1			filled in Dom, Subdom, and Bank Substrates as BLD since they were left blank	Run, but because of damns & dug out banks, creating pools at banks, and step-pool for length of run. Highly modified; after high-flows remove dams, will probably be a run!
9/13/2009	> Oregon Creek		9	GLI	210	3251	4.73	50					BLDR	BLD	COB	BLD	10		1	Y	at top	N	DTA1 1346	0	0	N	6	4				Subdominant bank substrate is SND. Deeper section in middle of glide - obviously modified; some erosion due to modification; run like at top, pool-like in middle, narrow cobble bar LBA -- elevated flood plain
9/13/2009	> Oregon Creek		10	STEP	110	3361	4.75	44.67					BLDR	BLD	COB	BLD			1	Y	at base	N	DTA1 1347	0	0	N	2	1	665552	4362234		step-run with short HGR separating steps - lots of catwater
9/13/2009	> Oregon Creek		11	MCP	280	3641	4.80	62.25		2.4375	4.75	40	INSIGNIF	COB	BLD	BED			2	N		N	DTA1 1348	0	0	N	8	3				10" brown trout, head of pool 28' run - ambiguous start
9/13/2009	> Oregon Creek		12	LGR	117	3758	4.83	56					BLDR	BLD	COB	BLD			1	n		n	DTA1 1349	0	0	N	29	15				3% gradient, some sandy deposits alnog shoreline
9/13/2009	> Oregon Creek		13	GLI	321	4079	4.89	57.67			3.5		BLDR	BLD	COB	BLD			1	n		n	DTA1 1350	0	0	n	21	4				3 inch fish, three 4' fish, 2 scour holes 3.5' deep LBA artificially scoured, end of glide oblique - mid - pt taken
9/13/2009	> Oregon Creek		14	LGR	223	4302	4.93	65	1.75				BLDR	BLD	BLD	BLD			1	y	at top	n	DTA1 1351	0	0	n	116	72				some indistinct stepping, but lots of surface agitation so calling it a run - slight scour pool RBA
9/13/2009	> Oregon Creek		15	RUN	80	4382	4.94	57					BLDR	BLD	BLD	BLD		120	1	y	at base	n	DTA1 1352	0	0	n	0	0	665849	4362162		almost pocket water but too much surface agitation
9/13/2009	> Oregon Creek		16	LGR	119	4501	4.97	52.33					BLDR	BLD	COB	BLD			1	n		n	DTA1 1353	0	0	n	43	36				some flat sections - esp at top (not modelable), 3% gradient
9/13/2009	> Oregon Creek		17	MCP	226	4727	5.01	57		4	8	30	BLDR	BLD	SND	BED			1	n		n	DTA1 1354	0	0	n	72	72				scour hole 1/3 width of channel (12x12) at base of channel
9/13/2009	> Oregon Creek		18	MCP	74	4801	5.02	42.67		1.94	3.5	0	BLDR	BLD	GRV	BED			1	N		N	DTA1 1355	0	0	n	182	180				pinch-point making ds control
9/13/2009	> Oregon Creek		19	STEP	112	4913	5.04	150.33					BLDR	BED	COB	SND			1	y		n	DTA1 1356	0	0	n	20	18				Lower 2/3 wider and slower upper 1/3 narrow and fast step-run. Lots veg on banks - riparian community
9/13/2009	> Oregon Creek		20	MCP	105	5018	5.06	48.5			5												DTA1 1357				15	12				Big hole (pool) at base ~5' deep, max depth 3', w/scour hole at bottom
9/13/2009	> Oregon Creek		21	LGR	54	5072	5.07	41.67			3																					3% gradient
9/13/2009	> Oregon Creek		22	RUN	133	5205	5.10	52																			130	108				deep boulder run w/some scour, slight control creates pool
9/13/2009	> Oregon Creek		23	MCP	92	5297	5.12	36			7																					bedrock side LBA
9/13/2009	> Oregon Creek		24	RAP	70	5367	5.13	26.5															DTA1 1358									
9/13/2009	> Oregon Creek		25	CHU	47	5414	5.14	22.33															DTA1 1359									
9/13/2009	> Oregon Creek			SPLIT	245	5659	5.19																									LBA = RIF/RUN, RBA = RIF/RUN
9/13/2009	> Oregon Creek		26	POW	298	5957	5.24	75.5																			118	50				
9/13/2009	> Oregon Creek		27	HGR	325	6282	5.30	76															DTA1 1360									4% grad, non-modelable multiple water surfaces and flow lines
9/13/2009	> Oregon Creek		28	MCP	918	7200	5.48	104.25			8												DTA1 1364 LDS, 1365 LUS				6	6				long tail with some surface agitation, PHOTOS: DTA1 1382 dead metamorph, probably FYF; DTA1 1363 lateral deep RBA to MCP w/no control. This pool becomes unwalkable, too deep w/ few to no places to get out, very deep, wide, bedrock walls w/ full riparian veg community where soils allow.
9/13/2009	> Oregon Creek		29	RUN	90	7290	5.49	65																								
9/13/2009	> Oregon Creek		30	MCP	433	7723	5.58	65			10																		666588	4361973		END at base of unit 31. FROG SIGHTINGS: DTA1 1367 & 1366

Middle Yuba – Ground-based Habitat Mapping Data (cont.)

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
11/18/2009	MY < OH Dam (SWS)		41	HGR	30	30	10.85	60					BED	BLDR	BED					Top F/T RL			730-731	0	0	N	0	0	670932	4363668		End survey
11/18/2009	MY < OH Dam (SWS)		40	RUN	119	149	10.87	47					BED	SND	BED					N				0	0	N	0	0				Cal newt obs on bank.
11/18/2009	MY < OH Dam (SWS)		39	LGR	106	255	10.89	30					BLDR	COB	BED					N			729	0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		38	RUN	92	347	10.91	31					COB	BLDR	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		37	MCP	74	421	10.92	34		3	5.5		COB	BLDR	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		36	MCP	154	575	10.95	45		4	7		BLDR	COB	BLDR					Bottom F RL				0	0	N	0	0	671088	4363676		
11/18/2009	MY < OH Dam (SWS)		35	RUN	57	632	10.96	40					BLDR	BED	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		34	MCP	98	730	10.98	37		4	7		BLDR	BED	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		33	MCP	181	911	11.02	60		6	10		BLDR	COB	BED					N	0 cfs (RR)			0	0	N	0	0				Boulder Bar River Left
11/18/2009	MY < OH Dam (SWS)		32	HGR	164	1075	11.05	35					BLDR	COB	BED					N			727	1	0	N	0	0				Boulder Bar River Left
11/18/2009	MY < OH Dam (SWS)		31	RUN	46	1121	11.06	45					BLDR	COB	BLDR					Top F RR				3	2	N	0	0	671274	4363623		Boulder Bar River Left
11/18/2009	MY < OH Dam (SWS)		30	LGR	75	1196	11.07	80					COB	BLDR	BLDR					Bottom F RR			726	0	0	N	0	0				Complex "splits"
11/18/2009	MY < OH Dam (SWS)		29	STEP	89	1285	11.09	70					BLDR	COB	BLDR					N			725	0	0	N	0	0				Split level step RUN (Complex)
11/18/2009	MY < OH Dam (SWS)		28	RUN	144	1429	11.11	40					COB	BLDR	BLDR					N			723-724	0	0	N	0	0				Frog obs. Photos 723-724
11/18/2009	MY < OH Dam (SWS)		27	STEP	144	1573	11.14	40					COB	BLDR	BLDR					N			722	0	0	N	0	0				Step RUN
11/18/2009	MY < OH Dam (SWS)		26	MCP	424	1997	11.22	70		5	10		SND	BLDR	BED					N			720-721	1	1	N	0	0	671546	4363556		Miners camp and cobble bar on RR. Cable crossing mid-pool. GPS at Top of unit
11/18/2009	MY < OH Dam (SWS)		25	STEP	197	2194	11.26	60					BLDR	COB	BED					Bottom F RL			719	0	0	N	15	15				Step RUN
11/18/2009	MY < OH Dam (SWS)		24	MCP	230	2424	11.30	60		4	7		BLDR	SND	BED					N				0	0	N	100	25				Fish observation. Max spawning gravel patch is from dredger tailings.
11/18/2009	MY < OH Dam (SWS)		23	RUN	67	2491	11.32	35					BLDR	COB	BED					N				0	0	N	25	25				
11/18/2009	MY < OH Dam (SWS)		22	LGR	121	2612	11.34	35					BLDR	COB	BED					N			718	0	0	N	0	0				HGR at top, runny at bottom - complex. Cattails on RR.
11/18/2009	MY < OH Dam (SWS)		21	MCP	304	2916	11.40	52		6	9		SND	BLDR	BED					Top F/T RR			716-717	1	1	N	0	0	671754	4363761		GPS taken at top of unit.
11/18/2009	MY < OH Dam (SWS)		20	RUN	87	3003	11.41	35					BLDR	BED	BED					Bottom F/T RR			715	0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		19	PLP	143	3146	11.44	32		5	8		BLDR	GRV	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		18	HGR	139	3285	11.47	37					BLDR	COB	BED					N			711 - 714	0	0	N	0	0				Miners dredging supplies on RR photos 712 and 713. CAS at base.
11/18/2009	MY < OH Dam (SWS)		17	RUN	197	3482	11.50	40					COB	BLDR	BED					F Top RR			710	0	0	N	0	0				Potential miners trail RR (ladder). Step at 113 ft.
11/18/2009	MY < OH Dam (SWS)		16	MCP	363	3845	11.57	50		6	10		SND	GRV	BED					N				1	1	N	25	25	671939	4363954		Narrow bedrock canyon. Large gravel deposit at tail. GPS at top of unit
11/18/2009	MY < OH Dam (SWS)		15	HGR	71	3916	11.59	50					BLDR	COB	BED					N			709	1	1	N	0	0				Difficult access beyond this point downstream.
11/18/2009	MY < OH Dam (SWS)		14	RUN	78	3994	11.60	40					BLDR	COB	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		13	LGR	55	4049	11.61	50					BLDR	COB	BLDR					N				0	0	N	0	0				HGR step at top, backwater pool
11/18/2009	MY < OH Dam (SWS)		12	MCP	63	4112	11.62	43		2	4		BLDR	GRV	BLDR					T/F RL			706-708	0	0	N	0	0				Potential fish site.
11/18/2009	MY < OH Dam (SWS)		11	RUN	166	4278	11.65	55					BLDR	COB	BED					N			704-705	2	2	N	0	0	672024	4364037		Potential fish site.
11/18/2009	MY < OH Dam (SWS)		10	LGR	216	4494	11.70	53					BLDR	COB	BED					N			703	1	1	N	0	0				Complex with POW, RUN, and HGR, steps.
11/18/2009	MY < OH Dam (SWS)		9	RUN	90	4584	11.71	38					BLDR	COB	BED					N				0	0	N	0	0				Good fish unit. Max depth = 3.5 ft
11/18/2009	MY < OH Dam (SWS)		8	POW	40	4624	11.72	30					BLDR	COB	BED					Top F RR				0	0	N	0	0				Good fish unit. Max depth = 2 ft
11/18/2009	MY < OH Dam (SWS)		7	RUN	115	4739	11.74	60					SND	GRV	BLDR					Bottom F RR			702	0	0	N	0	0				run/pool unit good fish unit
11/18/2009	MY < OH Dam (SWS)		6	POW	101	4840	11.76	30		2.5	3		BLDR	COB	BLDR					N			701	0	0	N	0	0	672196	4364153		Good fish unit. Avg. Depth = 2.5 ft Max Depth = 3.0 ft
11/18/2009	MY < OH Dam (SWS)		5	MCP	120	4960	11.78	50		4	6		BLDR	GRV	BED					Top F/T RL			700	0	0	N	0	0				Difficult but possible e-fish unit. Consider reduced discharge.
11/18/2009	MY < OH Dam (SWS)		4	HGR	48	5008	11.79	60					BLDR	COB	BED					N			699	0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		3	LGR	83	5091	11.81	70					BLDR	COB	BED					N				0	0	N	0	0				
11/18/2009	MY < OH Dam (SWS)		2	MCP	153	5244	11.84	50		4	6		BLDR	SND	BED					N			698	0	0	N	8	8				
11/18/2009	MY < OH Dam (SWS)		1	PLP	168	5412	11.87	65		4	6		SND	BLDR	BED					N			697	0	0	N	0	0	672312	4364274		HGR and USGS pool at top
9/16/2009	MY < OH Dam		1	MCP	130	5542	11.87	60		5	10	na	BLDR	BLD	SND	BED			2	Y	at top	N	DTA1 1442 LDS	0	0	N	0	0	671924	4363951		difficult access to bottom - lot, UTM's taken at top of pool - between U1 and U2, PHOTO DTA1 1443 LDS from near top of U1
9/16/2009	MY < OH Dam		2	CAS	73	5615	11.89	55.67					BLDR	BLD	BED	BED			1	N		N	DTA1 1444	0	0	N	0	0				1% gradient
9/16/2009	MY < OH Dam		3	RUN	68	5683	11.91	48	3				BLDR	BLD	COB	BLD		92	1	N		N	DTA1 1445	0	0	N	26	12				large boulders on margin
9/16/2009	MY < OH Dam			SPLIT	70	5753	11.92	57.67					BLDR	BLD	COB	BED			1	N		N	DTA1 1446	0	0	N	16	6				5% gradient, half channel is step run, half is HGR
9/16/2009	MY < OH Dam		4	MCP	50	5803	11.93	62.5		2.15	4		BLDR	BLD	SND	BLD			2	N		N	DTA1 1447, 1448 LDS	0	0	N	14	6				small flow around boulders RBA, 2 foots long boulder step top of pool, PHOTO DTA1 1449 photo of step at top of U4 from LBA LDS
9/16/2009	MY < OH Dam		5	RUN	111	5914	11.94	58	3				BLDR	BLD	COB	BLD			1	Y	at top	N	DTA1 1450	0	0	N	13	9	672025	4364028		
9/16/2009	MY < OH Dam		6	LAP	87	6001	11.97	62.33		2.0625	3.5		BLDR	BLD	SND	BLD			1	Y	at base	N	DTA1 1451	0	0	N	0	0	672025	4364028		sandy deposition LBA, scour hole meets min pool requirements, control at base low and maybe inconsequential at high flow
9/16/2009	MY < OH Dam		7	LGR	109	6110	11.98	59	3				BLDR	BLD	COB	BED			1	N		N	DTA1 1452	0	0	N	12	6				3.5% gradient, modelable
9/16/2009	MY < OH Dam			SPLIT	35	6145	12.00						BLDR	BLD	COB	BLD			1	N		N	DTA1 1453 from RBA	0	0	N	0	0				half of channel is run half is POW
9/16/2009	MY < OH Dam		8	HGR	95	6240	12.01	75.67	2				BLDR	BLD	COB	BLD			1	N		N	DTA1 1454 LDS	0	0	N	0	0				5% grade
9/16/2009	MY < OH Dam		9	MCP	104	6344	12.03	57.75		2	3.75	40	BLDR	BLD	SND	BLD			2	Y	at top	N	DTA1 1455			N	0	0				
9/16/2009	MY < OH Dam		10	RUN	63	6407	12.05	68					BLDR	BLD	SND	BLD			1	Y	at base	N	DTA1 1456			N	5	4	672124	4364111		some surface agitation, but too deep to be riffle
9/16/2009	MY < OH Dam		11	MCP	165	6572	12.06	60.33		2.625	5.5	40	BLDR	BLD	SND	BLD			2	N		N	DTA1 1457			N						Top of pool is run-like, but no control, so included in pool
9/16/2009	MY < OH Dam		12	RUN	40	6612	12.09	55	3				BLDR	BLD	COB	BED			1	N		N	DTA1 1458			N						some surface agitation, but very deep
9/16/2009	MY < OH Dam		13	MCP	125	6737	12.10	83		3.33	6	40	BLDR	BLD	SND	BLD			2	N		N	DTA1 1459			N	144	108				Run - with constriction at mid-pool but still deep and weak control; Top of LBA bar within BF, three 6" fish
9/16/2009	MY < OH Dam		14	CAS	50	6787	12.12	51.5					BLDR	BLD	BED	BED			1	N		N	DTA1 1460			N						11% gradient
9/16/2009	MY < OH Dam			SPLIT	140	6927	12.13													Y	at top							31	24				step-run on one side, split on other
9/16/2009	MY < OH Dam		15	MCP	162	7089	12.16	50			6.5																						seven 5" suckers, dark stripe down back photo DTA1 1461
9/16/2009	MY < OH Dam		16	MCP	178	7267	12.19	68.5			8																						photo of dam LUS DTA1 1464, photo of wier 1463, staff gauge reads 17.10 on

Stream: **Middle Yuba River**

Reach: **Entire**

Table 1a. Summary Statistics - Mapped Units

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall								
Cascade	421	2.7%	7	6.4%	63.4			
Chute	47	0.3%	1	0.9%	22.3			
Rapid	70	0.5%	1	0.9%	26.5			
High Gradient Riffle	1014	6.5%	9	8.2%	53.1			
Low Gradient Riffle	1997.5	12.9%	17	15.5%	62.0			
Glide	531	3.4%	2	1.8%	53.8			
Run	2269	14.6%	23	20.9%	52.9			
Step Run	1225	7.9%	8	7.3%	69.2			
Pocket Water	654	4.2%	5	4.5%	55.5			
Sheet								
Convergance Pool								
Mid-Channel Pool	6182.5	39.8%	30	27.3%	56.8	3.7	6.9	7.9
Lateral Scour Pool	469	3.0%	2	1.8%	101.9	1.8	3.5	25.0
Trench Pool	216	1.4%	1	0.9%	75.3	4.0	8.0	
Plunge Pool	446	2.9%	4	3.6%	53.3	5.8	7.0	5.0
TOTAL	**15542**	**100.0%**	**110**	**100.0%**	**58.9**	**3.8**	**6.3**	**12.6**
QC			**0**		**Weighted**			
					Average			
					By Length (ft)			

Table 2. Stream Cover

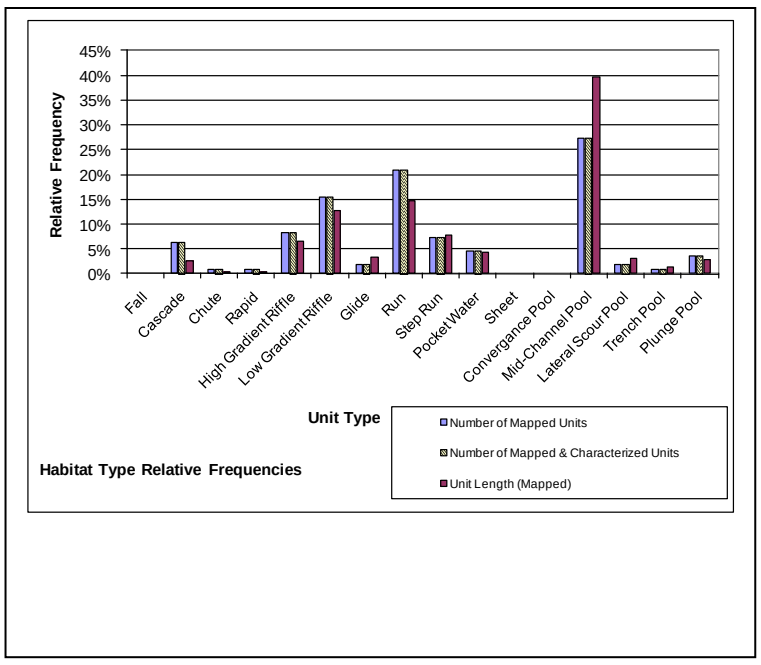
Dominant Cover Type	Number	Relative Frequency
Insignificant	6	7%
Boulder	77	93%
Vegetation	0	
Wood	0	
SUM	83	100%
QC	**Error**	

Table 3. Reach Summary

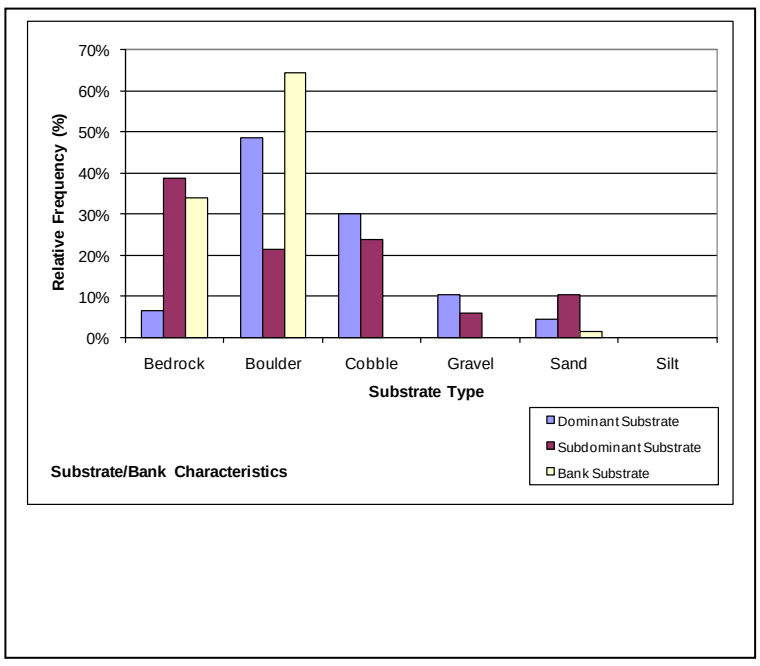
Total Reach Length:	**12.2**	mi.		
Total Mapped Length:	2.94	mi.	24.1%	mapped
Average Bankfull Width:	58.9	ft.	0.00	mi. charac
Bankfull Depth:	**2.5**	ft.	24.13%	Total m & c
Width:Depth:	24			
Flood Prone Width:	**0**	ft.		
Entrenchment Ratio:	0.0			
Total Spawnable Gravel:	2,311	ft^2 - trout		
Avg Largest Patch Size:	44	ft^2 - trout		
LWD Density:	5	/ mile (bankful)		
Wetted LWD Density:	4	/ mile (wetted width)		
Parent Material:	Volcanic, granite/granodiorite, metasedimentar			
Bank Erosion % of Reach:	0.0%			
Tot No. Passage Barriers:	2			

Table 4. Reach Summary - Substrate and Bank Characteristics

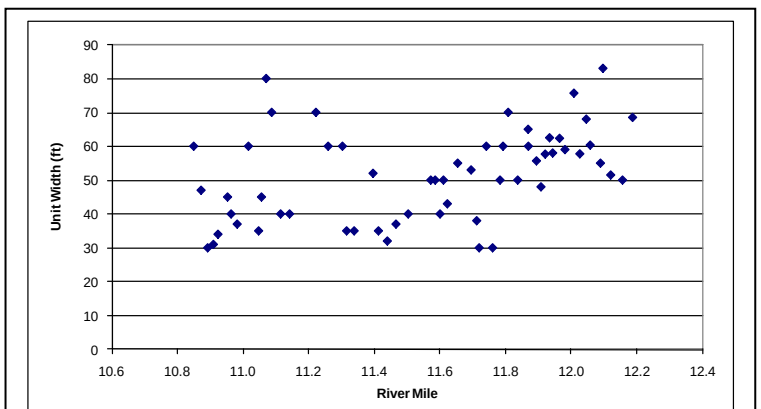
	Dominant Substrate		Subdominant Substrate		Bank Substrate		Bank Substrate Erosion	
	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency
Bedrock	723	6.4%	4651	38.7%	2583	34.0%	0	
Boulder	5523	48.6%	2569.5	21.4%	4900	64.5%	10	100.0%
Cobble	3421	30.1%	2859	23.8%	0		0	
Gravel	1186	10.4%	711	5.9%	0		0	
Sand	502	4.4%	1230.5	10.2%	112	1.5%	0	
Silt	0		0		0		0	
SUM	**11355**	**100.0%**	**12021**	**100.0%**	**7595**	**100.0%**	**10**	**100.0%**



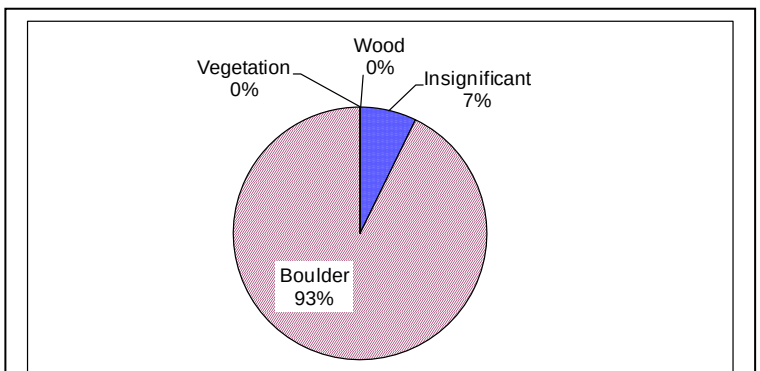
Habitat Type Relative Frequencies



Substrate/Bank Characteristics



Bankfull Width



Dominant Cover Types

Middle Yuba River – Habitat Mapping – Video based – From North Yuba/Middle Yuba Junction to Our House Dam

Time	RM	Habitat	Habitat	HM Unit
1:42:50	0.00	18	SPLIT	
1:42:53	0.04	12	MCP	1
1:42:56	0.08	12	MCP	1
1:42:59	0.11	12	MCP	1
1:43:02	0.15	12	MCP	1
1:43:05	0.17	11	POW	3
1:43:08	0.19	10	STEP	4
1:43:11	0.21	2	CAS	5
1:43:14	0.23	14	TRP	6
1:43:17	0.25	15	PLP	7
1:43:20	0.27	11	POW	9
1:43:23	0.29	15	PLP	10
1:43:26	0.31	10	STEP	11
1:43:29	0.33	2	CAS	13
1:43:32	0.35	12	MCP	
1:43:35	0.37	2	CAS	
1:43:38	0.39	2	CAS	
1:43:41	0.41	12	MCP	
1:43:44	0.43	9	RUN	
1:43:47	0.44	12	MCP	
1:43:50	0.46	15	PLP	
1:43:53	0.48	2	CAS	
1:43:56	0.50	11	POW	
1:43:59	0.52	11	POW	
1:44:02	0.54	4	RAP	
1:44:05	0.56	12	MCP	
1:44:08	0.58	14	TRP	
1:44:11	0.60	17	OOV	
1:44:14	0.62	7	LGR	S.C. dry or
1:44:17	0.64	7	LGR	S.C. dry or
1:44:20	0.66	12	MCP	
1:44:23	0.68	12	MCP	
1:44:26	0.70	13	LAP	
1:44:29	0.73	13	LAP	
1:44:32	0.75	12	MCP	
1:44:35	0.78	2	CAS	
1:44:38	0.81	6	HGR	
1:44:41	0.84	11	POW	
1:44:44	0.86	11	POW	
1:44:47	0.89	7	LGR	
1:44:50	0.92	13	LAP	
1:44:53	0.94	13	LAP	
1:44:56	0.97	9	RUN	
1:44:59	1.00	17	OOV	
1:45:02	1.03	9	RUN	
1:45:05	1.05	12	MCP	
1:45:08	1.08	7	LGR	
1:45:11	1.11	13	LAP	
1:45:14	1.13	12	MCP	
1:45:17	1.16	7	LGR	
1:45:20	1.19	7	LGR	
1:45:23	1.21	12	MCP	
1:45:26	1.24	12	MCP	
1:45:29	1.27	12	MCP	
1:45:32	1.30	12	MCP	
1:45:35	1.32	18	SPLIT	
1:45:38	1.35	18	SPLIT	
1:45:41	1.37	8	GLI	
1:45:44	1.39	8	GLI	
1:45:47	1.41	12	MCP	
1:45:50	1.43	12	MCP	
1:45:53	1.45	9	RUN	
1:45:56	1.47	13	LAP	
1:45:59	1.49	13	LAP	
1:46:02	1.51	13	LAP	
1:46:05	1.53	12	MCP	
1:46:08	1.55	9	RUN	
1:46:11	1.57	12	MCP	
1:46:14	1.59	7	LGR	
1:46:17	1.61	18	SPLIT	
1:46:20	1.63	18	SPLIT	
1:46:23	1.65	18	SPLIT	
1:46:26	1.68	13	LAP	
1:46:29	1.70	11	POW	
1:46:32	1.72	17	OOV	
1:46:35	1.74	12	MCP	
1:46:38	1.76	12	MCP	
1:46:41	1.78	6	HGR	
1:46:44	1.80	9	RUN	
1:46:47	1.82	13	LAP	
1:46:50	1.84	11	POW	
1:46:53	1.86	17	OOV	
1:46:56	1.88	7	LGR	
1:46:59	1.90	6	HGR	
1:47:02	1.92	12	MCP	
1:47:05	1.94	4	RAP	
1:47:08	1.96	7	LGR	
1:47:11	1.98	18	SPLIT	
1:47:14	2.00	17	OOV	SHADE
1:47:17	2.02	17	OOV	SHADE
1:47:20	2.04	17	OOV	SHADE
1:47:23	2.07	13	LAP	
1:47:26	2.09	13	LAP	
1:47:29	2.11	18	SPLIT	
1:47:32	2.13	8	GLI	
1:47:35	2.15	12	MCP	
1:47:38	2.17	12	MCP	
1:47:41	2.20	12	MCP	
1:47:44	2.22	12	MCP	
1:47:47	2.24	10	STEP	
1:47:50	2.26	10	STEP	
1:47:53	2.28	7	LGR	
1:47:56	2.30	7	LGR	
1:47:59	2.33	18	SPLIT	
1:48:02	2.35	18	SPLIT	

Time	RM	Habitat	Habitat	HM Unit
1:48:05	2.37	18	SPLIT	
1:48:08	2.39	12	MCP	
1:48:11	2.41	12	MCP	
1:48:14	2.43	13	LAP	
1:48:17	2.46	13	LAP	
1:48:20	2.48	6	HGR	
1:48:23	2.50	7	LGR	
1:48:26	2.52	7	LGR	
1:48:29	2.54	12	MCP	
1:48:32	2.57	12	MCP	
1:48:35	2.59	12	MCP	
1:48:38	2.61	12	MCP	
1:48:41	2.63	13	LAP	
1:48:44	2.65	12	MCP	
1:48:47	2.67	4	RAP	
1:48:50	2.70	14	TRP	
1:48:53	2.72	4	RAP	
1:48:56	2.74	9	RUN	
1:48:59	2.76	14	TRP	
1:49:02	2.78	12	MCP	
1:49:05	2.80	2	CAS	
1:49:08	2.83	9	RUN	
1:49:11	2.85	12	MCP	
1:49:14	2.87	18	SPLIT	
1:49:17	2.89	18	SPLIT	
1:49:20	2.91	18	SPLIT	
1:49:23	2.93	18	SPLIT	
1:49:26	2.96	18	SPLIT	
1:49:29	2.98	8	GLI	
1:49:32	3.00	14	TRP	
1:49:35	3.03	12	MCP	
1:49:38	3.05	11	POW	
1:49:41	3.08	11	POW	
1:49:44	3.10	11	POW	
1:49:47	3.13	11	POW	
1:49:50	3.15	18	SPLIT	
1:49:53	3.18	12	MCP	
1:49:56	3.20	12	MCP	
1:49:59	3.23	8	GLI	
1:50:02	3.25	12	MCP	
1:50:05	3.28	12	MCP	
1:50:08	3.30	18	SPLIT	
1:50:11	3.33	18	SPLIT	
1:50:14	3.35	9	RUN	
1:50:17	3.38	9	RUN	
1:50:20	3.40	13	LAP	
1:50:23	3.42	9	RUN	
1:50:26	3.44	7	LGR	SWS1
1:50:29	3.46	17	OOV	SWS2
1:50:32	3.49	6	HGR	SWS3
1:50:35	3.51	18	SPLIT	SWS3.1
1:50:38	3.53	18	SPLIT	SWS3-9.1
1:50:41	3.55	18	SPLIT	SWS3-9.1
1:50:44	3.57	18	SPLIT	SWS3-9.1
1:50:47	3.59	18	SPLIT	SWS3-9.1
1:50:50	3.62	18	SPLIT	SWS3-9.1
1:50:53	3.64	18	SPLIT	SWS3-9.1
1:50:56	3.66	18	SPLIT	SWS3-9.1
1:50:59	3.68	18	SPLIT	SWS3-9.1
1:51:02	3.70	18	SPLIT	SWS3-9.1
1:51:05	3.72	8	GLI	SWS10
1:51:08	3.75	7	LGR	SWS10
1:51:11	3.77	17	OOV	SWS10
1:51:14	3.79	17	OOV	SWS10
1:51:17	3.81	9	RUN	SWS10
1:51:20	3.83	9	RUN	SWS10
1:51:23	3.85	12	MCP	SWS11
1:51:26	3.87	13	LAP	SWS11
1:51:29	3.90	7	LGR	SWS12 &1
1:51:32	3.92	9	RUN	SWS 13
1:51:35	3.94	13	LAP	SWS 13
1:51:38	3.96	18	SPLIT	SWS 13.1a
1:51:41	3.98	18	SPLIT	SWS 13.1a
1:51:44	4.00	9	RUN	SWS15
1:51:47	4.03	13	LAP	SWS15
1:51:50	4.05	9	RUN	SWS15
1:51:53	4.07	9	RUN	SWS15
1:51:56	4.09	9	RUN	SWS15
1:51:59	4.11	7	LGR	SWS16
1:52:02	4.13	9	RUN	1
1:52:05	4.15	7	LGR	2
1:52:08	4.18	18	SPLIT	
1:52:11	4.20	18	SPLIT	
1:52:14	4.22	18	SPLIT	
1:52:17	4.24	18	SPLIT	
1:52:20	4.26	13	LAP	3
1:52:23	4.28	13	LAP	3
1:52:26	4.31	13	LAP	3
1:52:29	4.33	12	MOD	Scoured
1:52:32	4.35	7	LGR	4
1:52:35	4.37	7	LGR	4
1:52:38	4.39	7	LGR	4
1:52:41	4.41	9	RUN	7
1:52:44	4.44	9	RUN	7
1:52:47	4.46	7	LGR	8
1:52:50	4.48	13	LAP	
1:52:53	4.50	12	MCP	HWY 49
1:52:56	4.52	13	LAP	
1:52:59	4.54	13	LAP	
1:53:02	4.56	13	LAP	
1:53:05	4.58	13	LAP	
1:53:08	4.60	9	RUN	
1:53:11	4.62	10	STEP	1
1:53:14	4.64	10	STEP	1
1:53:17	4.66	10	STEP	1

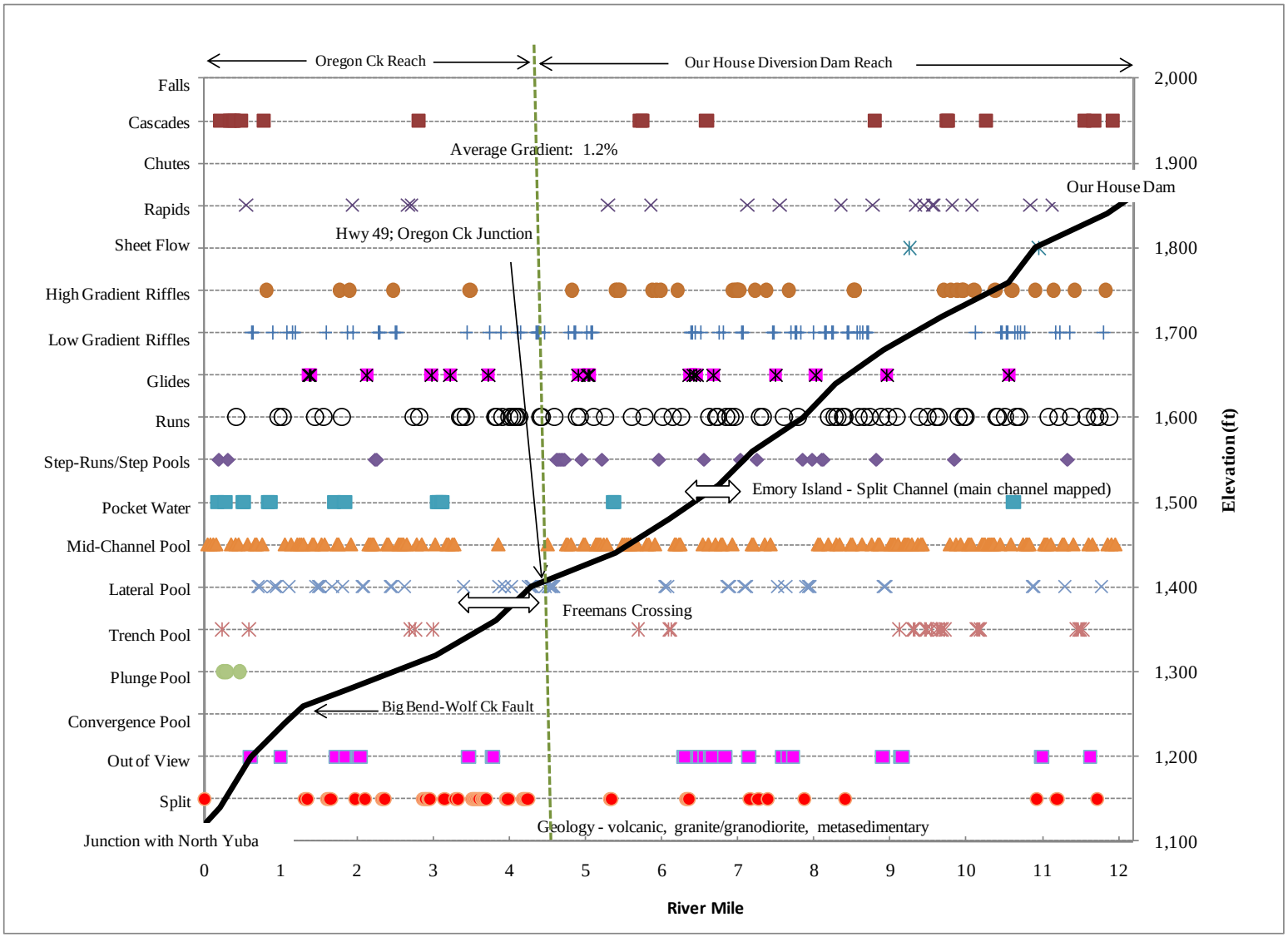
Time	RM	Habitat	Habitat	HM Unit
1:53:20	4.68	10	STEP	1
1:53:23	4.70	10	STEP	1
1:53:26	4.73	10	STEP	1
1:53:29	4.75	12	MCP	2
1:53:32	4.77	12	MCP	2
1:53:35	4.79	7	LGR	3
1:53:38	4.81	12	MCP	3
1:53:41	4.83	6	HGR	4
1:53:44	4.85	7	LGR	5
1:53:47	4.87	7	LGR	5
1:53:50	4.89	9	RUN	8
1:53:53	4.91	8	GLI	9
1:53:56	4.93	9	RUN	9
1:53:59	4.95	10	STEP	10
1:54:02	4.97	12	MCP	11
1:54:05	4.99	12	MCP	11
1:54:08	5.01	7	LGR	12
1:54:11	5.03	8	GLI	13
1:54:14	5.05	8	GLI	13
1:54:17	5.07	7	LGR	14
1:54:20	5.09	7	LGR	14
1:54:23	5.11	9	RUN	15
1:54:26	5.13	12	MCP	16
1:54:29	5.15	12	MCP	16
1:54:32	5.18	12	MCP	17
1:54:35	5.20	12	MCP	18
1:54:38	5.22	10	STEP	19
1:54:41	5.24	12	MCP	20
1:54:44	5.26	9	RUN	22
1:54:47	5.28	12	MCP	23
1:54:50	5.30	4	RAP	24
1:54:53	5.32	18	SPLIT	
1:54:56	5.34	18	SPLIT	
1:54:59	5.36	11	POW	26
1:55:02	5.38	11	POW	26
1:55:05	5.40	6	HGR	27
1:55:08	5.43	6	HGR	27
1:55:11	5.45	6	HGR	27
1:55:14	5.48	12	MCP	28
1:55:17	5.51	12	MCP	28
1:55:20	5.53	12	MCP	28
1:55:23	5.56	12	MCP	28
1:55:26	5.59	12	MCP	28
1:55:29	5.61	9	RUN	29
1:55:32	5.64	12	MCP	30
1:55:35	5.67	12	MCP	30
1:55:38	5.69	14	TRP	30
1:55:41	5.72	2	CAS	
1:55:44	5.75	2	CAS	
1:55:47	5.78	9	RUN	
1:55:50	5.80	12	MCP	
1:55:53	5.83	12	MCP	
1:55:56	5.86	4	RAP	
1:55:59	5.88	6	HGR	
1:56:02	5.91	12	MCP	
1:56:05	5.94	6	HGR	
1:56:08	5.96	10	STEP	
1:56:11	5.99	6	HGR	
1:56:14	6.02	9	RUN	
1:56:17	6.04	13	LAP	
1:56:20	6.07	13	LAP	
1:56:23	6.10	14	TRP	
1:56:26	6.12	14	TRP	
1:56:29	6.15	9	RUN	
1:56:32	6.17	12	MCP	
1:56:35	6.19	12	MCP	
1:56:38	6.21	6	HGR	
1:56:41	6.22	12	MCP	
1:56:44	6.24	12	MCP	
1:56:47	6.26	9	RUN	
1:56:50	6.28	17	OOV	
1:56:53	6.30	17	OOV	
1:56:56	6.32	18	SPLIT	
1:56:59	6.33	18	SPLIT	
1:57:02	6.35	18	SPLIT	
1:57:05	6.37	8	GLI	
1:57:08	6.39	7	LGR	
1:57:11	6.41	7	LGR	
1:57:14	6.43	8	GLI	
1:57:17	6.44	7	LGR	
1:57:20	6.46	8	GLI	
1:57:23	6.48	17	OOV	SPLIT
1:57:26	6.50	17	OOV	SPLIT
1:57:29	6.52	7	LGR	SPLIT
1:57:32	6.54	12	MCP	SPLIT
1:57:35	6.56	10	STEP	SPLIT
1:57:38	6.57	17	OOV	SPLIT
1:57:41	6.59	2	CAS	SPLIT
1:57:44	6.61	12	MCP	SPLIT
1:57:47	6.63	9	RUN	SPLIT
1:57:50	6.65	17	OOV	SPLIT
1:57:53	6.67	17	OOV	SPLIT
1:57:56	6.68	8	GLI	SPLIT
1:57:59	6.70	12	MCP	SPLIT
1:58:02	6.72	9	RUN	SPLIT
1:58:05	6.74	9	RUN	SPLIT
1:58:08	6.76	7	LGR	SPLIT
1:58:11	6.78	12	MCP	SPLIT
1:58:14	6.79	12	MCP	SPLIT
1:58:17	6.81	7	LGR	SPLIT
1:58:20	6.83	17	OOV	SPLIT
1:58:23	6.85	9	RUN	SPLIT
1:58:26	6.87	13	LAP	SPLIT
1:58:29	6.89	13	LAP	SPLIT
1:58:32	6.91	9	RUN	SPLIT

Middle Yuba River – Habitat Mapping – Video based – From North Yuba/Middle Yuba Junction to Our House Dam (cont)

Time	RM	Habitat	Habitat	HM Unit
1:58:35	6.92	12	MCP	SPLIT
1:58:38	6.94	6	HGR	SPLIT
1:58:41	6.96	9	RUN	
1:58:44	6.98	6	HGR	
1:58:47	7.00	6	HGR	
1:58:50	7.02	6	HGR	
1:58:53	7.03	10	STEP	
1:58:56	7.05	7	LGR	
1:58:59	7.07	7	LGR	
1:59:02	7.09	13	LAP	
1:59:05	7.11	13	LAP	
1:59:08	7.13	4	RAP	
1:59:11	7.14	17	OOV	
1:59:14	7.16	18	SPLIT	
1:59:17	7.18	12	MCP	
1:59:20	7.20	12	MCP	
1:59:23	7.23	6	HGR	
1:59:26	7.25	10	STEP	
1:59:29	7.28	18	SPLIT	
1:59:32	7.30	9	RUN	
1:59:35	7.33	9	RUN	
1:59:38	7.35	12	MCP	
1:59:41	7.38	6	HGR	
1:59:44	7.40	18	SPLIT	
1:59:47	7.43	12	MCP	
1:59:50	7.45	7	LGR	
1:59:53	7.48	7	LGR	
1:59:56	7.50	8	GLI	
1:59:59	7.53	13	LAP	
2:00:02	7.55	4	RAP	
2:00:05	7.58	17	OOV	SPLIT
2:00:08	7.60	9	RUN	SPLIT
2:00:11	7.63	13	LAP	SPLIT
2:00:14	7.65	17	OOV	SPLIT
2:00:17	7.68	6	HGR	SPLIT
2:00:20	7.70	7	LGR	SPLIT
2:00:23	7.73	17	OOV	SPLIT
2:00:26	7.75	7	LGR	SPLIT
2:00:29	7.78	7	LGR	SPLIT
2:00:32	7.80	9	RUN	SPLIT
2:00:35	7.83	7	LGR	SPLIT
2:00:38	7.85	10	STEP	SPLIT
2:00:41	7.88	18	SPLIT	
2:00:44	7.90	13	LAP	
2:00:47	7.93	13	LAP	
2:00:50	7.95	13	LAP	
2:00:53	7.98	10	STEP	
2:00:56	8.00	7	LGR	
2:00:59	8.03	8	GLI	
2:01:02	8.05	12	MCP	
2:01:05	8.08	12	MCP	
2:01:08	8.10	10	STEP	
2:01:11	8.12	10	STEP	
2:01:14	8.14	7	LGR	
2:01:17	8.16	7	LGR	
2:01:20	8.18	12	MCP	
2:01:23	8.21	9	RUN	
2:01:26	8.23	7	LGR	
2:01:29	8.25	7	LGR	
2:01:32	8.27	9	RUN	
2:01:35	8.29	12	MCP	
2:01:38	8.31	9	RUN	
2:01:41	8.33	12	MCP	
2:01:44	8.35	4	RAP	
2:01:47	8.37	9	RUN	
2:01:50	8.39	9	RUN	
2:01:53	8.42	18	SPLIT	
2:01:56	8.44	7	LGR	
2:01:59	8.46	7	LGR	
2:02:02	8.48	12	MCP	
2:02:05	8.50	12	MCP	
2:02:08	8.52	6	HGR	
2:02:11	8.54	6	HGR	
2:02:14	8.56	7	LGR	
2:02:17	8.58	9	RUN	
2:02:20	8.61	7	LGR	
2:02:23	8.63	12	MCP	
2:02:26	8.65	7	LGR	
2:02:29	8.67	9	RUN	
2:02:32	8.69	7	LGR	
2:02:35	8.71	7	LGR	
2:02:38	8.73	9	RUN	
2:02:41	8.75	12	MCP	
2:02:44	8.77	4	RAP	
2:02:47	8.79	2	CAS	
2:02:50	8.82	10	STEP	
2:02:53	8.84	12	MCP	
2:02:56	8.86	12	MCP	
2:02:59	8.88	9	RUN	
2:03:02	8.90	17	OOV	
2:03:05	8.92	13	LAP	
2:03:08	8.94	13	LAP	
2:03:11	8.96	8	GLI	
2:03:14	8.98	9	RUN	
2:03:17	9.00	12	MCP	
2:03:20	9.02	12	MCP	
2:03:23	9.04	12	MCP	
2:03:26	9.06	12	MCP	
2:03:29	9.08	9	RUN	
2:03:32	9.10	12	MCP	
2:03:35	9.12	14	TRP	
2:03:38	9.14	17	OOV	
2:03:41	9.16	17	OOV	
2:03:44	9.18	12	MCP	
2:03:47	9.20	12	MCP	

Time	RM	Habitat	Habitat	HM Unit
2:03:50	9.22	12	MCP	
2:03:53	9.24	12	MCP	
2:03:56	9.26	5	SHT	
2:03:59	9.28	12	MCP	
2:04:02	9.30	14	TRP	
2:04:05	9.32	14	TRP	
2:04:08	9.34	4	RAP	
2:04:11	9.36	12	MCP	
2:04:14	9.38	9	RUN	
2:04:17	9.40	12	MCP	
2:04:20	9.42	12	MCP	
2:04:23	9.44	4	RAP	
2:04:26	9.46	14	TRP	
2:04:29	9.48	14	TRP	
2:04:32	9.50	9	RUN	
2:04:35	9.52	14	TRP	
2:04:38	9.54	14	TRP	
2:04:41	9.56	4	RAP	
2:04:44	9.58	4	RAP	
2:04:47	9.60	9	RUN	
2:04:50	9.62	14	TRP	
2:04:53	9.64	9	RUN	
2:04:56	9.66	14	TRP	
2:04:59	9.68	14	TRP	
2:05:02	9.70	6	HGR	
2:05:05	9.72	14	TRP	
2:05:08	9.74	2	CAS	
2:05:11	9.76	2	CAS	
2:05:14	9.78	12	MCP	
2:05:17	9.80	6	HGR	
2:05:20	9.82	4	RAP	
2:05:23	9.84	10	STEP	
2:05:26	9.86	12	MCP	
2:05:29	9.88	6	HGR	
2:05:32	9.90	9	RUN	
2:05:35	9.92	12	MCP	
2:05:38	9.94	6	HGR	
2:05:41	9.96	6	HGR	
2:05:44	9.98	9	RUN	
2:05:47	10.00	9	RUN	
2:05:50	10.02	12	MCP	
2:05:53	10.04	12	MCP	
2:05:56	10.06	12	MCP	
2:05:59	10.08	4	RAP	
2:06:02	10.10	6	HGR	
2:06:05	10.12	7	LGR	
2:06:08	10.14	14	TRP	
2:06:11	10.16	14	TRP	
2:06:14	10.18	14	TRP	
2:06:17	10.20	12	MCP	
2:06:20	10.22	12	MCP	
2:06:23	10.24	12	MCP	
2:06:26	10.26	2	CAS	
2:06:29	10.28	12	MCP	
2:06:32	10.30	12	MCP	
2:06:35	10.32	12	MCP	
2:06:38	10.34	12	MCP	
2:06:41	10.36	12	MCP	
2:06:44	10.38	6	HGR	
2:06:47	10.40	9	RUN	
2:06:50	10.42	9	RUN	
2:06:53	10.44	12	MCP	
2:06:56	10.46	7	LGR	
2:06:59	10.48	7	LGR	
2:07:02	10.50	9	RUN	
2:07:05	10.52	7	LGR	
2:07:08	10.54	7	LGR	
2:07:11	10.56	8	GLI	
2:07:14	10.58	12	MCP	
2:07:17	10.60	6	HGR	
2:07:20	10.62	11	POW	
2:07:23	10.64	7	LGR	
2:07:26	10.66	9	RUN	
2:07:29	10.68	7	LGR	
2:07:32	10.70	9	RUN	
2:07:35	10.72	7	LGR	
2:07:38	10.74	12	MCP	
2:07:41	10.76	7	LGR	
2:07:44	10.78	12	MCP	
2:07:47	10.80	12	MCP	POOL
2:07:50	10.82	12	MCP	
2:07:53	10.84	4	RAP	
2:07:56	10.87	13	LAP	
2:07:59	10.89	13	LAP	
2:08:02	10.91	6	HGR	SWS41
2:08:05	10.93	18	SPLIT	SWS40
2:08:08	10.95	5	SHT	SWS40
2:08:11	10.97	17	OOV	SWS39
2:08:14	11.00	17	OOV	SWS38
2:08:17	11.02	12	MCP	SWS36
2:08:20	11.04	12	MCP	SWS36
2:08:23	11.06	12	MCP	SWS36
2:08:26	11.08	9	RUN	SWS35
2:08:29	11.10	12	MCP	SWS33
2:08:32	11.13	4	RAP	
2:08:35	11.15	6	HGR	SWS32
2:08:38	11.17	7	LGR	SWS30
2:08:41	11.19	18	SPLIT	SWS29
2:08:44	11.21	9	RUN	SWS28
2:08:47	11.23	7	LGR	SWS27
2:08:50	11.26	12	MCP	SWS26
2:08:53	11.28	12	MCP	SWS26
2:08:56	11.30	13	LAP	SWS26
2:08:59	11.33	10	STEP	SWS59
2:09:02	11.35	7	LGR	SWS25

Time	RM	Habitat	Habitat	HM Unit	Distance
2:09:05	11.38	9	RUN	SWS24	
2:09:08	11.40	12	MCP	SWS24	
2:09:11	11.43	6	HGR	SWS22	
2:09:14	11.45	14	TRP	SWS21	
2:09:17	11.48	14	TRP	SWS21	
2:09:20	11.50	14	TRP	SWS20	
2:09:23	11.53	14	TRP	SWS19	
2:09:26	11.55	2	CAS	SWS18	
2:09:29	11.58	9	RUN	SWS17	
2:09:32	11.60	12	MCP	1/SWS16	
2:09:35	11.63	17	OOV	SWS16	
2:09:38	11.65	12	MCP	1/SWS16	
2:09:41	11.68	2	CAS	2/SWS15	
2:09:44	11.70	9	RUN	3/SWS14	
2:09:47	11.73	18	SPLIT	SWS13 (lgr/hgr/bw)	
2:09:50	11.75	9	RUN	5/SWS11	
2:09:53	11.78	13	LAP	6/SWS11	
2:09:56	11.80	7	LGR	7/SWS10	
2:09:59	11.83	6	HGR	8/SWS10	
2:10:02	11.85	12	MCP	9/SWS9	
2:10:05	11.88	9	RUN	12/SWS7	
2:10:08	11.90	12	MCP	13/SWS5	
2:10:11	11.93	2	CAS	14/SWS4	
2:10:14	11.95	12	MCP	16/SWS2	
2:10:17	11.98			POOL BELOW OUR H	
2:10:20	12.00			OUR House DAM	



Middle Yuba River – Habitat Mapping Units using video-mapped data.

North Yuba River above Middle Yuba River Junction
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246


Habitat Mapping Unit 1 – Pocket Water

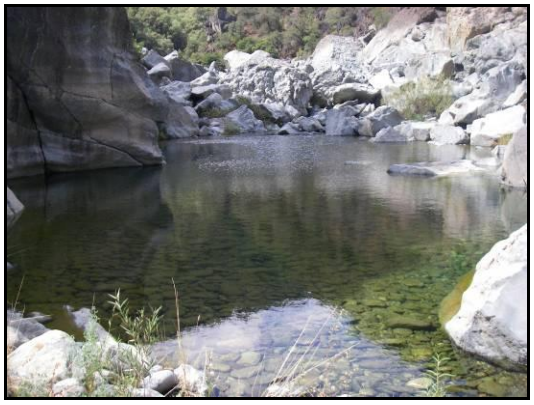

Habitat Mapping Unit 3 – Mid-Channel Pool


Habitat Mapping Unit 4 – Pocket Water


Habitat Mapping Unit 5 – Falls


Habitat Mapping Unit 6 – Mid-Channel Pool


Habitat Mapping Unit 7 – Pocket Water

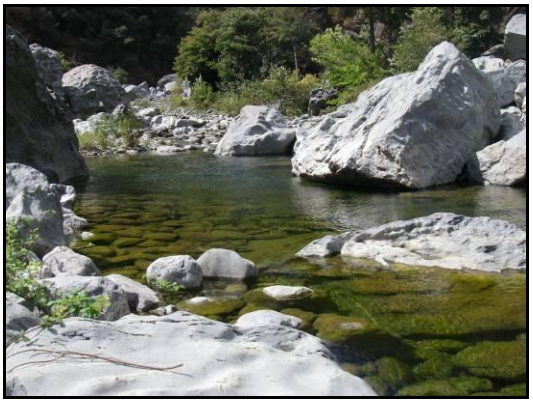

Habitat Mapping Unit 8 –Mid-Channel Pool


Habitat Mapping Unit 9 – Pocket Water


Habitat Mapping Unit 10 – Falls

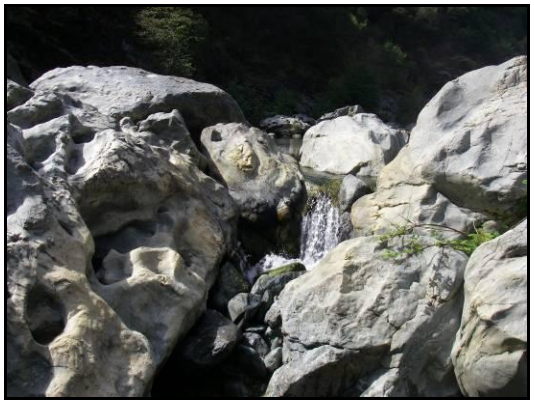

Habitat Mapping Unit 11 – Mid-Channel Pool


Habitat Mapping Unit 12 –High Gradient Riffle


Habitat Mapping Unit 13 – Mid-Channel Pool


Habitat Mapping Unit 14 – Step-Run


Habitat Mapping Unit 15 – Mid-Channel Pool


Habitat Mapping Unit 17 –Falls


Habitat Mapping Unit 18 –Mid-Channel Pool

Habitat Mapping Unit 19 – Pocket Water

Habitat Mapping Unit 20 – Mid-Channel Pool

North Yuba River below New Bullard's Bar Dam
Habitat Mapping Photographs

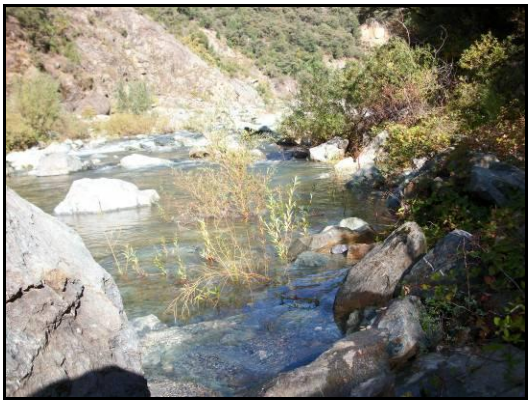
Yuba River Development Project
FERC No. 2246


Habitat Mapping Unit 1 – Pocket Water


Habitat Mapping Unit 2 – High Gradient Riffle

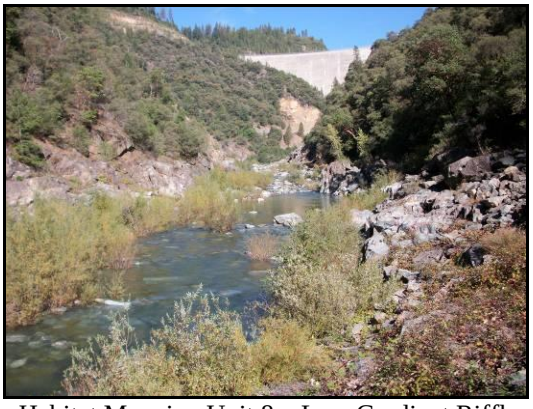

Habitat Mapping Unit 3 – Mid-Channel Pool


Habitat Mapping Unit 4 – Rapids


Habitat Mapping Unit 5 – Step-Run

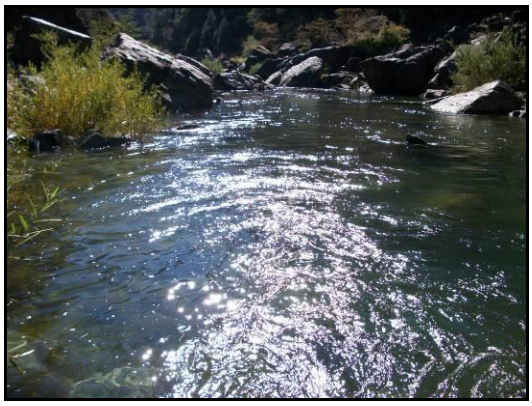

Habitat Mapping Unit 6 – High Gradient Riffle


Habitat Mapping Unit 7 – Mid-Channel Pool


Habitat Mapping Unit 8 – Low Gradient Riffle

Habitat Mapping Unit 9 – Step-Runs

Habitat Mapping Unit 10 – Cascade



Habitat Mapping Unit 11 –Mid-Channel Pool

Habitat Mapping Unit 12 – Mid-Channel Pool

Habitat Mapping Unit 13 – Rapid

North Yuba River
Habitat Mapping Raw Data

Yuba River Development Project
FERC No. 2246

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: N. Yuba above Middle Yuba Junction

Page 1 of 4

Team: Kathi Peacock & Gaea Bailey

Date 9/14/09

UTM: 0660393, 4359384 ±87 ft NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	1	2	3	4	5
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool	LGR, POW	LGR	MCP	POW	FALL
Length (ft)	132	36	108	72	7
Est. Avg. Width (ft)	89, 54	82	55, 82, 31	35, 47	50
Est. Avg. Pool Depth (ft)	—	—	3, 2, 1, 0	—	—
Max. Pool Depth (ft)	—	—	6	—	—
Pooltail Embedded %	—	—	0	—	—
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
	BLD	BLD	COB	BLD	BLD
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
	GRV	COB	BLD	COB	COB
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
	BLD	BLD	BED	BLD	BLD
Length of LB and RB Exposed Banks (feet)	n/a	n/a	n/a	n/a	n/a
Confinement [4]	2	1	2	2	1
Unit Flagged/ Labeled? (Y/N)	no — need to tie to bottom	no	no	no	yes — top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos DTA1	1381 = Base, 1382 LDS see below	0 — under huge boulder	1385	1386	1387
Large Woody Debris [5] within bankful width #					
Large Woody Debris [5] within bankful width Diameter class					
Large Woody Debris [5] within bankful width Length class					
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	8x6, 5x3, 3x4, 2x5, 2x2, 4x4	4x4, 6x4, 3x3	2x8,	~~2x8, 1x8~~ 2x2, 2x2	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	6x6	6x4	2x8	~~2x8~~ 2x2	N/a
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	In bedrock canyon HUGE medsed boulders provide lots of cover over water	Difficult to see what hab feature, as lg. boulders cover most water surface	Lots gravels, but mostly too deep	Ambiguous due to minor side channel (LBA), very heterogen. flow, deposition and low flow — NOT MODELABLE	6 ft. perm barrier 0660301, 4359431

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#1: 1382 - base waterpool where Middle Yuba meets N. Yuba LDS from hab #1
1383 - same photo w/gaea (for scale) 1384 - ART!

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. Yuba above Middle Yuba junction

Data Sheet # 1

Page 2 of 4

Team: KP, GB

Date 9/14/09

UTM: 0660294, 4359449 NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	6	7	8	9	10
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	132	190	108	143	30
Est. Avg. Width (ft)	62, 60, 73	40, 37, 39	49, 61, 55	37, 45, 32	75
Est. Avg. Pool Depth (ft)	1.6, 3, 4, 1.5, 0	—	6, 3, 4, 2.5, 0	—	—
Max. Pool Depth (ft)	6	—	6	—	—
Pooltail Embedded %	8	—	8	—	—
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	2	1	2	1	1
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	yes-top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos DSA1	1388	1389	1390	1391	1392
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	—	—
Fish Migration Barrier [6] (y/n)?	no	no	no	no	yes
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	3x2, 1x1, 1x1	1x1, 2x1	1x3, 12x6	2x2, 2x4, 2x3 out in water, 3x3	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	3x2	2x1	12x6	3x3	0 N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Punctuated by short steps	Punctuated by short steps	Pocket water at tail, head is pocket water		Split channel left perm barrier 0660113 4359512

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 2

Stream/Reach/Subreach: N. Yuba above junction w/ Middle Yuba

Page 3 of 4

Team: Kathi Peacock, Gaea Bailey

Date 9/14/09

UTM: 0660113, 4359512 NAD 83 (Habitat unit No 11, base

PM _____ Map Gradient: _____

Habitat Unit #	11	12	13	14	15
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	~~86~~ 106	~~27~~ 27	80	109	91
Est. Avg. Width (ft)	38, 52	30,	40, 40, 42	37, 43, 38,	41, 35, 34
Est. Avg. Pool Depth (ft)	4.5, 2.5, 2, 0	—	— 5.5, 3, 2, 0	—	4.75, 2, 1.75, 0
Max. Pool Depth (ft)	4.5	—	— 5.5	—	4.75
Pooltail Embedded %	0	—	—	—	0
Significant Cover? [2]	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	1	1	1	1	2
Unit Flagged/ Labeled? (Y/N)	yes - base	no	no	no	yes, top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	1393	1394	1395	1396	1397
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	—	—	—	—	—
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	~~0~~ 2x1	0	0	~~0~~ ~~0~~ ~~0~~
Maximum Spawning Gravel Patch Size (sq-ft) Est.	0 N/A	~~N/A~~ 2x1	n/a	n/a	~~0~~
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	subsurface flow side chan LBA	81, grad non-modelable Thru short step @ base may get tr.	Riffle-like @ [illegible] Step-Run	Step-run, riffle-like @ base 4% gradient	dead fish @ 7' photos = 1398

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. Yuba above Middle Yuba junction

Data Sheet # 2

Page 4 of 4

Team: KP, GB

Date 9/14/09

UTM: 0660340/4359537 NAD 83 (Habitat unit No 16) base

PM _____ Map Gradient: _____

Habitat Unit #	16	17	18	19	20
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	70	26	233	150	104
Est. Avg. Width (ft)	28, 24, 30	73	72, 70, 84	55, 100	60, 45, 53
Est. Avg. Pool Depth (ft)	3, 25, 2.5, 1.75, 0, 1.5	—	4	—	5, 3.5, 1.75, 0
Max. Pool Depth (ft)	3.25	—	6	—	5
Pooltail Embedded %	0	—	0	—	0
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate Harder 5.7 BLD	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0 0	0	0	0
Confinement [4]	1	1	2	1	2
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	Y @ top
Tributary Inflow in cfs	no	no	no	no	no lge bldr rock
Landmarks or photos DTA1	1399	1400	1401	1403 LDS	1404, 1405
Large Woody Debris [5] **within bankful width**	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class 1 / 24 / 50	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	1	0
Fish Migration Barrier [6] **(y/n)?**	no	yes	no	no	no
Spawnable Gravel Area (sqft) Est. [7] **(1/4" - 2.5")**	2x5 1x1 1x1	0	0	0	6x3
Maximum Spawning Gravel Patch Size (sq-ft) Est.	2x5	N/A	N/a	N/a	6x3
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Riffle crest 1 res. depth meet & size of deep meets req.	SPLIT (@ least 3 channels) 4' perm. barrie w/100 ft of last unit ms at base, 16	laden w/algae		Stop at lge bldr rock 0659920 4359584

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: KP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

#19 & #20 start same pattern as seen #1 - #10 downstream

Post 20 - goes back to Dam ↑

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: North Yuba below New Bullards Bar Dam

Page 1 of 4

Team: P Hardesty G. Bailey

Date 10/17/09

UTM: 0659861/4361878 NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #	1A*	2	3	4	5
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	683	304	500	556	151
Est. Avg. Width (ft)	139	55, 50, 18	79, 232, 201	91, 91, 129, 104, 73	~~233~~, 116, 111
Est. Avg. Pool Depth (ft)	6+	—	6+	—	—
Max. Pool Depth (ft)	6+	—	6+	BED ≥4.25	—
Poolfail Embedded %	TOO DEEP	—	TOO DEEP	—	—
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	2	2	2	2	2
Unit Flagged/ Labeled? (Y/N)	Y @ bottom	N	N	N	Y @ bottom
Tributary Inflow in cfs	—	~~0~~ Falls 353 LUS	NA	NA	NO
Landmarks or photos	LUS. 351, 5, 6	LUS 351 352 LUS	~~351, 352~~ LUS	335 LUS	337 LUS
Large Woody Debris [3] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	Y @ weir	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	—	—	—	—	—
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	—	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	>>deep 20ft Pool below dam ends in a weir (BH) that makes	→ a waterfall in HGR Gradient = 5% Hop is run like	Prob ≥15 ft deep.	~~2.5%~~ 3%	2 steps with 2 different water levels

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow; Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit: (e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: JB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

NO SATELLITES ~~FOR~~
NO UTMS

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Access to water difficult. Took gated road from Marysville Road toward ~~dam~~ bottom of dam & unpaved road to waters edge. Blackberries "thick" and big pool blocks access to ds reach; ~~Needed a boat~~ Used boat to cross pool.

*SEE BACK

This unit followed unit 1A

1B LGR 1% grad 50 wide BLD BED BLD
175 Long

Mapped going ds. due to difficult access and uncertainty about time.

2064

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: N. Yuba below New Bullards Bar Dam

Team: G. Bailey, P. Hardcastle

Data Sheet # 2

Page 3 of #4

Date 10/17/09

UTM: NO SATELITTE NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #	6	7	8	9	10
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	124	241	188	379	22
Est. Avg. Width (ft)	80, 67	80 112 115	108, 118, 96	94, 60, 63, 85	55
Est. Avg. Pool Depth (ft)	—	6+	—	—	—
Max. Pool Depth (ft)	—	6+	—	—	—
Pooltail Embedded %	—	TOO DEEP	—	—	—
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	2	2	2	2	2
Unit Flagged/ Labeled? (Y/N)	Y @ top	N	N	N	Y @ Bottom
Tributary Inflow in cfs	—	—	—	—	—
Landmarks or photos	338 LDS	339 LUS	340 LUS	342 LDS / 343 LUS	344 LUS
Large Woody Debris [5] within bankfull width	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	—	—	—	—	—
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	—	—	2 x 3	—	—
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	2 x 3	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	5% grad.		1% grad.	POOLS ARE 6+ deep throughout step run	44ft drop overall.

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: GB

[4] Channel Confinement: 1=Confined Shallow, 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

END PAGE
UTM: 0660041
4360972

PHOTO # 341 LUS @ DAM VIEW

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 2
Page 4 7b of 4 7b
Stream/Reach/Subreach: N. Yuba below New Bullards Bar Dam
Team: G Bailey, P Hardesty
Date 10/7/09
UTM: 0660041/4360972 NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #	11	12	13	18	
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	264	212	223		
Est. Avg. Width (ft)	66, 88 67	71, 74	57, 71, 68		
Est. Avg. Pool Depth (ft)	6+	6+	—		
Max. Pool Depth (ft)	6+	6+	—		
Pooltail Embedded %	TOO DEEP	TOO DEEP	—		
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Subdominant Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Dominant Bank Substrate	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)					
Confinement [4]	2	2	2		
Unit Flagged/ Labeled? (Y/N)	Y @ TOP	N	NO FLAG *		
Tributary Inflow in cfs	—	—	—		
Landmarks or photos	346 LDS	347 LDS	348 LLBA		
Large Woody Debris [3] within bankfull width	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class	# Diameter class Length class
No. of LWD Pieces within wetted width					
Fish Migration Barrier [6] (y/n)?	—	—	—		
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	20 x 5	20 x 5	—		
Maximum Spawning Gravel Patch Size (sq-ft) Est.	20 x 5	20 x 5	—		
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Prob > 10 ft deep Mid pool control divides into 2 pools	Prob > 10 ft deep	2.5 grad stepped but, with standing waves Garter snake		

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

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(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: GB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

PHOTO 349 is of drop-off, Δ in boulders & probably pocket water Impassable - dup w/ shoer diffs END UTMS.

* Bedrock & boulders; nothing to flag.

0659961
4360489

POW looks same as on N Yuba at junction w Middle Yuba

North Yuba River
Habitat Mapping Data

Yuba River Development Project
FERC No. 2246

NorthYuba River – Ground-based and Video-based Habitat Mapping Data

Stream: North Yuba **Date:** 9/14 & 9 **Parent Material:** Mesozoic rocks of the Smartville Complex
Reach: > MY jntn and < Bullards Bar **Map Gradient (%):** Percent

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
9/14/2009	NY above MY jnction		1	POW	132	132	0.20	71.5					BLDR	BLD	GRV	BLD			2	N	nowhere to tie	N	DTA1 1381 base, 1382 LDS			N	105	48	660393	4359384		In bedrock canyon HUGE medsed boulders provide lots of cover over water, photo descriptions: DTA1 1382 - backwater pool where Middle Yuba meets N. Yuba LDS from hab 1, DTA1 1383 - same photos with Gaea (for scale), DTA1 1384 - ART!
9/14/2009	NY above MY jnction		2	LGR	36	168	0.23	22					BLDR	BLD	COB	BLD			1	N		N				N	49	24				Difficult to see what hab feature, as large boulders cover most water surface.
9/14/2009	NY above MY jnction		3	MCP	108	276	0.25	56		2.4	6	0	BLDR	COB	BLD	BED			2	N		N	DTA1 1385			N	16	16				lots of gravels but mostly too deep
9/14/2009	NY above MY jnction		4	POW	72	348	0.27	41					BLDR	BLD	COB	BLD			2	N		N	DTA1 1386			N	8	4				Ambiguous due to minor side channel (LBA), very heterogenous, flow deposition and low flow - NOT MODELABLE
9/14/2009	NY above MY jnction		5	FALL	7	355	0.27	50					BLDR	BLD	COB	BLD			1	Y	top	N	DTA1 1387			y			660301	4359431		6' permanent barrier UTM: 0660301/ 4359431
9/14/2009	NY above MY jnction		6	MCP	132	487	0.29	65		2.9	6	0	BLDR	BLD	COB	BED			2	Y	base	N	DTA1 1388			N	8	6	660294	4359449		
9/14/2009	NY above MY jnction		7	POW	190	677	0.33	38.67					BLDR	BLD	COB	BED			1	N		N	DTA1 1389			N	3	2				punctuated by short steps
9/14/2009	NY above MY jnction		8	MCP	108	785	0.35	55		3.1	6	0	BLDR	BLD	COB	BED			2	N		N	DTA1 1390			N	75	72				pocket water at tail, head is pocket water
9/14/2009	NY above MY jnction		9	POW	143	928	0.38	38					BLDR	BLD	COB	BED			1	N		N	DTA1 1391			N	27	9				
9/14/2009	NY above MY jnction		10	FALL	30	958	0.38	75					BLDR	BLD	BLD	BED			1	Y	top	N	DTA1 1392			Y			660113	4359512		split channel, 6' permanent barrier (Barrier UTM: 0660113/ 4359512), bank substrate half boulder half bedrock.
9/14/2009	NY above MY jnction		11	MCP	68	1026	0.39	45		2.25	4.5	0	BLDR	BLD	COB	BLD			1	Y	base	N	DTA1 1393			N			660113	4359512		subsurface flow side channel LBA
9/14/2009	NY above MY jnction		12	HGR	27	1053	0.40	30					BLDR	BLD	BLD	BLD			1	N		N	DTA1 1394			N	2	2				8% gradient, non-modelable, though short step at base may get transect.
9/14/2009	NY above MY jnction		13	MCP	80	1133	0.41	40.67		2.6	5.5	0	BLDR	BLD	COB	BLD			1	N		N	DTA1 1395			N						
9/14/2009	NY above MY jnction		14	STEP	109	1242	0.44	39.33					BLDR	BLD	COB	BLD			1	N		N	DTA1 1396			N						step-run, riffle-like @ base, 4% gradient
9/14/2009	NY above MY jnction		15	MCP	91	1333	0.45	36.67		2.1	4.75	0	BLDR	BLD	COB	BLD			2	Y	top	N	DTA1 1397			N						dead fish about 7", photo: DTA1 1398
9/14/2009	NY above MY jnction		16	MCP	70	1403	0.47	27.33		1.8	3.25	0	BLDR	BLD	GRV	BLD			1	Y	base	N	DTA1 1399			N	12	10	660040	4359537		riffle crest and residual depth meet, size of pool meets minimum required for pool
9/14/2009	NY above MY jnction		17	FALL	26	1429	0.47	73					BLDR	BLD	BLD	BLD			1	N		N	DTA1 1400			Y						SPLIT into at least 3 channels, 4' permanent barrier within 100' of last UTM at base of unit 16.
9/14/2009	NY above MY jnction		18	MCP	233	1662	0.51	75.33		4	6	0	BLDR	BLD	COB	BLD			2	N		N	DTA1 1401			N						laden with algae
9/14/2009	NY above MY jnction		19	POW	150	1812	0.54	57.5					BLDR	BLD	COB	BLD			1	N		N	DTA1 1403	1	1	N						
9/14/2009	NY above MY jnction		20	MCP	104	1916	0.56	59.33		2.6	5		BLDR	BLD	COB	BLD			2	Y	top	N	DTA1 1404, 1405			N			659920	4359584		END, #19 & #20 start same pattern as seen #1 - #10, post 20 - goes back to POW + as seen #1-#10 downstream.
0:39:25	video mapping			POW			0.58																								
0:39:28	video mapping			POW			0.60																								
0:39:31	video mapping			MCP			0.62																								
0:39:34	video mapping			MCP			0.64																								
0:39:37	video mapping			MCP			0.66																								
0:39:40	video mapping			POW			0.68																								
0:39:43	video mapping			MCP			0.70																								
0:39:46	video mapping			POW			0.72																								
0:39:49	video mapping			POW			0.74																								
0:39:52	video mapping			POW			0.76																								
0:39:55	video mapping			POW			0.78																								
0:39:58	video mapping			MCP			0.80																								
0:40:01	video mapping			HGR			0.82																								
0:40:04	video mapping			POW			0.84																								
0:40:07	video mapping			MCP			0.86																								
0:40:10	video mapping			MCP			0.87																								
0:40:13	video mapping			TRP			0.89																								
0:40:16	video mapping			POW			0.91																								
0:40:19	video mapping			POW			0.93																								
0:40:22	video mapping			MCP			0.95																								
0:40:25	video mapping			MCP			0.97																								
0:40:28	video mapping			MCP			0.99																								
0:40:31	video mapping			LGR			1.01																								
0:40:34	video mapping			LGR			1.03																								
0:40:37	video mapping			MCP			1.05																								
0:40:40	video mapping			RUN			1.07																								
0:40:43	video mapping			POW			1.09																								
0:40:46	video mapping			LGR			1.11																								
0:40:49	video mapping			LGR			1.13																								
0:40:52	video mapping			POW			1.15																								
0:40:55	video mapping			MCP			1.17																								
0:40:58	video mapping			HGR			1.19																								
0:41:13	video mapping			POW			1.21																								
0:41:25	video mapping			MCP			1.23																								
0:41:28	video mapping			MCP			1.24																								
0:41:31	video mapping			MCP			1.26																								
0:41:34	video mapping			MCP			1.28																								
0:41:37	video mapping			POW			1.30																								
10/17/2009	NY below Bullards Bar		13	RAP	222	222	1.30	65.33					BLDR	BLD	BED	BLD			2	n	nothing to flag		GB 348			n			659961	4360489		2.5 gradient, stepped but with standing waves, garter snake.
10/17/2009	NY below Bullards Bar		12	MCP	212	434	1.34	72.5		6	10		BLDR	BLD	BED	BLD			2	n			GB 347 LDS			n	100	100				probably greater than 10' deep.
10/17/2009	NY below Bullards Bar		11	MCP	264	698	1.39	73.67		6	10		BLDR	BLD	BED	BLD			2	y	at top		GB 346 LDS			n	100	100	660041	4360972		probably greater than 10' deep. Mid pool control divides into 2 pools.
10/17/2009	NY below Bullards Bar		10	CAS	22	720	1.39	55					BLDR	BLD	BED	BLD			2	y	at base		GB 344			n			660041	4360972		~4' deep overall
10/17/2009	NY below Bullards Bar		9	STEP	379	1099	1.47	75.5					BLDR	BLD	BED	BLD			2	n			GB 342 LDS, 343			n						pools are 6' deep throughout step run (step - pools)
10/17/2009	NY below Bullards Bar		8	LGR	188	1287	1.50	107.33					BLDR	BLD	BED	BLD			2	n			GB 340			n	6	6				1% gradient
10/17/2009	NY below Bullards Bar		7	MCP	241	1528	1.55	102.33		6	10		BLDR	BLD	BED	BLD			2	n			GB 339			n						
10/17/2009	NY below Bullards Bar		6	HGR	124	1652	1.57	73.5					BLDR	BLD	BED	BLD			2	y	at top		GB 338			n			no satellite	no satellite		5% gradient
10/17/2009	NY below Bullards Bar		5	STEP	151	1803	1.60	113.5					BLDR	BLD	BED	BLD			2	y			GB 337			n						2 steps with 2 different water levels
10/17/2009	NY below Bullards Bar		4	RAP	556	2359	1.70	97.6	4.25				BLDR	BLD	BED	BLD			2	n			GB 335			n						3% gradient
10/17/2009	NY below Bullards Bar		3	MCP	500	2859	1.80	170.67		6	15		BLDR	BED	BLD	BLD			2	n			GB 334			n						probably greater than 15' deep
10/17/2009	NY below Bullards Bar		2	HGR	304	3163	1.86	95					BLDR	BLD	BED	BLD			2	n			GB 351, 352 LUS, 353 falls			n						Gradient 5%, top is run-like.
10/17/2009	NY below Bullards Bar		1B	LGR	175	3338	1.89	50					BLDR	BLD	BED	BLD																1% gradient
10/17/2009	NY below Bullards Bar		1A	MCP	683	4021	2.02	139		6	10		BLDR	BED	BLD	BED			2	y	at base		GB 354, 355, 356			y			659861	4361878		>> deep 20' pool below dam ends in a weir (8') that makes a waterfall in HGR.

Stream: North Yuba
Reach: > MY jntn and < Bullards Bar

Table 1a. Summary Statistics - Mapped Units

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall	63	1.1%	3	8.8%	66.0			
Cascade	22	0.4%	1	2.9%	55.0			
Chute								
Rapid	778	13.1%	2	5.9%	81.5			
High Gradient Riffle	455	7.7%	3	8.8%	66.2			
Low Gradient Riffle	399	6.7%	3	8.8%	59.8			
Glide								
Run								
Step Run	639	10.8%	3	8.8%	76.1			
Pocket Water	687	11.6%	5	14.7%	49.3			
Sheet								
Convergance Pool								
Mid-Channel Pool	2894	48.7%	14	41.2%	72.7	3.8	7.3	
Lateral Scour Pool								
Trench Pool								
Plunge Pool								
TOTAL	**5937**	**100.0%**	**34**	**100.0%**	**70.0**	**3.8**	**7.3**	**#DIV/0!**
QC			**0**		**Weighted Average By Length (ft)**			

Table 2. Stream Cover

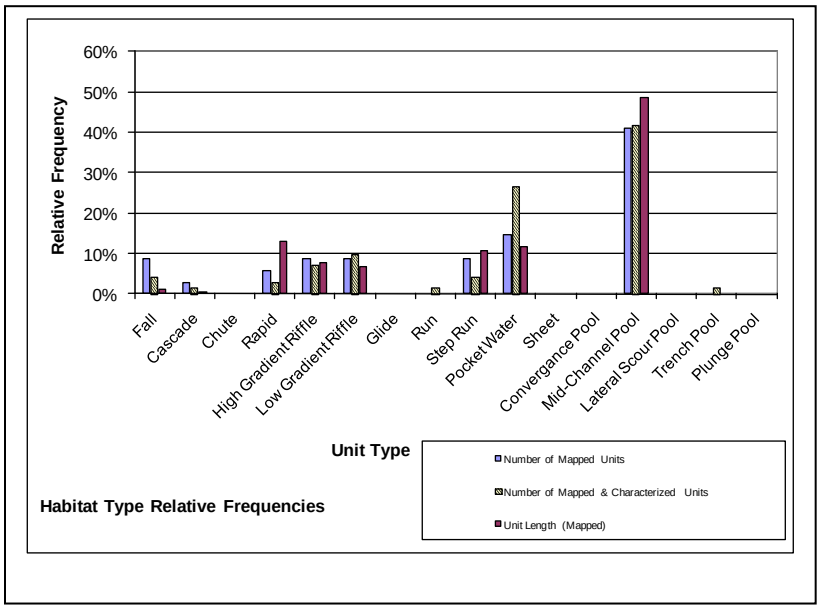
Dominant Cover Type	Number	Relative Frequency
Insignificant	0	
Boulder	34	100%
Vegetation	0	
Wood	0	
SUM	34	100%
QC	**OK**	

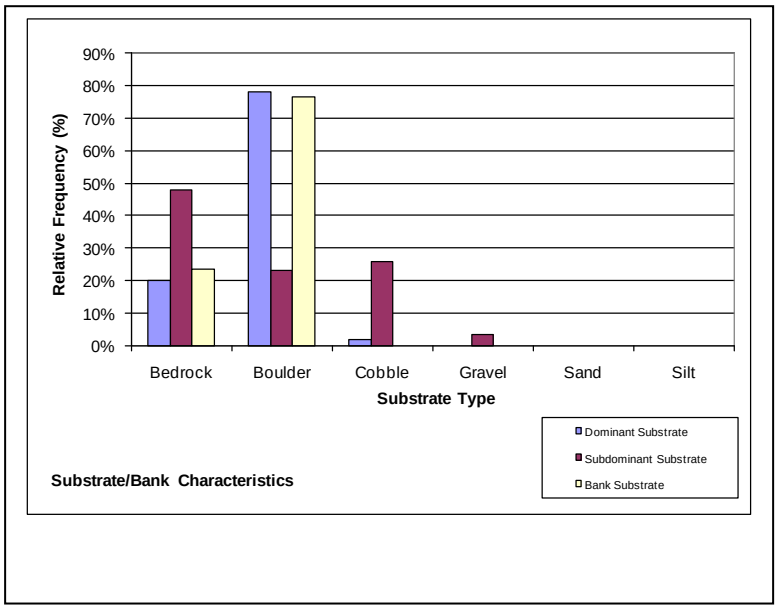
Table 3. Reach Summary

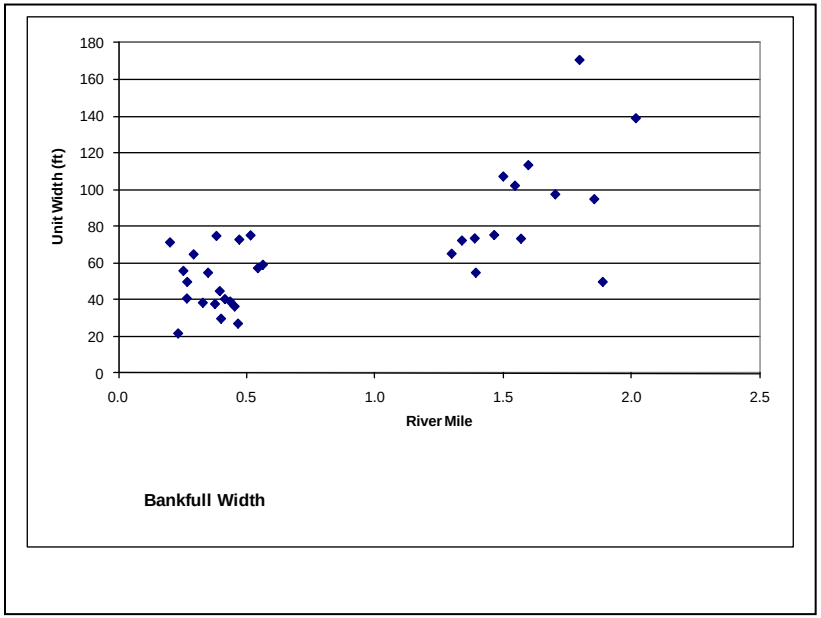
Total Reach Length:	**2.13** mi.	
Total Mapped Length:	1.12 mi.	52.8% mapped
Average Bankfull Width:	70.0 ft.	0.00 mi. charac
Bankfull Depth:	**3.5** ft.	52.79% Total m & c
Width:Depth:	20	
Flood Prone Width:	**0** ft.	
Entrenchment Ratio:	0.0	
Total Spawnable Gravel:	511 ft^2 - trout	
Avg Largest Patch Size:	31 ft^2 - trout	
LWD Density:	1 / mile (bankful)	
Wetted LWD Density:	1 / mile (wetted width)	
Parent Material:	Mesozoic rocks of the Smartville Complex	
Bank Erosion % of Reach:	0.0%	
Tot No. Passage Barriers:	4	

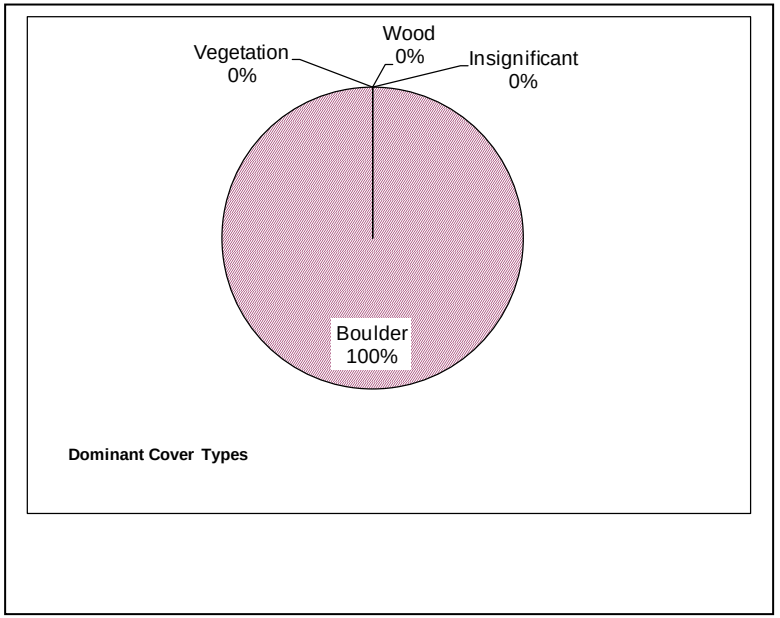
	Dominant Substrate		Subdominant Substrate		Bank Substrate		Bank Substrate Erosion	
	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency
Bedrock	1183	19.9%	2838	47.8%	1394	23.5%	0	
Boulder	4646	78.3%	1374	23.1%	4543	76.5%	0	
Cobble	108	1.8%	1523	25.7%	0		0	
Gravel	0		202	3.4%	0		0	
Sand	0		0		0		0	
Silt	0		0		0		0	
SUM	**5937**	**100.0%**	**5937**	**100.0%**	**5937**	**100.0%**	**0**	**0.0%**

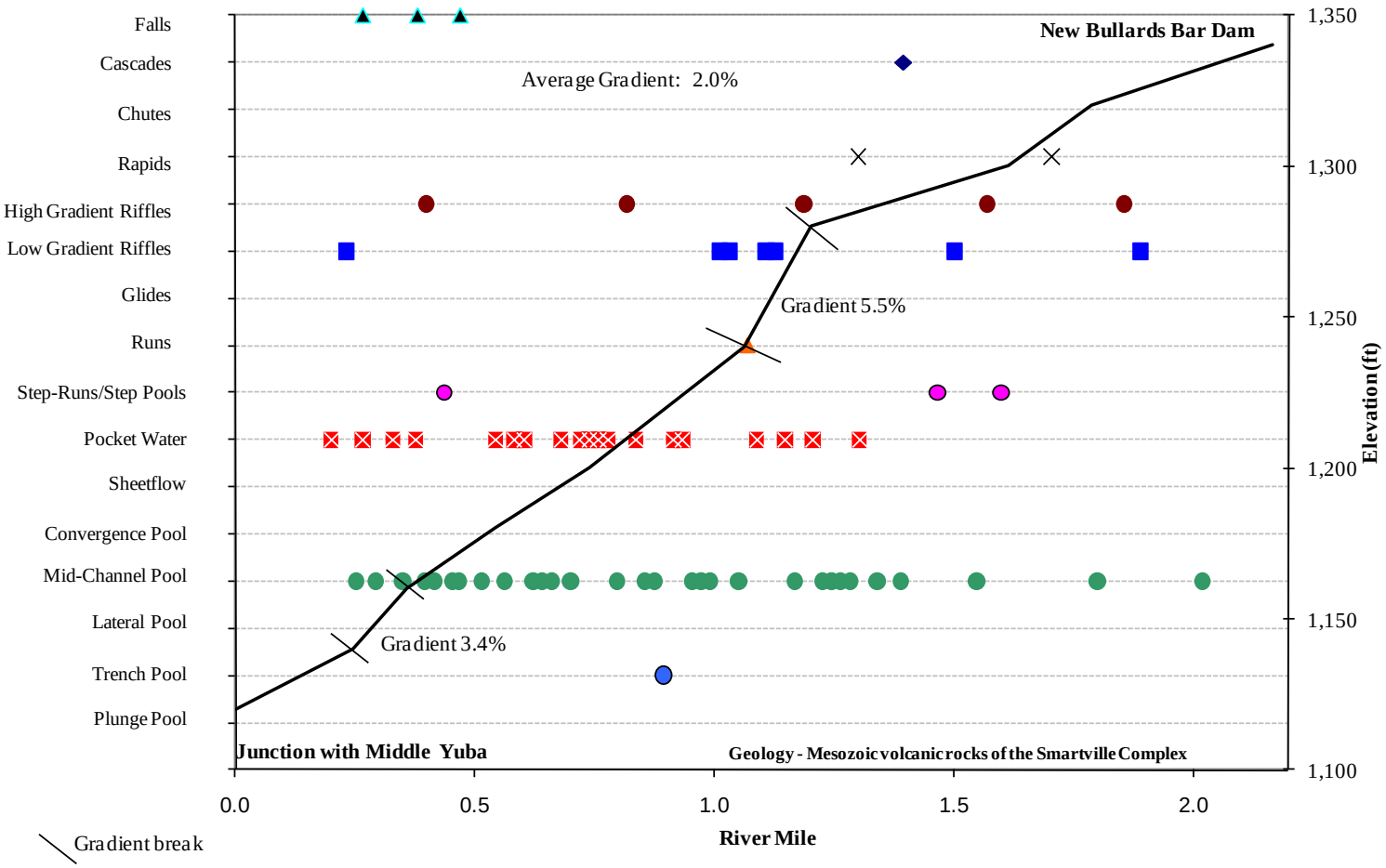
Table 4. Reach Summary - Substrate and Bank Characteristics


Relative Frequency
60%
50%
40%
30%
20%
10%
0%
Fall
Cascade
Chute
Rapid
High Gradient Riffle
Low Gradient Riffle
Glide
Run
Step Run
Pocket Water
Sheet
Convergance Pool
Mid-Channel Pool
Lateral Scour Pool
Trench Pool
Plunge Pool
Unit Type
Number of Mapped Units
Number of Mapped & Characterized Units
Unit Length (Mapped)
Habitat Type Relative Frequencies


Relative Frequency (%)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Bedrock
Boulder
Cobble
Gravel
Sand
Silt
Substrate Type
Dominant Substrate
Subdominant Substrate
Bank Substrate
Substrate/Bank Characteristics


Unit Width (ft)
180
160
140
120
100
80
60
40
20
0
0.0
0.5
1.0
1.5
2.0
2.5
River Mile
Bankfull Width


Wood
0%
Vegetation
0%
Insignificant
0%
Boulder
100%
Dominant Cover Types



North Yuba River – Habitat Mapping Units using ground-based and video-mapped data and longitudinal profile.

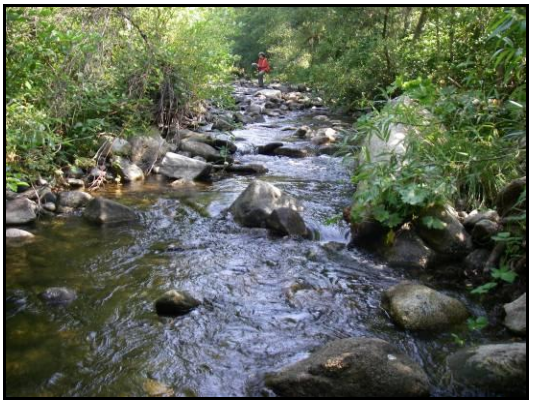
Oregon Creek
Habitat Mapping Photographs

Yuba River Development Project
FERC No. 2246

Habitat Mapping Unit 1 – High Gradient Riffle

Habitat Mapping Unit 2 – Step-Run

Habitat Mapping Unit 3 –Mid-Channel Pool



Habitat Mapping Unit 4 – Step-Run

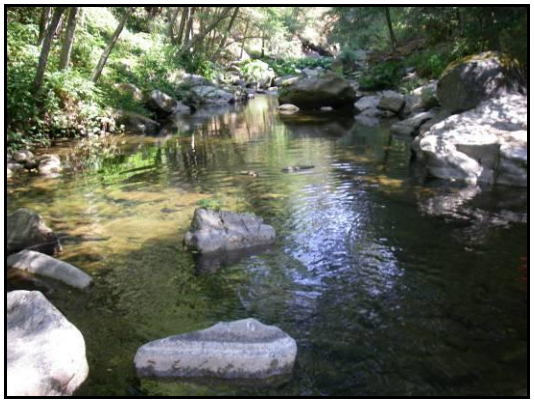
Habitat Mapping Unit 5 – Low Gradient Riffle

Habitat Mapping Unit 6 – Pocket Water

Habitat Mapping Unit 7 – Mid-Channel Pool

Habitat Mapping Unit 8 – Pocket Water

Habitat Mapping Unit 9 – Pocket Water



Habitat Mapping Unit 10 –Mid-Channel Pool

Habitat Mapping Unit 11 – Mid-Channel Pool

Habitat Mapping Unit 12 – Pocket Water

Habitat Mapping Unit 13 – Mid-Channel Pool

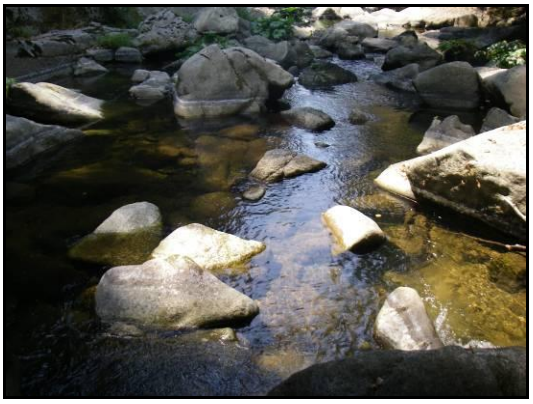
Habitat Mapping Unit 14 – Cascade

Habitat Mapping Unit 15 – Mid-Channel Pool

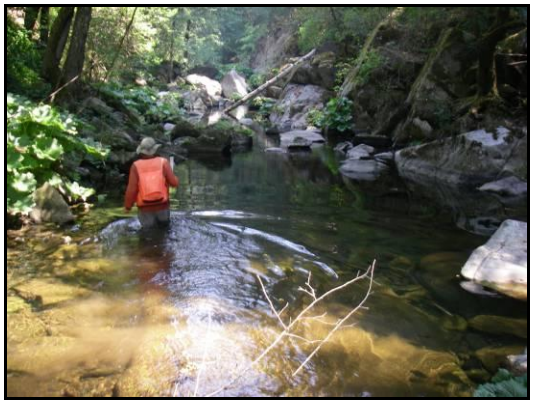
Habitat Mapping Unit 16 – High Gradient Riffle

Habitat Mapping Unit 17 – Mid-Channel Pool

Habitat Mapping Unit 18 – Pocket Water



Habitat Mapping Unit 19 – Pocket Water



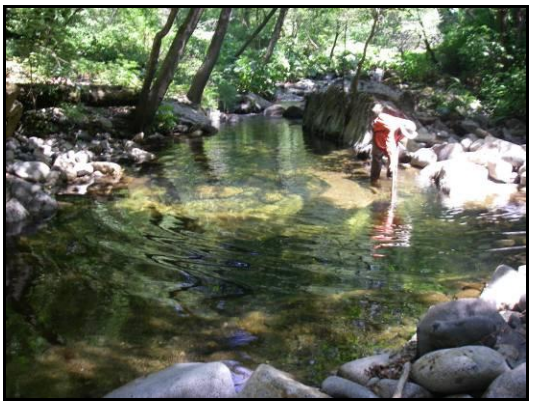
Habitat Mapping Unit 20 – Mid-Channel Pool

Habitat Mapping Unit 21 – Cascade/eroding bank

Habitat Mapping Unit 23 – Low Gradient Riffle

Habitat Mapping Unit 24 - Glide

Habitat Mapping Unit 25 – Low Gradient Riffle



Habitat Mapping Unit 26 – Mid-Channel Pool

Habitat Mapping Unit 36 – Plunge Pool

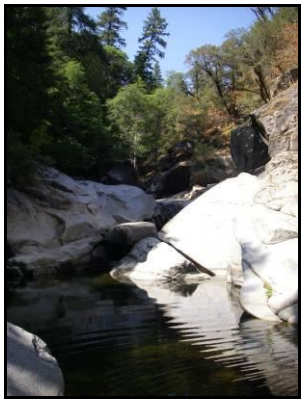
Habitat Mapping Unit 37 – Mid-Channel Pool

Habitat Mapping Unit 38 – Sheetflow

Habitat Mapping Unit 39 – Falls

Habitat Mapping Unit 40 – Pocket Water

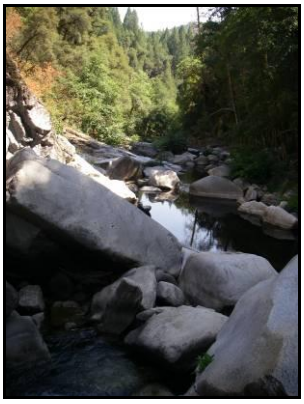
Habitat Mapping Unit 41 – Mid-Channel Pool



Habitat Mapping Unit 42 – Plunge Pool

Habitat Mapping Unit 43 – Falls

Habitat Mapping Unit 44 – Plunge Pool



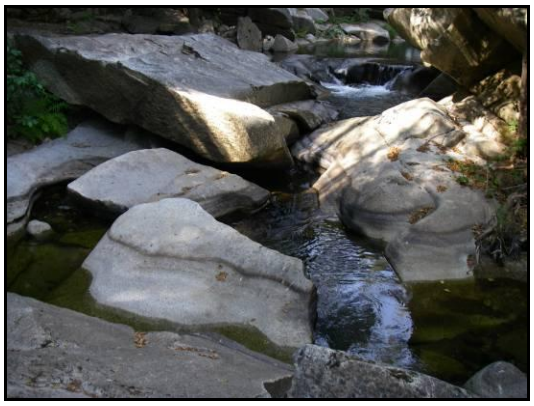
Habitat Mapping Unit 45 – Falls

Habitat Mapping Unit 46 – Plunge Pool

Habitat Mapping Unit 47 – Falls

Habitat Mapping Unit 48 – Mid-Channel Pool

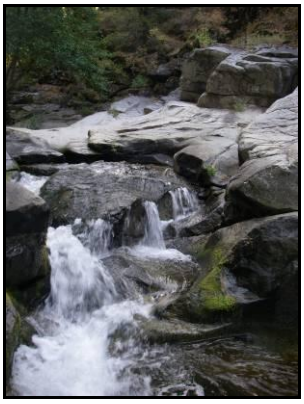
Habitat Mapping Unit 49 – Run



Habitat Mapping Unit 50 – Pocket Water

Habitat Mapping Unit 51 – Plunge Pool

Habitat Mapping Unit 52 – Mid-Channel Pool



Habitat Mapping Unit 77 – Chute

Habitat Mapping Unit 78 – Mid-Channel Pool

Habitat Mapping Unit 79 – Chute

Habitat Mapping Unit 80 – Cascade

Habitat Mapping Unit 81 – Mid-Channel Pool

Habitat Mapping Unit 82 – Chute

Habitat Mapping Unit 83 – Mid-Channel Pool

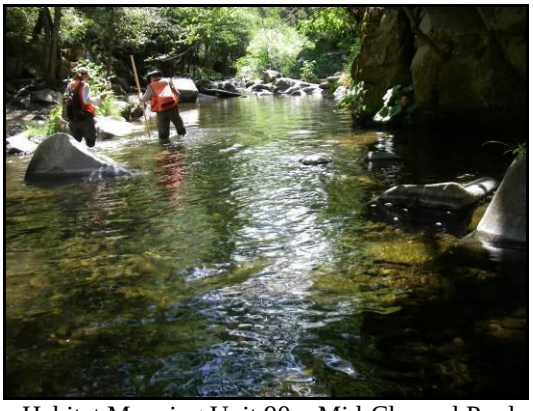
Habitat Mapping Unit 84 – Cascade

Habitat Mapping Unit 85 – Mid-Channel Pool

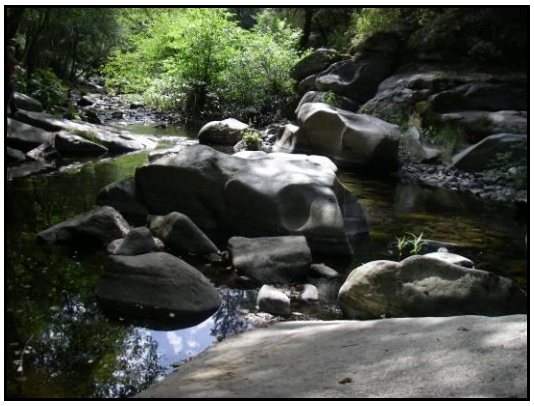
Habitat Mapping Unit 86 – Chute

Habitat Mapping Unit 87 – Mid-Channel Pool

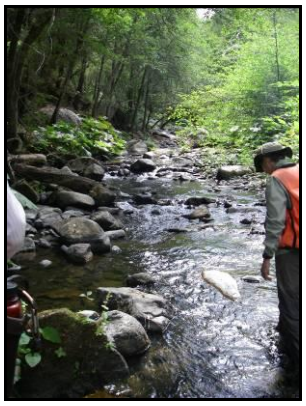
Habitat Mapping Unit 88 – Falls



Habitat Mapping Unit 90 – Mid-Channel Pool



Habitat Mapping Unit 91 – Pocket Water



Habitat Mapping Unit 92 – Step-Run

Habitat Mapping Unit 93 – Mid-Channel Pool

Habitat Mapping Unit 95 – Lateral Pool

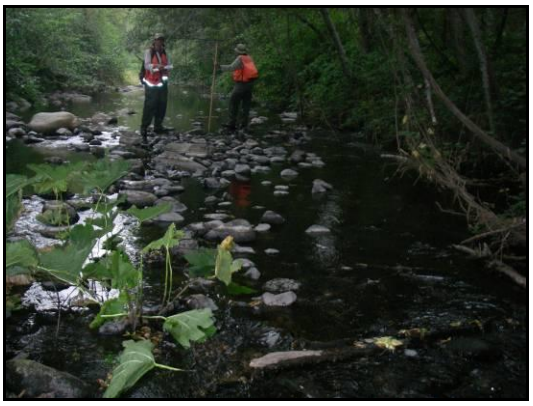
Habitat Mapping Unit 96 – Low Gradient Riffle

Habitat Mapping Unit 97 – Glide

Habitat Mapping Unit 98 – Low Gradient Riffle

Habitat Mapping Unit 99 – Glide

Habitat Mapping Unit 100 – Lateral Pool



Habitat Mapping Unit 101 – Low Gradient Riffle

Habitat Mapping Unit 102 – Glide

Habitat Mapping Unit 103 – :Low Gradient Riffle

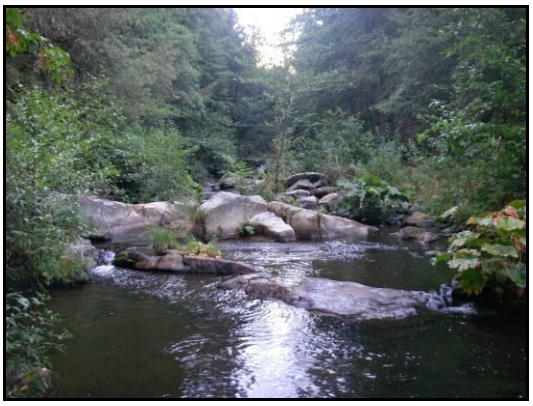
Habitat Mapping Unit 104 – Glide

Habitat Mapping Unit 105 – Pocket Water

Habitat Mapping Unit 106 – Mid-Channel Pool

Habitat Mapping Unit 107 – Pocket Water

Habitat Mapping Unit 134 – Mid-Channel Pool



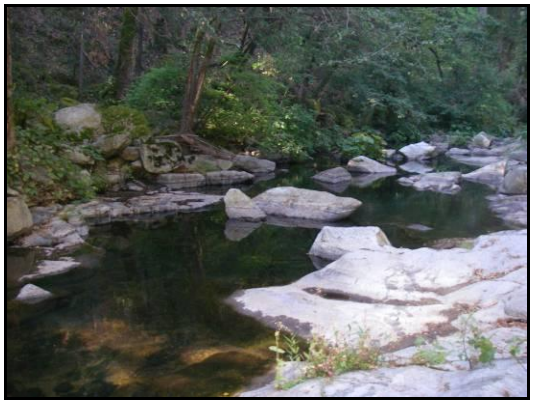
Habitat Mapping Unit 146 – Step-Run

Habitat Mapping Unit 148 – Mid-Channel Pool

Habitat Mapping Unit 149 – Low Gradient Riffle

Habitat Mapping Unit 154 – High Gradient Riffle

Habitat Mapping Unit 155 – Step-Run



Habitat Mapping Unit 159 – Pocket Water

Habitat Mapping Unit 166 – Mid-Channel Pool

Habitat Mapping Unit 167 – Step-Run

Habitat Mapping Unit 169 – Mid-Channel Pool

Habitat Mapping Unit 171 – Mid-Channel Pool

Habitat Mapping Unit 172 – Glide

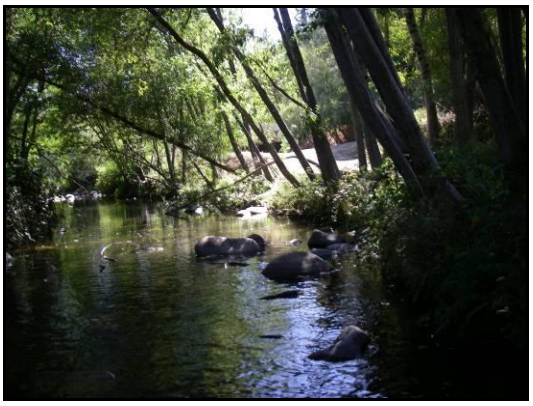
Habitat Mapping Unit 173 – Low Gradient Riffle

Habitat Mapping Unit 174 – Glide

Habitat Mapping Unit 175 – Mid-Channel Pool

Habitat Mapping Unit 176 – Low Gradient Riffle

Habitat Mapping Unit 177 – Mid-Channel Pool



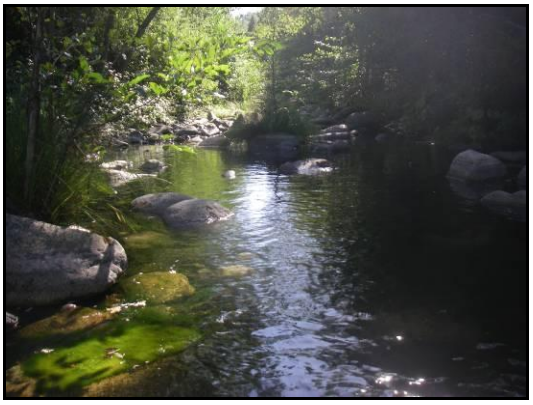
Habitat Mapping Unit 204 – Mid-Channel Pool

Habitat Mapping Unit 207 – Low Gradient Riffle

Habitat Mapping Unit 208 – Run

Habitat Mapping Unit 214 – High Gradient Riffle

Habitat Mapping Unit 217 – Pocket Water



Habitat Mapping Unit 222 – Mid-Channel Pool

Habitat Mapping Unit 223 – Mid-Channel Pool

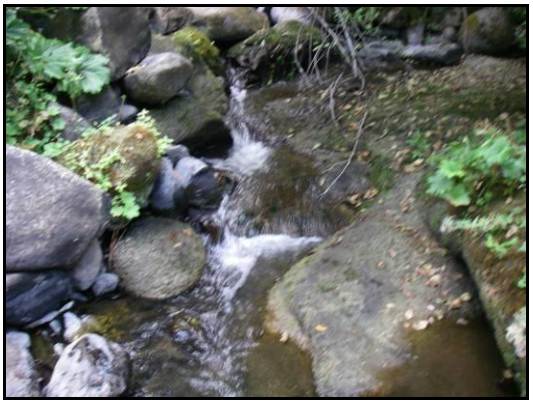
Habitat Mapping Unit 225 – Pocket Water

Habitat Mapping Unit 226 – Low Gradient Riffle

Habitat Mapping Unit 227 – Run

Habitat Mapping Unit 228 – High Gradient Riffle

Habitat Mapping Unit 229 – Mid-Channel Pool



Habitat Mapping Unit 230 – Cascade

Habitat Mapping Unit 231 – Low Gradient Riffle

Habitat Mapping Unit 232 – Mid-Channel Pool

Habitat Mapping Unit 234 – Pocket Water

Habitat Mapping Unit 235 – Step-Run

Habitat Mapping Unit 236 – Low Gradient Riffle

Habitat Mapping Unit 237 – Pocket Water

Habitat Mapping Unit 238 – Low Gradient Riffle

Habitat Mapping Unit 239 – Run

Habitat Mapping Unit 240 – Low Gradient Riffle

Habitat Mapping Unit 241 – Run

Habitat Mapping Unit 242 – Mid-Channel Pool

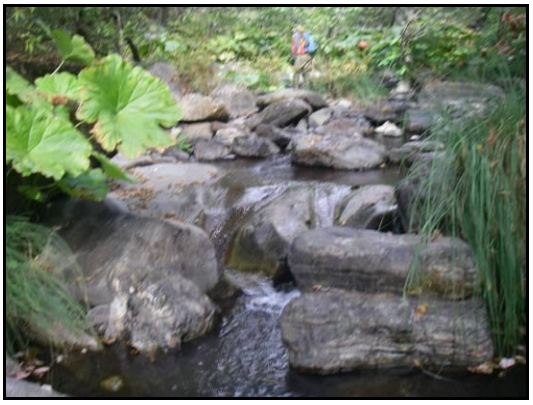
Habitat Mapping Unit 243 – High Gradient Riffle

Habitat Mapping Unit 244 – Low Gradient Riffle

Habitat Mapping Unit 245 – Run

Habitat Mapping Unit 246 – Low Gradient Riffle

Habitat Mapping Unit 250 – Low Gradient Riffle



Habitat Mapping Unit 253 – Low Gradient Riffle

Habitat Mapping Unit 254 – Mid-Channel Pool


Habitat Mapping Unit 260 – Mid-Channel Pool

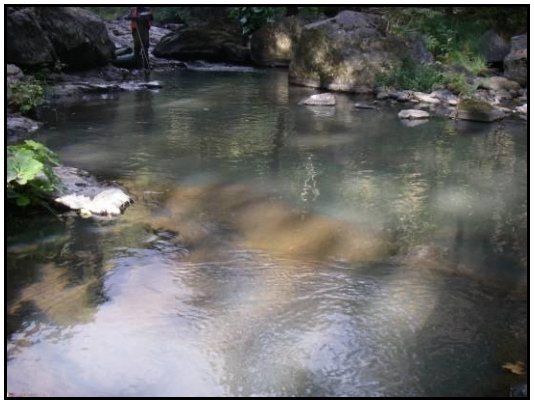

Habitat Mapping Unit 261 – Low Gradient Riffle


Habitat Mapping Unit 263 – Falls


Habitat Mapping Unit 264 – Mid-Channel Pool


Habitat Mapping Unit 266 – Falls


Habitat Mapping Unit 267 – Mid-Channel Pool


Habitat Mapping Unit 268 – Mid-Channel Pool

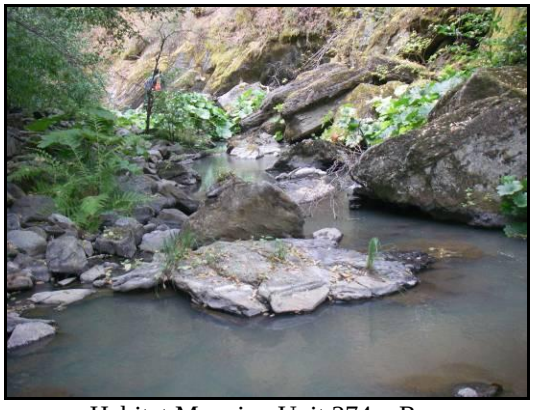

Habitat Mapping Unit 269 – High Gradient Riffle

Habitat Mapping Unit 270 – Pocket Water

Habitat Mapping Unit 271 – Mid-Channel Pool

Habitat Mapping Unit 272 – Mid-Channel Pool

Habitat Mapping Unit 273 – High Grade Riffle



Habitat Mapping Unit 274 – Run

Habitat Mapping Unit 275 – Mid-Channel Pool

Habitat Mapping Unit 276 – Step-Run

Habitat Mapping Unit 277 – Run

Habitat Mapping Unit 278 – Low Gradient Riffle

Habitat Mapping Unit 279 – Mid-Channel Pool

Habitat Mapping Unit 280 – Run

Habitat Mapping Unit 281 – Cascade

Habitat Mapping Unit 282 – Mid-Channel Pool (backwater from weir)

Habitat Mapping Unit 283 – Low Gradient Riffle

Habitat Mapping Unit 284 – Run

Habitat Mapping Unit 285 – Mid-Channel Pool

Habitat Mapping Unit 286 – Low Gradient Riffle

Habitat Mapping Unit 287 – Mid-Channel Pool

Habitat Mapping Unit 288 – Low Gradient Riffle

Habitat Mapping Unit 289 –Plunge Pool at base of Log Cabin Dam

Oregon Creek
Habitat Mapping Raw Data

Yuba River Development Project
FERC No. 2246

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: YCWA - oregon Ck @ my jnctn

Page 1 of 12

Team: KP, JC

Date 8-15-09

UTM: 0665014/4362378 NAD 83 (Habitat unit No 1) (base)

PM granite pluton

Map Gradient: 1-3%

Habitat Unit #	1	2	3*	4	5
Habitat Type [1] (FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP) *note if dammed pool	HGR	STEP	MCP	STEP	LGR
Length (ft)	60'	80	36	80	117
Est. Avg. Width (ft)	27, 36, 27	24, 27, 30	15 19	19, 19, 21	34, 33, 31
Est. Avg. Pool Depth (ft)	—	—	1' BFD = 2'	(1.75)	—
Max. Pool Depth (ft)	—	—	1.75	(1.75)	—
Pooltail Embedded %	—	—	no - cobble	no	—
Significant Cover? [2] (INSIGNIF BLDR / VEG WOOD)	INSIGNIF	BLDR	INSIGNIF, VEG	VEG	BLDR
SUBSTRATE COMPOSITION					
Dominant Substrate (BED BLD COB / GRV SND SLT)	COB	BLD	BLD	BLD	BLD
Subdominant Substrate (BED BLD COB / GRV SND SLT)	BLD	COB	COB	COB	COB
Dominant Bank Substrate (BED BLD COB / GRV SND SLT)	COB	BLD	COB	BLD	BLD
Length of LB and RB Exposed Banks (feet)	5'	20' RRA	—	—	—
Confinement [4]	3	3	3	3	3
Unit Flagged/ Labeled? (Y/N)	N - too public	N	N	N	N - too public
Tributary Inflow in cfs	S.C. end	SC. LBA	N	S.C. begin @ bp	0
Landmarks or photos	DTA1 #LDS to 1177 1178LUS	#1179 LUS	#1180 LUS	#1181 LUS	#1182
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)	—	—	1 / 12 / 10	—	—
No. of LWD Pieces within wetted width	—	—	1	—	—
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	—	no	no	1.5x1	no
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	no		—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	SC. begins 60' u/s from jnctn. Begin @ jnctn. w/ m yuba. 6% HGR - NM - transverse	S.C. LBA lots flat pockets moderate.	temp lasser casing returned to wtr. r.c. = 1.0 max 1.8 pool area = 2m² * barely meets	short (10') sc. pool near base heavy blackberry nm - too many steps transverse.	3.5% - M (0.3°) 2" trout sm. frogs

DTA 2

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JC

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.): Oregon Ck day use area @ jnctn w/ M. Yuba. Highly modified by rds, artificial dams @ base.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # ____

Stream/Reach/Subreach: YCWA - [illegible] [illegible] →

Page 2 of ~~11~~ 12

Team: KP, JL

Date 8/15/09

UTM: 0665074/4362464 NAD 83 (Habitat unit No 6) base

PM pluton

Map Gradient: 1-3%

Habitat Unit #	6	7	8	SPL 9	10
Habitat Type [1] (FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP) *note if dammed pool	POW (circled)	MCP (circled)	POW (circled)	POW (circled)	MCP (circled)
Length (ft)	102	55 + 34	58	180	108
Est. Avg. Width (ft)	49, 47, 49 BFD = 20	41, 39, 38.	39, 40, 41	51, 59, 53, 55	34, 31, 38 BFD = 3'
Est. Avg. Pool Depth (ft)	—	1'	—	—	1.5'
Max. Pool Depth (ft)	—	1.75	—	— (2.5')	3.5'
Pooltail Embedded %	na	50%	—	—	50%
Significant Cover?[2] (INSIGNIF BLDR / VEG WOOD)	BLDR (circled)	BLDR (circled)	BLDR (circled)	BLDR (circled)	BLDR (circled)
SUBSTRATE COMPOSITION					
Dominant Substrate (BED BLD COB / GRV SND SLT)	BLD (circled)	BLD (circled)	BLD (circled)	BLD (circled)	BED (circled)
Subdominant Substrate (BED BLD COB / GRV SND SLT)	COB (circled)	COB (circled)	COB (circled)	GRV (circled)	BLD (circled)
Dominant Bank Substrate (BED BLD COB / GRV SND SLT)	BLD (circled)	BLD (circled)	BLD (circled)	BLD (circled)	BLD (circled)
Length of LB and RB Exposed Banks (feet)	10 LBA	0	0	0	0
Confinement[4]	3	3	1	1	1
Unit Flagged/ Labeled? (Y/N)	N	N	N	N	Y @ top
Tributary Inflow in cfs	no	N	N	0	no
Landmarks or photos	#1183 LUS	#1184 LUS	#1185 LUS	#1189 LUS	#1190 LUS
Large Woody Debris[5] within bankful width (# / Diameter class / Length class)	(crossed out)	1 / 6 / 25	1 / 6 / 25	(crossed out)	(crossed out)
No. of LWD Pieces within wetted width	—	0	1	0	0
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est.[7] (1/4" - 2.5")	5 2x2' 1 3x2	0	no	1x2, 3x2, 7x8, 2x2	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	3x2	—	—	7x8	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	sc. holes around bldrs, flat complex 3d flow trail to car park	r.c. = 1' area > 2 m2 separated @ 55' by mid control short upper pool		SPLIT, 107' STEP/ HGR/ POW; ma series of steps. long flat, separated by short bldr steps → split by bldr pile @ upper end	some sand - ~10% ~5cm deep.

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.
[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JC

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)
[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')
[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT
[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.): SPLIT begins @ covered bridge. Include split in length calcs. → #1186 + 1187 LUS @ midpoint @ covered bridge; 1188 @ KP - covered br.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA - oregon ck, intnc to → Page 3 of ~~8~~ 12

Team: KP, JC Date 8-15-09

UTM: 0665175/4362622 NAD 83 (Habitat unit No 11, bsc) PM pluton Map Gradient: 3-8%

Habitat Unit #	11	12	13	14	15
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP (POW) SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL (CAS) CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP
*note if dammed pool					
Length (ft)	41	66	63	40'	48
Est. Avg. Width (ft)	31 31	30, 27, 38	32, 34, 27 BFD=15	26, 40	36 38
Est. Avg. Pool Depth (ft)	1.25	—	1.75	—	2
Max. Pool Depth (ft)	3	—	3.5	—	4.5
Pooltail Embedded %	no - Blr control	60%	60%	—	50%
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	INSIGNIF (BLDR) WOOD	INSIGNIF (BLDR) WOOD	INSIGNIF (BLDR) WOOD	INSIGNIF (BLDR) WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	(BED) (BLD) COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	2
Unit Flagged/ Labeled? (Y/N)	Y Ø bsc	N	N	N	Y Ø top
Tributary Inflow in cfs	no	no (from top)	no	no	no
Landmarks or photos	#1191 LUS	#1192 #1194 LUS	#1193 LUS	#1195 LUS	#1198 LDS
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)			1 / 24 / 25		
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	2x2	Ø	Ø	3x3	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	2x2	—	—	3x3	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	small mini pool Ø bsc on LBA sand 3x4 ~5cm		lots sand on banks neg. Ø h.f.	9% - CAS because pocket pools	

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JC

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.) Adj. to HWY 49 but up cliff thru. poison oak.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA - oregon ck - jnctn → Page 4 of 12

Team: KP, JC. Date 8-15-09

UTM: 0665223/4362687 NAD 83 (Habitat unit No 16, (base)) PM pluton Map Gradient: 3-8%

Habitat Unit #	16	17	18	19	20
Habitat Type [1]	FALL CAS CHU RAP / (HGR) LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP (POW) SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP (POW) SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP
*note if dammed pool					
Length (ft)	20	26	36	54	154
Est. Avg. Width (ft)	24 26	24 24	20 21 21	29 22 29	28 20 21 15
Est. Avg. Pool Depth (ft)	/	1.5	/	/	1.75
Max. Pool Depth (ft)	/	3.75	/	/	3.5
Pooltail Embedded %	/	50%	/	/	50%
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF VEG (BLDR) WOOD	INSIGNIF (BLDR) VEG WOOD	INSIGNIF (BLDR) VEG WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD COB / (GRV) SND SLT	BED BLD (COB) / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Θ	Θ	Θ	Θ	Θ
Confinement [4]	1	1	1	1	2
Unit Flagged/ Labeled? (Y/N)	Y @ base	N	N	N	Y @ top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	#1196 LWS	#1197 LWS	#1199	#1200 LOS	1201 LWS 1202 LOS @ top
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)					1 / 24 / 50
No. of LWD Pieces within wetted width	Θ	Θ	Θ	Θ	1
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	no	2x2	2x2 w/ sand 1x1	no	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	0	2x2	2x2	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	15% - no pocket wtr.	short but sig. depth		short steps @ base & top	2" fish. 4" brown (?) 2" fish

[1] **FALL** = Falls, **CAS** = Cascade, **CHU** = Chute, **RAP** = Rapid, **GLI** = Glide, **RUN** = Run, **STEP** = Step Run, **HGR** = High Gradient Riffle (>4%), **LGR** = Low Gradient Riffle, **POW** = Pocket Water, **SHT** = Sheetflow;
Pools: **COP** = Convergence, **MCP** = mid-channel pool, **LAP** = Lateral, **TRP** = Trench, **PLP** = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JC

[4] Channel Confinement: **1**=Confined Shallow; **2**=Confined Deep; **3**=Moderate Confined (<2x wetted channel width); **4**=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: **6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+** (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.) Finish mapping - 0665290/4362738; characterize units 21 to 22 (1458')

VCWA - crezmce. jntnc → u/s 8/15-09

p.1 of p.5/12 KP/JC

unit #	HAB	L	W	Max dep	Notes
21	CAS	72'	24	–	12%

OTAZ photo # 1203 LUB ← unit 21 base @ RBA vert. bank

Thin colluvial sandy soil over br. - undermine → failure

2" fish pocket pools

22	MCP	57	24	1.57	

"Federal mining claim oregon #2 ROCKPROPERTIES USA CAMC #" @ top.

23 → see sheet - mining claim has created unusual habitat - see sheet

27	HGR	43	25	–	

S.C. starts - defines U-28

28	HGR	80	can't measure		7% nm.
29	POW	83		35, 58	

Lots indian rhubarb.

30	MCP	40	44	2.5	0.75 v.c.

S.C. ← LBD

31	CAS	49	36	–	8% / 20°

POCKETY ∴ CAS. nm. - too many splits

Flag tied @ top 0605457/4362829

32	POW	29	30	–	
33	MCP	650	28, 35, 38	4.0	

tons of 2" fish; 6 4", 16"

sand on margin ~ 2' deep 30 x 6

lms, deep pool; bldr cover, some sp. gr.

. pocket wtr @ top

YCWA oregon ck incln → p6 of 12 8-15-07 KS/JR

Unit #	HAB	L	W	max D	Notes
34	POW	27	26	—	
35	MCP	28	23	2.5	
~~36~~	CAS	158	24, 20, 22	—	9% NM/33"

frog - adult couldn't identify - cream throat, black spots considered CAS because pockets of depth & flat.

DTAR photo 1207 LOS

—	MCP	33	25	2.75

SPLIT begins @ base of MCP → LGR → MCP → top of split continues to top of U.35. Σ split = 158 + 33 + 180

	LGR	58		
	MCP	122	3'	Fish 2" → 4"

36 - see H.M. Notes. Δ morph to bar. control.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA creek mouth → Page 7 of 12

Team: KP/JL Date _____

UTM: _____ NAD 83 (Habitat unit No_____) PM _____ Map Gradient:_____

Habitat Unit #	23	24	25	26 (MEDIUM ← mouth)
Habitat Type [1]	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR (GLI) RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / (MCP) LAP TRP PLP
*note if dammed pool				
Length (ft)	30	71	63	58
Est. Avg. Width (ft)	29	29 30	30 38	34 31
Est. Avg. Pool Depth (ft)	—	1	—	3'
Max. Pool Depth (ft)	—	2.0 (wood)	—	7'
Pooltail Embedded %	—		—	
Significant Cover? [2]	(INSIGNIF VEG) BLDR WOOD	(INSIGNIF VEG) BLDR WOOD	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION				
Dominant Substrate	BED BLD COB / (GRV) SND SLT	BED BLD COB / (GRV) SND SLT	BED BLD COB / (GRV) SND SLT	BED (BLD) COB / GRV SND SLT
Subdominant Substrate	BED BLD (COB) / GRV SND SLT	BED BLD COB / GRV (SND) SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB / GRV SND SLT	BED BLD COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	—	0	0
Confinement [4]	1	1	1	2
Unit Flagged/ Labeled? (Y/N)	N	N	N	N
Tributary Inflow in cfs	—	—	—	—
Landmarks or photos	#1204 LWS	#1206 LDS ← top.	#1207 LWS	#1208 LWS @ MAX
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)				
No. of LWD Pieces within wetted width	0	0	0	0
Fish Migration Barrier [6] (y/n)?	no	no	n	n
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	4x5 3x3 embedded	— too embedded	too embedded →	
Maximum Spawning Gravel Patch Size (sq-ft) Est.	4x5		—	2 3" fish (nest)
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	mining claim trail to Hwy 49 photo #1205 deleted	small sc. hole gravel/sdr @ base	top formed by dug-out mining debris	max dep ← digging; d/s control excavated material

DTA 2

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRF = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24', 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 3 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

(→ back to channel)

(I/C Initials: _____)

Notes regarding access points (road condition, bridge crossings, trails, etc.) Channel. units 27 to 36

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA oregon Ck mstm → u/s

Page 8 of 12

Team: KP/JL

Date 8-15-09

UTM: 0665476/4362988 NAD 83 (Habitat unit No 36 (base))

PM _____ Map Gradient: _____

Habitat Unit #	36	37	38	39	40
Habitat Type[1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP (PLP)	(FALL) CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW (SHT) COP MCP LAP TRP PLP	(FALL) (CAS) CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP
Length (ft)	61'	65	92	17	43
Est. Avg. Width (ft)	44 32 62	33	17 18 56 30	66	66
Est. Avg. Pool Depth (ft)	4'	2	/	/	
Max. Pool Depth (ft)	10'	3.5	/	/	
Pooltail Embedded %	60%	0 (bc)	/	/	
Significant Cover?[2]	INSIGNIF (VEG) (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV (SND) SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED BLD (COB) GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	0	0	0	0
Confinement[4]	2	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	Y @ base	N	N	N	Y @ top
Tributary Inflow in cfs	n	N	0	0	0
Landmarks or photos	1210 LWS 1211 LWS	#1212 LWS	#1213 LWS	#1214 RBA 1215 LBA	#1216 LWS
Large Woody Debris[5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	0
Fish Migration Barrier[6] (y/n)?	N	N	N- enough pockets	N	N
Spawnable Gravel Area (sqft) Est.[7] (1/4" - 2.5")	0	0	2x2	—	—
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	2x2	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan amphib habitat? Riparian? Landmarks, Photo #s, Etc.	4" trout Sand on margin but not @ mxcdq	Falls @ base not a barrier no sand	—	FALLS HEIGHT (Min) LB = 2' RB = 1.5' PERM	—

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow; Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit: (e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation etc.)

Q/C initials: JC

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD (stony downed wood within bankfull width of channel =or> than 1/2 bankfull width.

Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12', 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA oregon ck inctn → U/S

Page 9 of 12

Team: KP/JC

Date 8-15-09

UTM: 0665452/4363062 NAD 83 (Habitat unit No. 41 (base)) FM _____ Map Gradient: _____

Habitat Unit #	41	42	43	44	45
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP (PLP)	(FALL) CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP (PLP)	(FALL) CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	51	71	13	20	10
Est. Avg. Width (ft)	24 26	38 25 10	15	15	15
Est. Avg. Pool Depth (ft)	3'	4	—	3'	—
Max. Pool Depth (ft)	5'	6' est.	—	4 est.	—
Pooltail Embedded %	30%	n3 - Bldr	—	n4 bldr	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	2	2	1	1	1
Unit Flagged/ Labeled? (Y/N)	Y @ base	N	N	N	Y @ base
Tributary Inflow in cfs	N → 0	N	N	N	N
Landmarks or photos	#1217 LUS	#1218	#1219 LBA → RBA	#1220 @ top of U 45 LDS → U44+45	
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	0
Fish Migration Barrier [6] (y/n)?	N	N	N	N	Y
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	—	—	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		separated from U. 41 by Bldr control Spwnd - deep. i50%	F		0665419/ 4363109 barrier

DA 2

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Rocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit
(e.g., logs in stream, lots of boulders, >25% surface area has bedrock or low overhanging vegetation, etc.)

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is any downed wood within bankfull width of channel and > than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 3 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submerged in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

T.D. to base of T41 = 2947' (0.56mi)

photo # 1221 ← top U. 45 LDS
to U 45, 44, 43, 42, 41

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: YCWA Oregon Ck

Page 10 of 12

Team: KP/JC

Date 8-15-09

UTM: 0665448/4363098 NAD 83 (Habitat unit No 46, base

PM _____ Map Gradient: _____

Habitat Unit #	46	47	48	49	50
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	65	10	25	34	54
Est. Avg. Width (ft)	20, 25	25	31	12, 11	20, 13
Est. Avg. Pool Depth (ft)	2	—	1.5	—	—
Max. Pool Depth (ft)	4.5	—	3	—	—
Pooltail Embedded %	na-br	—	na-br	—	—
Significant Cover? [2]	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD	INSIGNIF VEG, BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	2	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	Y @ base	N	N	N	Y @ top
Tributary Inflow in cfs	—	—	—	—	—
Landmarks or photos	#1222 → 1225	→ LOS	#1226 → LOS	#1227 → LOS	#1228
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)	1 / 24 / 25				
No. of LWD Pieces within wetted width	1	0	0	0	0
Fish Migration Barrier [6] (y/n)?	N	Y	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0 - bkmd + br only	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	0	—	—	—	—
Comments / Observations. Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		10' high - perm.			End - see channel notes @ 0665445 4363120 ± 46'

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JC

[4] Channel Confinement: 1=Confined Shallow, 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Very difficult hiking, no trail access found. channel units 46-50

YCWA - Oregon Ck mouth → U/S   P 11/12

Unit #	HAB	L	W	Max D	Notes
51	PLP	26	11	2.5'	#1229 ← LBA → RBA
52	MCP	51	21 12	5'	#1230 → U/S
3' Falls @ base w/ 1/2 fall / 1/2 sheet					
54	PLP	35	11	4'	
55	CAS	52	18	—	under blders
56	MCP	53	25	5	
57	CAS	40	26, 38	—	14% / 5" under blders
58	MCP	82	40, 27, 33	3.5	run @ top
59	MCP	69	37	4	
Blder/br. control separates 58 + 59					
lots fingerlings; trib enters LBA ~0.01 cfs					
60	POW.	28	25	—	shallower near br.
0665376 / 4363198 (Flag @ base)					
61	CAS	69	25	—	12% / 3.6'
62	MCP	27	28, 34	4'	
63	MCP	18	25	3'	
separated ← 62 by short 2' step					
64	HBR	23	14	—	Br.
65	PLP	32	27	3	
66	FALL	10	15	—	1.5' perm
67	MCP	31	18	3.5	
68	POW	35	29	—	
69	PLP	22	39	3.5	
70	FALL	10	20	—	2' high

no SAT
SC. goes around Mainca. @ GHF

YCWA/ oregon ck jnctn -> u/s p12 8-15-09
KP/KC

Unit #	HAB	L	W	MAX D	NOTES
71	MCP	29	20	3	
72	POW	37	50	—	w/ STEPS
73	POW	34	38	—	no steps

dead dace — photo # 1231
S.C. begins @ this unit -> under gnd to U69

74	PLP	60	40, 38	10' est	
75	CHU/BHT	20	20	—	4' step
76	PLP	111	18, 27	10+	st. gage

photo # 1232 <- base 74 -> 76
heavy rec. use. tree frog
TRAIL FROM GAGE TO RD.
0665525/4363305 (base 76)
photo 1233 <- Base U.76 LUS
T.D. = 4304' = 0.8 mi.

mac spot in rd. for tr. access
flag tied
0665504/4363342

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: YCWA Oregon Creek

Team: K Reynolds, G Bailey, P Herdesty

Data Sheet # 13

Page 1 of 2

Date 9-12-09

UTM: 0665544/4363327 NAD 83 (Habitat unit No 77 (base)

PM _____ Map Gradient: _____

Habitat Unit #	77	78	79	80	81
Habitat Type [1]	FALL CAS (CHU) RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS (CHU) RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL (CAS) CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP
*note if dammed pool					
Length (ft)	27	57	315	80	75
Est. Avg. Width (ft)	8.5, 9, 5.5	22 25.5 20.5	11 9.5 6.5	15 9 24	21 22 17
Est. Avg. Pool Depth (ft)	—	4.5	—	4, 1.5, 3.5 pocket pools	2.6, 1.8, 1.0
Max. Pool Depth (ft)	—	4, 2.5, 1, 0=x	—	—	2.6
Pooltail Embedded %	—	0	—	—	0
Significant Cover? [2]	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Subdominant Substrate	(BED) BLD COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD COB GRV (SND) SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	1	2	1	1	1
Unit Flagged/ Labeled? (Y/N)	Y0 base	N	N	N	Y0 top
Tributary Inflow in cfs	0	0	0	0	0
Landmarks or photos DTAIL	1283 LWS	1284 LWS	1285 LWS	1286 & 1287 LWS	#1290 LWS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	0	0	0	0
Fish Migration Barrier [6] (y/n)?	n	n	n	n	n
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	—	0	—	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	just above gage pool	slight sand pocket	lge pool @ bottom (slant)	2 larger pools 11% possible red-legged F. - no photo/no ID.	vert, bc wall-confined Some lge bldrs but not enough to call POW dead fish (sucker) photo # 1288 1287

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel >or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and if CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Q/C Initials: JB

Notes regarding access points (road condition, bridge crossings, trails, etc.) trail to gage marked on rd. (Hwy 49) w/ flagging

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 14 Page 2 of 2 Date 9/12/09

ENDING MAPPING @ UTM 0665700 4363395

Stream/Reach/Subreach: Oregon Creek

Team: K. Peacock G. Bailey P. Hardesty

UTM: 0665599 4363376 NAD 83 (Habitat unit No 82 (@base)) PM _____ Map Gradient: _____

Habitat Unit #	82	83	84	85	86
Habitat Type [1]	FALL CAS (CHU) RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	(MCP) LAP TRP PLP	CAS	(MCP)	(CHU)
*note if dammed pool					
Length (ft)	22	108	88	76	35
Est. Avg. Width (ft)	8.5, 21, 20	35, 17, 27	22, 12, 22	17, 17, 12	6, 12, 8
Est. Avg. Pool Depth (ft)	/	0, 4.5, 3.5, 1.8, 4.5	3, 4.5, 4	4, 2.8, 1, 0	3.5, 1, 1, 0
Max. Pool Depth (ft)	/	/	4.5	4	3.5
Pooltail Embedded %	/	/	/	/	/
Significant Cover? [2]	(INSIGNIF VEG) BLDR WOOD	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Subdominant Substrate	BED (BLD) (COB) / GRV SND SLT	(BED) BLD (COB) / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT	(BED) BLD COB / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	0	0	0	0	0
Confinement [4]	1	1	2	2	1
Unit Flagged/ Labeled? (Y/N)	Y @ base	n	n	n	Y @ top
Tributary Inflow in cfs	0	0	0	0	0
Landmarks or photos	1291 LUS	1292 LUS	1293 LUS	1294 LUS	1299 LUS
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)					
No. of LWD Pieces within wetted width	n	n	n	n	n
Fish Migration Barrier [6] (y/n)?	n	n	n	n	n
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	/	/	/	/	/
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	small pool @ base with chute @ bottom	mid-pool control pinch. only 1 small scour hole @ max	almost a step pool but water diverges around boulders & not enough of pools controls	trench-like in some parts.	small cascade @ base, 1 small pool is. @ high flow is going to be chute

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence MCP = mid-channel pool, LAP = Lateral TRP = Trench, PLP = Plunge
The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit.
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JP

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

0665692 4363397 ~~IDG~~ - poss. CRLF or toad young of year in pool same not IDed earlier in survey.

1295-7

Oregon Ck p1 of 5 9-12-09
7U.B6 (P15) KP/PH/GB

Units 77-86 mapped

Unit#	HAB	L	W	max D	Notes
87	MCP	~~108~~ 58	17	3.5	P-1300
				4.5	1301

two big pools separated by small pool 10+ plung
3 Plung pool with mid-pool control is a scour
pool. ~~3 with 3 small plung pools @ top~~ waterfalls

BARRIER 0665718/4363392 ←

88	FALL	35	6	4.5 4.5	1302

Falls plunge into deep scour holes - fall/scour/fall/scour
6', 4', 3', 3' = 4 falls form the barrier

89	POW	50	25	—	1303
90	MCP	97	30	2.5	~~1303~~
91	POW	52	25	—	1304
92	STEP	88	20	—	1305
93	MCP	38	17	3.5	1306

ARTIFICIAL POOL - DUG OUT by mining

94	SPLIT	98	—	—	5-7%

not modelable, multiple surfaces, highly modified by mining. HGR on both sides of split. unconfined. SEE MAPPING UNIT 95-104

Oregon Ck. (P18) 9-12-09 KS/GB/PH
Sterling-amer @ HMW #10 P2 of 5

Unit	Hab	L	W	MaxD	Notes
SPLIT	MIX	303	LGR/HGR/GLI WITH		
(CONFINED CHANNEL START)			HIGH DENSITY DARMERA		
105	POW	92	47,47,45	—	PHOTO LDS 1323
106	MCP	20	20	2.5	LDS 1324
107	POW	170	30,40,42,33	—	LDS 1325
undercut RBA ~ 30'.					
108	CAS	19.5	38	—	gradient 11%
109	POW	54	37,37,49	—	
110	CAS	18	42	—	gradient 12%
111	POW	25	30	—	—
112	MCP	41	19,21	3.25	—
CA NEWT; DWNSTRM UNIT SEPARATED BY BR PINCH PT					
113	MCP	73	24,24,18	3.5	—
114	CAS	22	32	—	gradient 11%
0665769/4363635 FLAGGED @ base 115					
115	MCP	42	33,28	3	—
116	CAS	19	18+24	—	gradient 12%
117	POW	184	40,42,39,	—	
Pool UPSTM OF 116 but short & enough boulders to include with POW UNIT 117. 4 STEPS IN POW.					
118	HGR	27	35	—	gradient 11%

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

YC WA

Stream/Reach/Subreach: Oregon Creek

Team: K. Peacock G. Bailey P. Hardesty

UTM: 0605762 4363273 NAD 83 (Habitat unit No 95, @ base

Data Sheet # 16

Page 3 of ____

Date 9/12/09

PM ____ Map Gradient: ____

Habitat Unit #	95	96	97	98	99
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP (LAP) TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR (GLI) RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR (GLI) RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	88	30	55	24	130 + 97
Est. Avg. Width (ft)	32	24	25	30	23
Est. Avg. Pool Depth (ft)	4, 2.25, 1.5, 0	—	—	—	—
Max. Pool Depth (ft)	4	—	—	—	—
Pooltail Embedded %	0	—	—	—	—
Significant Cover? [2]	(INSIGNIF VEG) BLDR WOOD	INSIGNIF (BLDR WOOD)	INSIGNIF (BLDR WOOD)	INSIGNIF (BLDR WOOD)	(INSIGNIF VEG) BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT
Subdominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	BED BLD (COB) GRV SND SLT	BED BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV (SND) SLT
Length of LB and RB Exposed Banks (feet)	undercut bank 80' RBA	undercut bank 10 RBA, 5 LBA	—	—	—
Confinement [4]	4	4 FPW=55	4	4	4
Unit Flagged/ Labeled? (Y/N)	Y @ base	N	N	N	Y @ TOP
Tributary Inflow in cfs	0	0	0	0	0
Landmarks or photos	1308 LWS	1309 LWS	1310 LWS	1311 LWS	1312 LDS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class 1 / 12 / 25 1 / 12 / 50				
No. of LWD Pieces within wetted width	2	N	N	N	N
Fish Migration Barrier [6] (y/n)?	N	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	0	0	0	0	0
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Adult POSS. CRLF & several juv.	gradient 4% modelable		gradient 4% modelable	RC .25 max D 1.5 small scour area - glide plane bed form punctuated with short LGRs,

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: GB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Mining access road @ split channel
Fish - 3 in long, brown, poss. sucker
Unit 98: tree frogs

Resume Mapping

~~99 TOP UTMS:~~

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 17

Stream/Reach/Subreach: YCWA Oregon Creek

Page 4 of ____

Team: K. Peacock, G. Bailey, P. Hardesty

Date 9/12/09

UTM: 0665889/4363288 NAD 83 (Habitat unit No. 99 @ top)

PM ____ Map Gradient: ____

Habitat Unit #	100*	101	102	103	104
Habitat Type [1]	FALL CAS CHU RAP / HGR LGR GLI RUN / STEP POW SHT COP / MCP (LAP) TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR (GLI) RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR (LGR) GLI RUN / STEP POW SHT COP / MCP LAP TRP PLP	FALL CAS CHU RAP / HGR LGR (GLI) RUN / STEP POW SHT COP / MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	31.5 + 88	40	110	29	88
Est. Avg. Width (ft)	24	30	33	22 23	25
Est. Avg. Pool Depth (ft)	2.75, 1.75, .75, 0	—	—	—	—
Max. Pool Depth (ft)	3.0	—	—	—	—
Pooltail Embedded %	0	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR) WOOD	(INSIGNIF) VEG BLDR WOOD	INSIGNIF (VEG) BLDR WOOD	(INSIGNIF) VEG BLDR WOOD	(INSIGNIF) VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED (BLD) (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Subdominant Substrate	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) COB / GRV SND SLT	BED (BLD) (COB) / GRV SND SLT	BED BLD COB / GRV (SND) SLT
Dominant Bank Substrate	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT	BED BLD COB / GRV (SND) SLT	BED BLD (COB) / GRV SND SLT	BED BLD (COB) / GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Incised RBA	INCISED RBA	Incised RBA	—	—
Confinement [4]	4	4	4	4	4
Unit Flagged/ Labeled? (Y/N)	Y @ top 99	N	N	N	Y @ top
Tributary Inflow in cfs	0	0	0	0	0
Landmarks or photos	1315 LVS	1317 LVS	1318 LVS	1319 LVS	1320 LVS
Large Woody Debris [5] within bankful width (# / Diameter class / Length class)	1 / 12 / 25				
No. of LWD Pieces within wetted width	1	—	—	—	—
Fish Migration Barrier [6] (y/n)?	N	N	N	N	N
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	6x4* 6x2* 4x4* 3x2*
Maximum Spawning Gravel Patch Size (sq-ft) Est.	0	0	0	0	
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	*SPLIT @ top of unit #99 (highly modified) split length = 112	gradient 2% modelable but variety of controls; poor modelability		gradient 3% modelable	*spawnable gravels present but packed with sand.

[1] **FALL** = Falls, **CAS** = Cascade, **CHU** = Chute, **RAP** = Rapid, **GLI** = Glide, **RUN** = Run, **STEP** = Step Run, **HGR** = High Gradient Riffle (>4%), **LGR** = Low Gradient Riffle, **POW** = Pocket Water, **SHT** = Sheetflow;
Pools: **COP** = Convergence, **MCP** = mid-channel pool, **LAP** = Lateral, **TRP** = Trench, **PLP** = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: JB

[4] Channel Confinement: **1**=Confined Shallow; **2**=Confined Deep; **3**=Moderate Confined (<2x wetted channel width); **4**=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: **6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+** (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Mussels - 2" long.
campsite @ Top of unit 99 in Sterling's Property
Campers catching brown trout.

END MAPPING @ UTMS 0665875/4363419

Oregon CK 9/12/09 KP/GB/PH
YCWA (PA) P3 of 5

UNIT	HAB	L	W	MAXD	Notes
119	POW	55	39	—	—
120	MCP	146	45 29 38 24	4.0	—
121	CAS	16	33	—	gradient 1%
122	RUN	50	25 25 18	—	—

BEDROCK STEP DIVIDES RUN WITH UPPER RUN SHORT & WIDE SPLIT with HGR / GLIDE & SMALL MCP

(CRLF Adult)		211	—	—	—
123	MCP	222	41 35 27 27 21	6	—

CAMPER REPORTS RINGTAILS ON YUBA @ Peterson corner

124	RUN	118124	18 30 35	—	—

RUN with a step @ dwstm end 8% series of step runs @ upstm end gradient nonmodelable

~~125~~ 0665898/4363930

125	POW	53	52	—	—

CA NEWT

126	MCP	144	48 42 38 28		

BOULDERS STICKING UP @ dwnstm Pool.

127	CAS	18	40	—	grad: 17%
128	MCP	34	30	2.75	—
129	CAS	47	37	—	grad: 8%

AT low flow cascade/hodgepodge. AT high flow its a true hodgepodge. nonmodelable

Oregon Creek P4/— 9/12/09
YCWA (P20) KP/GB/PH

UNIT	HAB	L	W	MAXD	NOTES
130	RUN	27	45	—	—
RC .75 / MAX D 1.75					
131	MCP	35	32,26	3	—
132	RUN	23	22	—	STEP/RUN
133	COP	25	25	0.5	—
SPLIT MIX		272	MULTI-BRAIDED SPLIT WITH LGR & GLIDES		
134	MCP	304	55	6+	PHOTOS 1829-31

066093/4363938 GREAT BLUE HERON

UNIT 134 almost looks like dam pool PHOTO 32 IS OUTFLOW
but no obvious dam just braided channels

SPLIT	—	54	40,37	Some sort of deposit at the dam stm & braids at deposit
135	RUN	23	23	

0666049/4364033 FLAGGED @ BASE 135

136	LGR	82	40	—	grad: 3%
POOLING on perimeter			non modelable		
137	POW	60	30	—	—
138	LGR	64	26	—	gradient: 2%

AMBIGUOUS due to minor surface agitation @ current flow. would be LGR @ additional 5 cfs.

139	HGR	30	35	—	grad: 9%
140	STEP	58	31,42	2	—
141	POINT	178	40	—	—
142	STEP	46+62	35,37	—	—

Oregon Creek P5/S (P21) 9/12/09
YCWA KP/GB/PH

UNIT	HAB	L	W	MAXD	NOTES
143	MCP	72	25	3	—
MID-POOL CONTROL					
144	RUN	25	19	—	—
ENDS IN A CHUTE FLAGGED@TOP					
0606595 4/436 4/170					
END SURVEY FOR 9/12/09					

YCWA Pg 1 of - 9-15-09

Oregon Ck < C.V. bridge (p22) KP/OB

Unit#	HAB	L	W	max dep	Notes
145	MCP	~~78~~	22,25,35	2.5	bed rock
146	STEP	35	31,30	—	photo 1411

bedrock 3% grad; step run unclear because of substrate (chute-like)

147	MCP	left mid-chan sandbar	39,44,35	2.5	

Width includes ⅓ assoc. side pool

148	MCP	78	34,33,30	3.25	photo 1412

Pool slit by surfacing bedrock in middle

149	RIF	1160	57,50,42	—	photo

Bedrock riffle – some step-like features 4% - 1413

150	MCP	101	37,36,48	3.75	
151	MCP	65	31,40,29	3.25	bedrock

two above MCP separated by strong control

152	HGR	29	32,38,	—	

bedrock riffle 4% grad

153	MCH	91	35,33,34	3.25	

head of pool w/some surface agitation, slightly pow-like, but no significant control so considered part of ~~pool~~ MCP

154	HGR	66	25,35,	—	photo 1414

5% gradient, modelable

155	STEP	50	45,45	—	#1415

oblique flow, multiple water surfaces, pocket-like (poor exp of step) 3% grad

flag top 155 0646009 2/4364377

oregon ck </rv br @<> p2of— (p23) #9-15-09

unit	hab	length	width	maxdepth	notes/photo
156	MCP	82	33,47,33	2	
157	MCP	32	33,31	2	
RC=.5 max depth: 2, area<3 meter2					
158	STEP	28	35,34	—	
cobble/boulder bar creats split, few					
159	POW	156	49,34,37		LDS 7416
bedrock pool/shallow pocketwater — directly under celestial vally rd bridge					
160	RUN	45	18,37,	—	
bedrock run, under bridge					
162	MCP	32	41,31	2,75	
163	RUN	27	19,20	—	
164	MCP	38	25,28,29	3	
tributary LBA ≈ .5CFS					
165	LGR	230	31,30,40,36	—	
california newt!					
short run @ bottom, one LBA mid-chan modelable; modification & some pools formed from mining					

SWITCH TO MAPPING 0666246/4364489
flagged at top 165, bottom 166

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 24

Stream/Reach/Subreach: Oregon Creek upstrem of CV Bridge

Page 1 of 2

Team: Kathi Peacock, Gaea Bailey

Date 9/15/09

UTM: 0666242/4364489 NAD 83 (Habitat unit No base 166

PM _____ Map Gradient: _____

Habitat Unit #	166	167	168	169	170
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	48	53	32, 31	151	108
Est. Avg. Width (ft)	38, 30,	32, 34	30	32, 31, 32	22, 34, 36
Est. Avg. Pool Depth (ft)	2	—	2	5, 5	—
Max. Pool Depth (ft)	1.5, 2, .75, 0	—	2, 1.75, .75, 0	5, 5, 3.1, 2.5, 0	—
Pooltail Embedded %	N/A	—	30%	50%	—
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø 10ft RBA	Ø	30ft	4ft
Confinement [4]	4	4	4	4	4
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	yes-top
Tributary Inflow in cfs	RBA .5 CFS	no	no	no	no
Landmarks or photos DTA2	1417	1418	1419 none	1419	none
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	n/a	n/a	N/a	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		3% gradient		Pool 168 & 169 separated by strong bedrock boulder outcrop w/ lake control mid pool	2.5% gradient 75% of channel (RBA) riffle-like, although stepLike RBA, NOT MODELABLE because more than 1 habitat type w/ riffle in between

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: 1/3rm

[4] Channel Confinement. 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

flagged top of 170: 0663591/4364524

Began @ mining claim u/s of Celestial Valley bridge.

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 25

Stream/Reach/Subreach: Oregon creek Above Celestial bridge

Page 2 of 2

Team: KP, GB

Date 9/15/09

UTM: 0666362/4345524 NAD 83 (Habitat unit No base 171) PM _____ Map Gradient: _____

Habitat Unit #	171	172	173	174	175
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if damned pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	243	274	264	43	225
Est. Avg. Width (ft)	39, 44, 42	36 25 31 27	24 26 38 42	44 43 45	41 33 34 23
Est. Avg. Pool Depth (ft)	2	BFD = 2 ft	BFD: 1.25	BFD: 2	BFD: 1.75 1.5x
Max. Pool Depth (ft)	3.5	—	—	—	3.1
Pooltail Embedded %	50	—	—	—	30%
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF BLDR WOOD	INSIGNIF BLDR WOOD	INSIGNIF BLDR WOOD	INSIGNIF BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	15 ft	50' rba	—	5' RBD	increased, undercut but not active erosion
Confinement [4]	4	4	4	1	1
Unit Flagged/ Labeled? (Y/N)	yes-base	N	N	N	Y @ top
Tributary Inflow in cfs	LBA 0.1<	rba 1cfs	0	0	—
Landmarks or photos	~~1420~~ LDS	1421 LDS	1422 LVS	1423 LVS	#1425 LDS
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	0	—	—	—	0
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	0	0	0	0	0
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	—	—	—	—
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	+ 15 feet for average BF depth	N/A	2% gradient sedges * banks - heavy Blackberry cobbles in sand matrix w/some bldr	GLI @ base of pool. poor control between GLI & POOL (BMU 174 & 175)	poor SC. but enough. shallow, slow, wide.

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: GB

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

1424 LVS but creepy

Notes regarding access points (road condition, bridge crossings, trails, etc.)

* modelable @ higher flows (THW) rocks & multiple flow lines @ current flow)

lots frogs - most likely RLF young of yr.

YCWA | 1 - 01 - (p26) 9-15-09

Oregon Ck > Cleona? Valley Rd KP/GB

all mapping units to 175

#	HAB	L	W	MAX D	NOTE
176	LGR	41	24	—	3%
	0666380/4364831 @ base			Bld/cob sub	photo 1427 LDS
177	MCP	113	26,33,31,25	2.5	photo 1426 LUS
	railroad bridge XS unit			Cob/Bld sub.	30% emb
178	LGR	60	29,26,28	BFD = 2-1.75	2%
179	GLI	78	25,28,23	1.2	—
	r.c. = 0.75 max dep. 1.2 ∴ does not meet. Slow ∴ GLI				
180	LGR	27	25	2%	mm-?? Ctr.
181	LGR	156	25,22,28,26		3%
182	MCP	337	38, 37, 43, 45, 30, 23	4.25	—
	Swimming d/s control ← Bld13 ; start rm @ top lots sand surround cobbles + bldrs but not in big dep. cattails, ↑ overhanging veg. Bldr/cob substrate				
183	LGR	53	25, 25,	Bldr/cob.	3%
184	MCP	98	30,28,29	2.25	Bld/cob w/sand
185	LGR	86	24,26,33	NM 100 Many WSE	4%
	0666329/4365161		(w/ flag)		
186	MCP	83	31 33 29	2	Cob/Bld/sand
187	LGR	26	28		2%
188	MCP	108	35,28,36	2.5	—
	r.c. = 0.6			shallow @ top	
(189	LGR	214	24, 36, 33		3%
(		114	34, 37, 36		2%

Combined in hindsight - flat sections, deeper, but still [illegible]

oregon Cr (cont) 70 V. Rd. (P27) 9/15/09

#	HAB	L	W	Max D	NOTES	KP/GB
190	MCP	132	36, 34, 36	3		
sand fills pool						
191	MCP	68	27, 29	3		
Bolder control separates 190 + 191						
Fence @ goat pasture, modification/disturbed						
192	HGR	26	27		6%	
old riffle n.m.						
193	LGR	78	22, 23		3%	
lower w/ poorly formed steps; flatter/deeper - lumped						
Cobble bar on LBA						
194	RUN	46	22, 17	1.25		
r.c. 0.75 r.d. = 0.5 doesn't meet, deeper ∴ run (but slow)						
195	LGR	63	15.	24, 33	4%	
Flag modelable @ top only. 0666363/4365457						
196	RUN	50	32, 36, 35		wide, shallow	
197	MCP	255	52, 41, 46	4.25	long, deep	
Filled w/ sand; ad. to log yard; + 1' for BFD						
LWD 1 - 12, 50 (W) 1-12, 25 (W); 150 LBD BE						
198	LGR	49	29, 36	—	3%	
199	MCP	132	32, 31, 34	1.75		
Bridge 0666325/4365596 sand/Bldr sub. 30% embed.						
200	LGR	278	27, 32, 32, 27, 25		3%	
BFD = 1.5 modelable in flatter sections but multiple flowlines elsewhere.						
201	MCP	94	26, 27, 29	1.5		
r.c. = 0.4 → meets.						

(margin, bracketing 192–195: goats)

YCWA - oregon ck > celestial valley (038) 9/15/09 KP/GB

#	HAB	L	W	Max D	Notes
202	RUN	50	24, 21, 27	—	
non uniform, deeper than gli, but slow wtr.					
203	LGR	112	32, 33, 34	—	4% - plat
204	MCP	193	32, 29, 38, 36	3.75	50% formed #1428
sand fills pool; cows, streamside rd. (Bldr/sand) LOS					
205	LGR	36	27,		3%
Bldr/cobble Flag @ top (but forgot UTM)					
206	MCP	94	32, 27, 21	2.25	
UTM 0666330/4365849					
207	LGR	60	25	NM.	4% 1429
208	RUN	30	27		1430
209	MCP	201	36	1.75	1431
Filled w/ sand - Bldr/sand substrate Thick gr. algae dogs, sand piling into str. 0.05 cfs Culvert/trib LBA 1432 Shallow @ head 1430 - 1432 - dogs + pool + bank					
210	LGR	29	34	—	2%
211	MCP	123	35, 38, 31	2.0	—
RUN/GLIDE @ tail (~25' long)					
212	RUN	34	25, 22, 26		bldr/cob
213	MCP	54	22, 17, 18	2.9	bldr/cob
10' step through rootmass + Bldrs separates 212 + 213					
214	HGR	25	29	—	8%
strong bldr → pseudo steps; oblique flow NM					photo #1433 LUS
215	MCP	82	27, 26, 22	2.0	#1434 LUS (of tail)
top-flag long narrow tail (run-like) Bldr/cob. (+sand) 0666409/4366040 R.L.=0.75					

YCWA - Oregon Ck > Celeste's / V. rd (p29) 9-15-03 KP/GB

#	HAB	L	W	MAX D	NOTES
216	LGR	93	30,31,32	—	4% - M.
217	POW	36	30,27	—	
small scale, multi-thread, Bldr-dom					#1436 LWS photo
218	MCP	56	27,35,27	2.0	2m² ac.
r.c. = 0.5		poor sc.; wide, flat, shallow			
219	POW	186	37, 28,29,25		rhubarb
220	MCP	20	21	2.0	
221	RUN	17	17	—	
222	MCP	127	29,25,30	2.0	#1437 LDS
Thick algae; r.c. = 0.5			Tail-glide-like		
223	POW	32	28		#1438 LWS
224	LGR	70	29, 22, 27 Bldr-cob Sb.		3% - NM-algae
225	POW	44	25	1.5	#1439 LWS

r.c. = 0.5 Bldr/cob. no movement w/ L > 1

poor sc. (can't meet r.d.) no flow uniformity ∴ POW

END SURVEY 0666538/4366168

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 1

Stream/Reach/Subreach: Oregon Creek below Log Cabin Dam

Page 1 of 9

Team: Patty Hardesty & Gaea Bailey

Date 10/14/09

UTM: 0666543/4366181 NAD 83 (Habitat unit No. 226 base)

PM _____ Map Gradient: _____

Habitat Unit #	226	227	228	229	230
Habitat Type [1]	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL, CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL (CAS) CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	120,5	51	86	124	16
Est. Avg. Width (ft)	21,16,10	17,18	15,19,17	41,33,22	5,8,6
Est. Avg. Pool Depth (ft)	—	—	—	5,4,2.5,0	—
Max. Pool Depth (ft)	— BFD=1.25	— BFD=1.95	—	5+	—
Pooltail Embedded %	—	—	—	15%	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	RBA LBA Ø	Ø
Confinement [4]	1	1	1	3	3
Unit Flagged/ Labeled? (Y/N)	Yes base	no	no	no	yes top
Tributary Inflow in cfs	N/A	N/A	N/A	N/A	N/A
Landmarks or photos	DTR #2 . . 2127	2128	2129	2130	2131
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	6
Fish Migration Barrier [6] (y/n)?	Ø	Ø	Ø	Ø	Ø
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	LGR because surface agitation, Although may resemble POW @ high flows. 2129	Not POW because shallow & no divergent flows, used unit #2 5- for truthing	1%. Big boulders	top of pool run- like due to slight control	7%. 0666664 6/ 4366242

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: RRH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Stream/Reach/Subreach: Oregon Creek below Log Cabin Dam

Team: PH, GB

Data Sheet # 1

Page 2 of 9

Date 9/10/4/09

UTM: 0666646/4366242 NAD 83 (Habitat unit No. 231 base

PM _____ Map Gradient: _____

Habitat Unit #	231	232	233	234	235
Habitat Type [1]	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN (STEP) POW SHT COP MCP LAP TRP PLP
Length (ft)	29 29	157	61	89	98
Est. Avg. Width (ft)	14,10	24,3,38,14	15,30,13	42,33,21	15,18,30
Est. Avg. Pool Depth (ft)	—	6,5,4,2.5,0	—	—	—
Max. Pool Depth (ft)	BFD = 1.5	6+	BFD=1.5	—	—
Pooltail Embedded %	—	10/.	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	N/A	N/A	N/A	N/A	N/A
Confinement [4]	3	2	3	3	3
Unit Flagged/ Labeled? (Y/N)	yes, base	no	no	no	yes, top no
Tributary Inflow in cfs	no	no	no	no	
Landmarks or photos	2132	2133	—	2134	2135, LDS
Large Woody Debris [5] within bankfull width	# Diameter class / Length class	# Diameter class / Length class	# Diameter class / Length class	# Diameter class / Length class	# Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	NO	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	2'.	top of pool narrow & run like w/weak control	3'. maybe split channel @ higher flows		weakly stepped, but steps present. modified - stacked rocks in wetted channel photo # 2135 LDS

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

end #236
0666614
4366372
top step looks like maybe 1/2 LGR in higher flows

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 2

Stream/Reach/Subreach: Oregon Creek below Log Cabin

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Team: Patty Hardesty and Gaea Bailey

Date 10/04/09

UTM: 0616604, 4366353 NAD 83 (Habitat unit No. base 236) PM _____ Map Gradient: _____

Habitat Unit #	236	237	238	239	240
Habitat Type [1]	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	61	105	136	91	32
Est. Avg. Width (ft)	15, 14, 20	33, 21, 15	10, 16, 30, 21	23, 35, 18	15, 24
Est. Avg. Pool Depth (ft)	—	—	—	—	—
Max. Pool Depth (ft)	BFD=1.5	—	BFD=1.75-1.5	BFD=1.5	—
Pooltail Embedded %	—	—	—	—	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG (BLDR WOOD)	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	(BED) BLD COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT	BED BLD (COB) GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	3	3	3
Unit Flagged/ Labeled? (Y/N)	yes base	no	no	no	yes-top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	2139	2140	2141	2149	2150
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	4(1x1), 3x3, 3x1, 2x3	Ø	~~Ø~~ 1x1 out of wetted	N/A - Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	3x3	N/A	~~N/A~~ 1x1	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	0%	pow best decr - would be GLI but very uniform boulder substrate	modified @ middle rock-boulder dam @ road x-ing; photos # 2142, 2143 2.5%	pow-like, but much too shallow - no scour around boulders no surface agitation some LGR	3% 0666588/ 4366303

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: _____

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Red-legged adult frog @ HMU 238 2144, 2145, 2146 = photos juvenile RLF
2147, 2148 = photos adult RLF

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 2

Stream/Reach/Subreach: Oregon Creek

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Team: PH 3, GB

Date 10/4/09

UTM: 0666546/4366498 NAD 83 (Habitat unit No. bas 241

PM _____ Map Gradient: _____

Habitat Unit #	241	242	243	244	245
Habitat Type [1]	FALL CAS CHU RAP	FALL CAS CHU RAP	FALL CAS CHU RAP	FALL CAS CHU RAP	FALL CAS CHU RAP
	HGR LGR GLI RUN	HGR LGR GLI RUN	HGR LGR GLI RUN	HGR LGR GLI RUN	HGR LGR GLI RUN
	STEP POW SHT COP	STEP POW SHT COP	STEP POW SHT COP	STEP POW SHT COP	STEP POW SHT COP
*note if dammed pool	MCP LAP TRP PLP	MCP LAP TRP PLP	MCP LAP TRP PLP	MCP LAP TRP PLP	MCP LAP TRP PLP
Length (ft)	108	94	83	47	74
Est. Avg. Width (ft)	18, 20, 21	40, 43	8, 23, 24	36, 15	21, 19, 11
Est. Avg. Pool Depth (ft)	—	5.5, 4.5, 3.5, 1P	1.5	—	BFD=1.5
Max. Pool Depth (ft)	—	0.5+	—	—	4+
Pooltail Embedded %	—	25%	—	—	—
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	1	2	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes, base	no	no	no	~~no~~ yes fup
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	2151	2152	2153	2154	2155
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	∅	∅	∅	∅	∅
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	~~∅~~ 2x2, 1x1	∅	∅	∅	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	~~n/a~~ 2x2	N/a	N/A	na	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	pool-like, but shallow, little scour. More pool-like @ base		4", some steps on LBA, not mappable	fish - 4" LGR - due to surface agitation 1%	06666031 4366020

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: RM

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12', 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Oregon Creek below log cabin dam — 10/4/09 Patty Harderty, Shea Baxter

HMU #	habitat	length	width	max depth	photo
246	LGR	104	19,25,23	—	2156
25% – ~~log~~ boulders throughout					
247	POW	39	23,30,	—	
248	LGR	44	30,25,	—	
3%					
249	MCP	89	33,35	3.5	
SPLIT		43			2157
250	LGR	71	21,25	—	2158
1% – surface agitation present, channel widiz almost divergent, some indistinct run-like features, not stepped					
251	RUN	49	44,42		
POW-like, but shallow w/no scour around bldrs					
252	LGR	73	21,23	—	
5%					
253	LGR	83	16,12	—	#2157
3%					
split –	POOL RBA, run		LBA	—111 long	
254	MCH	56	63	6+	2160
255	FAL	15	15		
6 Ft barrier		flagged @ top Odds 25/436817			
256	CHUT	22	30	—	—
257	CAS	15	56	—	—
258	POW	63	41	—	—
	CAS	15	58	—	—
4Ft barrier					

Oregon Creek below Log Cabin Dam 10/04/09 PH, GB

Unit #	Habitat	length	width	m. depth	photo
259	STEP	35	27	—	
SPLIT	— divergent, shallow, under darmana 46+83 long				2161
260 —	MCP	62	40, 33	4	2162
	divided by raised bedrock in center				
261	LGR	35	49	—	2165
	4%. ↳ over bedrock				
262	MCP	94	33, 49	6+	
263	FAL	20	35	—	2166
	weir at top substantially reducing flows, irrigation from weir - looks private; photos 2163, 2164 and 2166; wetted channel ≈ 35ft				
264	MCP	253	35, 50	6	from weir 2167
265	POW	86	30	—	—
	- tail is rapid like				

go to mapping

Flagged @ top 265 1666921/4366959

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 3

Stream/Reach/Subreach: Oregon Creek below Log Cabin Dam

Page 5 of 9

Team: Patty Hardesty & Gaea Bailey

Date 10/04/09

UTM: 0666921, 4366959 NAD 83 (Habitat unit No._____) PM _____ Map Gradient:_____

Habitat Unit #	266	267	268	269	270
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
Length (ft)	8	106	47	39	100
Est. Avg. Width (ft)	36	36, 32, 32	29, 15	25, 14	34, 25, 23
Est. Avg. Pool Depth (ft)	—	4, 3, 1, 0	3.5, 3, 2.5, 0	—	—
Max. Pool Depth (ft)	—	4	3.5	—	—
Pooltail Embedded %	—	Ø	Ø	—	—
Significant Cover? [2]	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø	Ø	Ø	Ø	Ø
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes base	no	no	no	yes-top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	DTA 2169	2170	2171	2172	2173
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	yes	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	NA	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	4ft barrier	Bedrock "controls" throughout, top of Pool is POW-LIKE	Riffle at base separates from lower pool 5%	5%	Oldd6157/ 4367034

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 3

Stream/Reach/Subreach: Oregon Creek below Log Cabin Dam

Page 6 of 9

Team: PH & GB

Date 10/4/09

UTM: 0666962/4367038 NAD 83 (Habitat unit No. base 27

PM _____ Map Gradient: _____

Habitat Unit #	271	272	273	274	275
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP *note if dammed pool (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP (HGR) LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP (POW) SHT COP MCP LAP TRP PLP
Length (ft)	114	36	36	45	48
Est. Avg. Width (ft)	22, 23, 32	30	25	27, 13, 21	65, 60
Est. Avg. Pool Depth (ft)	3, 2, 1, 0	—	BFD=1.75-2.00	—	6, 5, 5, 3, 0
Max. Pool Depth (ft)	3	—	—	—	6
Pooltail Embedded %	NA	—	—	—	0
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD	INSIGNIF VEG (BLDR WOOD	INSIGNIF VEG (BLDR WOOD	INSIGNIF VEG (BLDR WOOD	INSIGNIF VEG (BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT
Subdominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT	(BED) BLD COB (GRV) SND SLT	BED (BLD) COB GRV (SND) SLT	(BED) BLD COB (GRV) SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	1	1	1	1	1
Unit Flagged/ Labeled? (Y/N)	yes base	no	no	no	yes-top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	2174	2175	2176	2177, 2178	2179, 80
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# 1 / Diameter class 24-36 / Length class 25-50
No. of LWD Pieces within wetted width	∅	∅	∅	∅	1
Fish Migration Barrier [6] (y/n)?	no.	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	none	∅	∅	∅	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	POW-like @ base; shorty HGR separates from POW below		bl.	POW-like with some steps, but shallow & no scour or boulders	creepy cave here - water goes under bedrock cliff!

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PRAT

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is:any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

el top MCP #275
0667048
4367070

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 4

Stream/Reach/Subreach: Oregon Creek above Logcabin

Page 7 of 9

Team: Patty Hardesty & Gaea Bailey

Date 10/4

UTM: 0667048 / 4367070 NAD 83 (Habitat unit No. base 276)

PM _____ Map Gradient: _____

Habitat Unit #	276	277	278	279	280
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN (STEP) POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI (RUN) STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR (LGR) GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP (MCP) LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	95	135	203	177	33
Est. Avg. Width (ft)	13, 30, 15	23, 20, 24, 19	19, 8, 32, 25	28 43 34	9, 15
Est. Avg. Pool Depth (ft)	BFD=1.5	~~BFD=1~~	BFD=1	6, 5, 3.5, 2, 0	—
Max. Pool Depth (ft)	1+	—	—	10+	—
Pooltail Embedded %	—	—	—	N/A	—
Significant Cover? [2]	INSIGNIF VEG (BLDR WOOD)	INSIGNIF (BLDR WOOD)	INSIGNIF (BLDR WOOD)	INSIGNIF (BLDR WOOD)	INSIGNIF (BLDR WOOD)
SUBSTRATE COMPOSITION					
Dominant Substrate	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Subdominant Substrate	BED BLD (COB) GRV SND SLT	(BED) BLD COB GRV SND SLT	BED BLD (COB) GRV SND SLT	BED (BLD) COB GRV SND SLT	BED (BLD) COB GRV SND SLT
Dominant Bank Substrate	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	BED (BLD) COB GRV SND SLT	(BED) BLD COB GRV SND SLT	(BED) BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅	∅	∅	∅
Confinement [4]	3	1	1	2	1
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	yes-top
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	2181	2182	2183	2184, 2185	2186
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	~~2~~ 0	∅	∅	∅	0
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	∅	∅	∅	∅	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		2%	2%		Narrow channel bedrock both sides

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C Initials: PRH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

top #280 0667047 4367258

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 3

Stream/Reach/Subreach: Oregon creek below Log Cabin Dam Page 8 of 9

Team: PH & CaB Date 10/4/09

UTM: 0667030/4307261 NAD 83 (Habitat unit No. 281 base PM _____ Map Gradient: _____

Habitat Unit #	281	282	SPLIT	283	284
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	13.5	101	19	89	66
Est. Avg. Width (ft)	15	40, 46		25, 22, 19	18, 14, 23
Est. Avg. Pool Depth (ft)	—	5, 4, 3, 2.5, 0		BF = 1.25	—
Max. Pool Depth (ft)	—	5+	5+	—	—
Pooltail Embedded %	—	35%		—	—
Significant Cover? [2]	INSIGNIF VEG [1] BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD	INSIGNIF VEG BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	∅	∅		∅	∅
Confinement [4]	1	2		1	1
Unit Flagged/ Labeled? (Y/N)	yes-base	no	no	no	no
Tributary Inflow in cfs	no	no		no	no
Landmarks or photos DTA2	2187	2188	none	2190	2191
Large Woody Debris [5] within bankful width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	∅	∅		∅	∅
Fish Migration Barrier [6] (y/n)?	yes - 10ft	~~no~~ yes top weir		no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	∅	∅		∅	∅
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A		N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.	Weir @ top of feature	wier @ top and bottom; gauge here	RBA - pool LBA - run into weir	2%	plunge/step from upper pool into run

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: PRH

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # 4

Stream/Reach/Subreach: Oregon Creek below Dyer Cabin

Page 9 of 9

Team: Patty Hardesty & Grace Bailey

Date 10/4/09

UTM: 0667006/4363549 NAD 83 (Habitat unit No. 285 top) PM _____ Map Gradient: _____

Habitat Unit #	285	286	287	288	289
Habitat Type [1]	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP	FALL CAS CHU RAP HGR LGR GLI RUN STEP POW SHT COP MCP LAP TRP PLP
*note if dammed pool					
Length (ft)	~~55~~ 55	104	39	55	49
Est. Avg. Width (ft)	23, 22, 21	29, 19, 20	19, 14	10, 12, 9	
Est. Avg. Pool Depth (ft)	3.5, 3, 2, 1, 0	BFD=1.5	2.5, 2, 1, 0	—	8, 7, 6, 4, 3, 0
Max. Pool Depth (ft)	3.5	—	2.5	—	8+
Poolfall Embedded %	30%	—	N/A	—	50%
Significant Cover? [2]	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD	INSIGNIF VEG / BLDR WOOD
SUBSTRATE COMPOSITION					
Dominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Subdominant Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Dominant Bank Substrate	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT	BED BLD COB GRV SND SLT
Length of LB and RB Exposed Banks (feet)	Ø		Ø	Ø	Ø
Confinement [4]	1		1	1	1
Unit Flagged/ Labeled? (Y/N)	yes top	yes base	no	yes-top	yes-base
Tributary Inflow in cfs	no	no	no	no	no
Landmarks or photos	2192	2193	2194	2199	2191
Large Woody Debris [5] within bankfull width	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class	# / Diameter class / Length class
No. of LWD Pieces within wetted width	Ø	Ø	Ø	Ø	Ø
Fish Migration Barrier [6] (y/n)?	no	no	no	no	no
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")	Ø	Ø	Ø	Ø	Ø
Maximum Spawning Gravel Patch Size (sq-ft) Est.	N/A	N/A	N/A	N/A	N/A
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.		3%		4%	pool directly below dam 0667048 4367394

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: _____

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36", or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankfull flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

STREAM HABITAT TYPING SURVEY DATA (NID Yuba-Bear, PG&E Drum Spaulding)

Data Sheet # _____

Stream/Reach/Subreach: _____ Page _____ of _____

Team: _____ Date _____

UTM: _____ NAD 83 (Habitat unit No._____) PM _____ Map Gradient: _____

Habitat Unit #																				
Habitat Type [1]	FALL	CAS	CHU	RAP	FALL	CAS	CHU	RAP	FALL	CAS	CHU	RAP	FALL	CAS	CHU	RAP	FALL	CAS	CHU	RAP
	HGR	LGR	GLI	RUN	HGR	LGR	GLI	RUN	HGR	LGR	GLI	RUN	HGR	LGR	GLI	RUN	HGR	LGR	GLI	RUN
	STEP	POW	SHT	COP	STEP	POW	SHT	COP	STEP	POW	SHT	COP	STEP	POW	SHT	COP	STEP	POW	SHT	COP
*note if dammed pool	MCP	LAP	TRP	PLP	MCP	LAP	TRP	PLP	MCP	LAP	TRP	PLP	MCP	LAP	TRP	PLP	MCP	LAP	TRP	PLP
Length (ft)																				
Est. Avg. Width (ft)																				
Est. Avg. Pool Depth (ft)																				
Max. Pool Depth (ft)																				
Pooltail Embedded %																				
Significant Cover? [2]	INSIGNIF VEG		BLDR WOOD		INSIGNIF VEG		BLDR WOOD		INSIGNIF VEG		BLDR WOOD		INSIGNIF VEG		BLDR WOOD		INSIGNIF VEG		BLDR WOOD	
SUBSTRATE COMPOSITION																				
Dominant Substrate	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB
	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT
Subdominant Substrate	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB
	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT
Dominant Bank Substrate	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB	BED	BLD		COB
	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT	GRV	SND		SLT
Length of LB and RB Exposed Banks (feet)																				
Confinement [4]																				
Unit Flagged/ Labeled? (Y/N)																				
Tributary Inflow in cfs																				
Landmarks or photos																				
Large Woody Debris [5] within bankful width	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class	#	Diameter class		Length class
No. of LWD Pieces within wetted width																				
Fish Migration Barrier [6] (y/n)?																				
Spawnable Gravel Area (sqft) Est. [7] (1/4" - 2.5")																				
Maximum Spawning Gravel Patch Size (sq-ft) Est.																				
Comments / Observations: Fish? Wildlife? Amphibs? Backwater or side chan. amphib habitat? Riparian? Landmarks, Photo #s, Etc.																				

[1] FALL = Falls, CAS = Cascade, CHU = Chute, RAP = Rapid, GLI = Glide, RUN = Run, STEP = Step Run, HGR = High Gradient Riffle (>4%), LGR = Low Gradient Riffle, POW = Pocket Water, SHT = Sheetflow;
Pools: COP = Convergence, MCP = mid-channel pool, LAP = Lateral, TRP = Trench, PLP = Plunge

The minimum unit length should be 1x active channel width, unless there is something notable or unique about it.

[2] Note if cover is a significant or dominant feature of the unit:
(e.g., logs in stream, lots of boulders, >25% surface area has instream or low overhanging vegetation, etc.)

Q/C initials: _____

[4] Channel Confinement: 1=Confined Shallow; 2=Confined Deep; 3=Moderate Confined (<2x wetted channel width); 4=Unconfined (>= 2 wetted channel widths)

[5] Criteria for LWD is: any downed wood within bankfull width of channel =or> than 1/2 bankfull width.
Size classes: 6-12", 12-24", 24-36",or 36"+ x 3-10', 10-25', 25-50', 50-75', 75'+ (ie. 6 | 25 = 6-12", 25-50')

[6] Waterfalls, high velocity chutes or cascades at approx bankful flows. NOTE VERTICAL DROP and IF CONDITIONAL or PERMANENT

[7] Spawning Sized gravel submersed in an area of adequate depth and velocity within one unit

Notes regarding access points (road condition, bridge crossings, trails, etc.)

Oregon Creek
Habitat Mapping Data

Yuba River Development Project
FERC No. 2246

Oregon Creek – Ground-based Habitat Mapping Data

Stream: Oregon Creek **Date:** 8/15/2009 **Parent Material:** granitic pluton, metasedimentary
Reach: **Map Gradient (%):** 2.3%

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
8/15/2009	OC jntn to CV Br		1	HGR	60	60	0.00	30					INSIGNIF	COB	BLD	COB	5		3	N	too public	S.C. end	DTA1 1177 LDS, 1178	0	0	N	0	0	0665014	4362378		S.C. begins 60' u/s from junction. Begin at junction with M Yuba, 6%HGR - transverse - NM
8/15/2009	OC jntn to CV Br		2	STEP	80	140	0.03	27					BLDR	BLD	COB	BLD	20		3	N		S.C. LBA	DTA1 1179	0	0	N	0	0				S.C. LBA lots of flat pockets, modelable
8/15/2009	OC jntn to CV Br		3	MCP	36	176	0.03	17	2	1	1.75	0	VEG	BLD	COB	COB	0		3	N			DTA1 1180	1	1	N	0	0				temp logger casing returned to water, r.c. = max 1.8, area = 2m^2, barely meets
8/15/2009	OC jntn to CV Br		4	STEP	80	256	0.05	19.67			1.75	0	VEG	BLD	COB	BLD	0		3	N		S.C. begin @ bp	DTA1 1181	0	0	N	1.5	1.5				short (10') sc pool near base, heavy blackberry, nm - too many steps transpose.
8/15/2009	OC jntn to CV Br		5	LGR	117	373	0.07	32.67					BLDR	BLD	COB	BLD	0		3	N	too public		DTA1 1182	0	0	N	0	0				3.5% - M.(0.3 deg), 2" trout, small frog
8/15/2009	OC jntn to CV Br		6	POW	102	475	0.09	48.33	2			na	BLDR	BLD	COB	BLD	10		3	N			DTA1 1183	0	0	N	26	6	0665074	4362464		S.C. holes around boulders, flat complex 3D flow, trail to car park
8/15/2009	OC jntn to CV Br		7	MCP	89	564	0.11	39.33		1	1.75	50	BLDR	BLD	COB	BLD	0		3	N			DTA1 1184	1	0	N	0	0				r.c. = 1' area > 2m^2, separated at 55' by mid control, short upper pool
8/15/2009	OC jntn to CV Br		8	POW	58	622	0.12	40					BLDR	BLD	COB	BLD	0		1	N			DTA1 1185	1	1	N	0	0				SPLIT between U8 and U9 107' STEP/HGR/POW (photos: 1186, 1187, 1188)
8/15/2009	OC jntn to CV Br		9	POW	180	802	0.15	54.5			2.5		BLDR	BLD	GRV	BLD	0		1	N			DTA1 1189	0	0	N	68	56				in a series of steps, lms flat, separated by short boulder steps, split by boulder pile at upper end
8/15/2009	OC jntn to CV Br		10	MCP	108	910	0.17	34.33	3	1.5	3.5	50	BLDR	BED	BLD	BLD	0		1	Y	at top		DTA1 1190	0	0	N	0	0				some sand ~10%, ~ 5 cm deep
8/15/2009	OC jntn to CV Br		11	MCP	41	951	0.18	31		1.25	3	na	BLDR	BLD	BLD	BED	0		1	N			DTA1 1191	0	0	N	4	4	0665175	4362622		small mini pool @ base on LBA, sand 3x4 ~5 cm
8/15/2009	OC jntn to CV Br		12	POW	66	1017	0.19	31.67					BLDR	BLD	BED	BED	0		1	N		no (from top)	DTA1 1192, 1194 LDS	0	0	N	0	0				
8/15/2009	OC jntn to CV Br		13	MCP	63	1080	0.20	31	2.5	1.75	3.5	60	BLDR	BLD	COB	BED	0		1	N			DTA1 1193	1	0	N	0	0				lots of sand on banks represents high flow
8/15/2009	OC jntn to CV Br		14	CAS	40	1120	0.21	33					BLDR	BLD	COB	BED	0		1	N			DTA1 1195	0	0	N	9	9				9% gradient - CAS because pocket pools
8/15/2009	OC jntn to CV Br		15	MCP	48	1168	0.22	37		2	4.5	50	BLDR	BLD	COB	BED	0		2	Y	at top		DTA1 1198 LDS	0	0	N	0	0				
8/15/2009	OC jntn to CV Br		16	HGR	20	1188	0.23	25					BLDR	BLD	COB	BED	0		1	Y	at base		DTA1 1196	0	0	N	0	0	0665223	4362687		13%, no pocket water
8/15/2009	OC jntn to CV Br		17	MCP	26	1214	0.23	24		1.5	3.75	50	BLDR	BLD	COB	BED	0		1	N			DTA1 1197	0	0	N	4	4				short but significant depth
8/15/2009	OC jntn to CV Br		18	POW	36	1250	0.24	20.67					BLDR	BLD	GRV	BED	0		1	N			DTA1 1199	0	0	N	5	4				spawn gravel patches with some sand
8/15/2009	OC jntn to CV Br		19	POW	54	1304	0.25	26.67					BLDR	BLD	COB	BED	0		1	N			DTA1 1200 LDS	0	0	N	0	0				short steps @ base and top
8/15/2009	OC jntn to CV Br		20	MCP	154	1458	0.28	21		1.75	3.5	50	BLDR	BLD	BED	BED	0		2	Y	at top		DTA1 1201, 1202 LDS < top	1	1	N	0	0				2" fish, 4" brown, 2" fish
8/15/2009	OC jntn to CV Br		21	CAS	72	1530	0.29	24															DTA1 1203 at base									12% gradient, thin colluvial sandy soil over bedrock, undermine > failure, 2" fish, pocket pools
8/15/2009	OC jntn to CV Br		22	MCP	57	1587	0.30	24			1.57																					"Federal Mining claim over ch #2, ROCKPROPERTIES USA CAMC#" @ top.
8/15/2009	OC jntn to CV Br		23	LGR	30	1617	0.31	29					INSIGNIF	GRV	COB	BLD	0		1	N			DTA1 1204	0	0	N	29	20				spawning gravel embedded, Mining Claim trail to HWY 49, Photo 1205 deleted
8/15/2009	OC jntn to CV Br		24	GLI	71	1688	0.32	29.5		1			INSIGNIF	GRV	SND		0		1	N			DTA1 1206 LDS < top	0	0	N	0	0				spawning gravel too embedded, small sc hole around boulder at base
8/15/2009	OC jntn to CV Br		25	LGR	63	1751	0.33	34					INSIGNIF	GRV	COB	BLD	0		1	N			DTA1 1207	0	0	N	0	0				gravel too embedded, top formed by dug-out minning debris
8/15/2009	OC jntn to CV Br		26	MCP	58	1809	0.34	32.5		3	7		BLDR	BLD	COB	BED	0		2	N			DTA1 1208	0	0	N	0	0				two 3" trout, max dep < digging; d/s control excavated water, CHARACTERZED UNITS 27 TO 36, S.C. starts - debries U-28.
8/15/2009	OC jntn to CV Br		27	HGR	43	1852	0.35	25																								7% nm
8/15/2009	OC jntn to CV Br		28	HGR	80	1932	0.37																									lots of Indian Rhubarb
8/15/2009	OC jntn to CV Br		29	POW	83	2015	0.38	46.5																								0.75 r.c., sc <- LBD
8/15/2009	OC jntn to CV Br		30	MCP	40	2055	0.39	44			2.5																					8%, 2 degrees, Pockety therefore CAS, nm - too many splits, flag tied @ top
8/15/2009	OC jntn to CV Br		31	CAS	49	2104	0.40	36												Y	at top								0665457	4362829		
8/15/2009	OC jntn to CV Br		32	POW	29	2133	0.40	30																								tons of 2" fish, six 4" fish, long deep pool; boulder cover, some spawning gravel, pocket water at top
8/15/2009	OC jntn to CV Br		33	MCP	150	2283	0.43	33.67			4		BLDR															18	18				
8/15/2009	OC jntn to CV Br		34	POW	27	2310	0.44	26																								
8/15/2009	OC jntn to CV Br		35	MCP	28	2338	0.44	23			2.5																					9% non-modelable, 3.3 degrees. Frog - adult coulnt identify - cream throat, black spots. Considered CAS because pockets of depth and flat.
8/15/2009	OC jntn to CV Br	SPLIT		CAS	158	2496	0.47	24.67															DTA1 1209 LUS									MCP > LGR > top of split. SPLIT begins at base of continues to top of U35.
8/15/2009	OC jntn to CV Br	SPLIT		MCP	33	2529	0.48	25			2.75																					
8/15/2009	OC jntn to CV Br	SPLIT		LGR	58	2587	0.49																									fish 2" - 4"
8/15/2009	OC jntn to CV Br	SPLIT		MCP	122	2709	0.51				3																					
8/15/2009	OC jntn to CV Br		36	PLP	61	2770	0.52	46	4	10	60		BLDR	BED	SND	BED	0		2	y	at base		DTA1 1210 LUS, 1211 LUS	0	0	n	0	0	665476	4362988		:4" trout sand on margin but not at max depth
8/15/2009	OC jntn to CV Br		37	MCP	65	2835	0.54	33	2	3.5	0		INSIGNIF	BED	BED	BED	0		1	n			DTA1 1212 LDS	0	0	n	0	0				Falls at base not a barrier, no sand
8/15/2009	OC jntn to CV Br		38	SHT	92	2927	0.55	30.25					INSIGNIF	BED	BED	BED	0		1	n			DTA1 1213 LUS	0	0	n	4	4				
8/15/2009	OC jntn to CV Br		39	FALL	17	2944	0.56	66					BLDR	BLD	BED	BED	0		1	n			DTA1 1214 RBA, 1215 LBA	0	0	n	0	0				Falls height (min) LB = 2' RB = 1.5' :PERM
8/15/2009	OC jntn to CV Br		40	POW	43	2987	0.57	66					BLDR	BLD	COB	BED	0		1	y	at top		DTA1 1216 LUS	0	0	n	0	0				
8/15/2009	OC jntn to CV Br		41	MCP	51	3038	0.58	25	3	5	30		BLDR	BLD	COB	BLD	0		2	y	at base		DTA1 1217 LUS	0	0	n	0	0	665452	4363062		
8/15/2009	OC jntn to CV Br		42	PLP	71	3109	0.59	24.33	4	6			BLDR	BLD	BED	BED	0		2	n			DTA1 1218	0	0	n	0	0				separated from U41 by Bldr control, sand deep ~50%
8/15/2009	OC jntn to CV Br		43	FALL	13	3122	0.59	15					BLDR	BLD	BED	BED	0		1	n			DTA1 1219 LBA > RBA	0	0	n	0	0				
8/15/2009	OC jntn to CV Br		44	PLP	20	3142	0.60	15	3	4			BLDR	BLD	BED	BED	0		1	n			DTA1 1220 @ top of U45 LDS > U44&45	0	0	n	0	0				
8/15/2009	OC jntn to CV Br		45	FALL	10	3152	0.60	15					INSIGNIF	BED	BED	BED	0		1	y	at base			0	0	Y	0	0				BARRIER: 665419/ 4363109
8/15/2009	OC jntn to CV Br		46	PLP	65	3217	0.61	22.5		2	4.5		INSIGNIF	BED	GRV	BED	0		2	y	at base		DTA1 1222 >1225 LUS	1	1	n	0	0	665448	4363098		
8/15/2009	OC jntn to CV Br		47	FALL	10	3227	0.61	25					INSIGNIF	BED	BED	BED	0		1	n			DTA1 1222 >1225 LUS	0	0	Y	0	0				10' high, PERM
8/15/2009	OC jntn to CV Br		48	MPC	25	3252	0.62	31	1.5	3			BLDR	BED	BLD	BED	0		1	n			DTA1 1226 LUS	0	0	n	0	0				
8/15/2009	OC jntn to CV Br		49	RUN	34	3286	0.62	11.5					BLDR	BED	BLD	BED	0		1	n			DTA1 1227 LUS	0	0	n	0	0				
8/15/2009	OC jntn to CV Br		50	POW	54	3340	0.63	16.5					BLDR	BLD	COB	BED	0		1	y	at top		DTA1 1228	0	0	n	0	0	665445	4363130		UTM +,- 46'
8/15/2009	OC jntn to CV Br		51	PLP	26	3366	0.64	11			2.5												DTA1 1229 <LBA > RBA									
8/15/2009	OC jntn to CV Br		52	MCP	51	3417	0.65	16.5			5												DTA1 1230 LUS									3' Falls at base w/ 1/2 Fall 1/2 sheet
8/15/2009	OC jntn to CV Br		53	PLP	35	3452	0.65	11			4																					
8/15/2009	OC jntn to CV Br		54	CAS	52	3504	0.66	18																								under boulders
8/15/2009	OC jntn to CV Br		55	MCP	53	3557	0.67	25			5																					
8/15/2009	OC jntn to CV Br		56	CAS	40	3597	0.68	32																								14%, 5 degrees, under boulders
8/15/2009	OC jntn to CV Br		57	MCP	82	3679	0.70	33.33			3.5																					run at top
8/15/2009	OC jntn to CV Br		58	MCP	69	3748	0.71	37			4											LBA ~0.01 cfs										Boulder/bedrock control separates U58 and U59, lots of fingerlings, trib enters LBA ~ 0.01cfs
8/15/2009	OC jntn to CV Br		59	POW	28	3776	0.72	25												y	at base								665376	4363198		shallower, no bedrock
8/15/2009	OC jntn to CV Br		60	CAS	69	3845	0.73	25																								12%, 3.6 deg
8/15/2009	OC jntn to CV Br		61	MCP	27	3872	0.73	31			4																					
8/15/2009	OC jntn to CV Br		62	MCP	18	3890	0.74	25			3																					separated < 62 by short 2' step
8/15/2009	OC jntn to CV Br		63	HGR	23	3913	0.74	14																								Bedrock
8/15/2009	OC jntn to CV Br		64	PLP	32	3945	0.75	27			3																					
8/15/2009	OC jntn to CV Br		65	FALL	10	3955	0.75	15																								1.5' Perm
8/15/2009	OC jntn to CV Br		66	MCP	31	3986	0.75	18			3.5																					
8/15/2009	OC jntn to CV Br		67	POW	35	4021	0.76	29																								
8/15/2009	OC jntn to CV Br		68	PLP	22	4043	0.77	39			3.5																					
8/15/2009	OC jntn to CV Br		69																													

Oregon Creek – Ground-based Habitat Mapping Data (cont.)

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
8/15/2009	OC jntn to CV Br		70	FALL	10	4053	0.77	20																								2' high, no sat, sc goes around main channel at HF
8/15/2009	OC jntn to CV Br		71	MCP	29	4082	0.77	20			3																					
8/15/2009	OC jntn to CV Br		72	POW	37	4119	0.78	50																						665525	4363305		w/ steps
8/15/2009	OC jntn to CV Br		73	POW	34	4153	0.79	38																									no steps, dead dace = DTA1 1231, sc begins at this unit > under ground to U69
8/15/2009	OC jntn to CV Br		74	PLP	60	4213	0.80	39			10																					
8/15/2009	OC jntn to CV Br		75	CHU	20	4233	0.80	20																									4' step
8/15/2009	OC jntn to CV Br		76	PLP	111	4344	0.82	22.5			10												DTA1 1232 < base 74 > 76, 1233 < base U76 LUS										gauge, heavy recreational use, tree frog. TRAIL FROM GAUGE TO ROAD. Total distance = 4304' = 0.8 mi.
9/12/2009	OC jntn to CV Br		77	CHU	27	4371	0.83	7.67					INSIGNIF	BED	BED	BED			1	y	at base		DTA1 1283 LUS	0	0	n	0	0	665544	4363327		just above gauge pool
9/12/2009	OC jntn to CV Br		78	MCP	57	4428	0.84	22.67		1.88	4.5	0	BLDR	BED	COB	BED			2	n			DTA1 1284 LUS	0	0	n	0	0				slight sand pocket
9/12/2009	OC jntn to CV Br		79	CHU	31.5	4459.5	0.84	9					BLDR	BLD	SND	BED			1	n			DTA1 1285 LUS	0	0	n	0	0				large, slow pool at bottom
9/12/2009	OC jntn to CV Br		80	CAS	80	4539.5	0.86	16			2, 1.5, 3.5		BLDR	BED	BLD	BED			1	n			DTA1 1286, 1287 LUS	0	0	n	0	0				2 larger pools, 11%, possible red-legged F. No photo/ no ID.
9/12/2009	OC jntn to CV Br		81	MCP	75	4614.5	0.87	20		1.35	2.6	0	BLDR	BED	BLD	BED			1	y	at top		DTA1 1290 LUS	0	0	n	0	0				vertical bedrock wall on RBA. Some large boulders but not enough to call POW, dead sucker fish = Photos DTA1 1288, 1289.
9/12/2009	OC jntn to CV Br		82	CHU	22	4636.5	0.88	16.5					INSIGNIF	BED	COB	BED			1	y	at base		DTA1 1291 LUS	0	0	n	0	0	665599	4363376		small pool @ base with chute @ bottom
9/12/2009	OC jntn to CV Br		83	MCP	108	4744.5	0.90	26.33		2.45	4.5		BLDR	BED	COB	BED			1	n			DTA1 1292 LUS	0	0	n	0	0				mid-pool control pinch. Only 1 small scour hole at max
9/12/2009	OC jntn to CV Br		84	CAS	88	4832.5	0.92	18.67		2.88	4.5		BLDR	BED	BLD	BED			2	n			DTA1 1293 LUS	0	0	n	0	0				almost a step pool but water diverges around boulders and not enough ds pool controls
9/12/2009	OC jntn to CV Br		85	MCP	76	4908.5	0.93	15.33		1.95	4		BLDR	BED	BLD	BED			2	n			DTA1 1294 LUS	0	0	n	0	0				trench like in some parts
9/12/2009	OC jntn to CV Br		86	CHU	35	4943.5	0.94	8.67		1.38	3.5		INSIGNIF	BED	COB	BED			1	y	at top		DTA1 1299 LUS	0	0	n	0	0				small cascade at base, one small pool at highflow is going to become chute. ENDING MAPPING@ UTM: 0665700/ 4363395
9/12/2009	OC jntn to CV Br		87	MCP	58	5001.5	0.95	17			3.5												DTA1 1300, 1301									two big pools separated by small pool. 3 Plunge pools wit mid-pool control waterfalls is a plunge pool. Other pools max depths = 4.5 & 10+'
9/12/2009	OC jntn to CV Br		88	FALL	35	5036.5	0.95	6			4.5												DTA1 1302			Y						Falls plunge into deep scour holes - fall/scour/fall/scour. 4 falls = 6', 4', 3', 3'. BARRIER @ UTM: 0665718/ 4363392
9/12/2009	OC jntn to CV Br		89	POW	50	5086.5	0.96	25															DTA1 1303									
9/12/2009	OC jntn to CV Br		90	MCP	97	5183.5	0.98	30			2.5																					
9/12/2009	OC jntn to CV Br		91	POW	52	5235.5	0.99	25															DTA1 1304									
9/12/2009	OC jntn to CV Br		92	STEP	88	5323.5	1.01	20															DTA1 1305									
9/12/2009	OC jntn to CV Br		93	MCP	38	5361.5	1.02	17			3.5												DTA1 1306									Artificial pool dugout by minning.
9/12/2009	OC jntn to CV Br		94	SPLIT	88	5449.5	1.03												4				DTA1									5-7%, not modelable, multiple surfaces, highly modified by minning, HGR on both sides of SPLIT. Unconfined
9/12/2009	OC jntn to CV Br		95	LAP	88	5537.5	1.05	32		1.94	4		VEG	COB	BLD	COB	80		4	y	at base		DTA1 1308	2	2	N	0	0	665762	4363273		Adult poss. CRLF and several juveniles
9/12/2009	OC jntn to CV Br		96	LGR	30	5567.5	1.05	24					BLDR	BLD	BLD	BLD	15	55	4	n			DTA1 1309	0	0	N	0	0			filled in BLD because 'Dominant Bank Substrate' was blank.	gradient 4%, modelable
9/12/2009	OC jntn to CV Br		97	GLI	55	5622.5	1.06	25					BLDR	BLD	COB	BLD			4	n			DTA1 1310	0	0	N	0	0				
9/12/2009	OC jntn to CV Br		98	LGR	24	5646.5	1.07	30					BLDR	BLD	COB	BLD			4	n			DTA1 1311	0	0	N	0	0				gradient 4%, modelable, tree frogs
9/12/2009	OC jntn to CV Br		99	GLI	227	5873.5	1.11	23					VEG	COB	BLD	SND			4	y	at top		DTA1 1312 LDS	0	0	N	0	0	665889	4363288		RC 0.25, max D 1.5, small scour area therefore glide plane bed form punctuated with short LGR's.
9/12/2009	OC jntn to CV Br			SPLIT	112	5985.5																									*SPLIT @ top of unit #99 (highly modified) split length = 112
9/12/2009	OC jntn to CV Br		100	LAP	118.5	6104	1.16	24		1.31	3		BLDR	COB	BLD	COB			4	n			DTA1 1315	0	0	n	0	0				
9/12/2009	OC jntn to CV Br		101	LGR	40	6144	1.16	30					INSIGNIF	COB	BLD	COB			4	n			DTA1 1317	0	0	n	0	0				gradient 2%, modelable but variety of controls; poor modelability
9/12/2009	OC jntn to CV Br		102	GLI	110	6254	1.18	33					VEG	COB	BLD	SND			4	n			DTA1 1318 LDS	0	0	n	0	0				
9/12/2009	OC jntn to CV Br		103	LGR	29	6283	1.19	23					INSIGNIF	COB	BLD	COB			4	n			DTA1 1319 LDS	0	0	n	0	0				gradient 3% modelable
9/12/2009	OC jntn to CV Br		104	GLI	88	6371	1.21	25					INSIGNIF	COB	SND	COB			4	Y	at top		DTA1 1320	0	0	n	58	24	665875	4363419		spawining gravel present but packet with sand
9/12/2009	OC jntn to CV Br			SPLIT	303	6674	1.26																									(Confined channel at start) LGR/HGR/GLI with high density Darmera
9/12/2009	OC jntn to CV Br		105	POW	92	6766	1.28	46.33															DTA1 1323 LDS									
9/12/2009	OC jntn to CV Br		106	MCP	20	6786	1.29	20			2.5												DTA1 1324									
9/12/2009	OC jntn to CV Br		107	POW	170	6956	1.32	36.25									30						DTA1 1325									
9/12/2009	OC jntn to CV Br		108	CAS	19.5	6975.5	1.32	38																									gradient 11%
9/12/2009	OC jntn to CV Br		109	POW	54	7029.5	1.33	41																								
9/12/2009	OC jntn to CV Br		110	CAS	18	7047.5	1.33	42																									gradient 12%
9/12/2009	OC jntn to CV Br		111	POW	25	7072.5	1.34	30																								
9/12/2009	OC jntn to CV Br		112	MCP	41	7113.5	1.35	20			3.25																					CA newt; downstream unit separated by bedrock pinch point
9/12/2009	OC jntn to CV Br		113	MCP	73	7186.5	1.36	22			3.5																					
9/12/2009	OC jntn to CV Br		114	CAS	22	7208.5	1.37	32																									gradient 11%
9/12/2009	OC jntn to CV Br		115	MCP	42	7250.5	1.37	30.5			3									y	at base									665769	4363635		
9/12/2009	OC jntn to CV Br		116	CAS	19	7269.5	1.38	46																									gradient 12%
9/12/2009	OC jntn to CV Br		117	POW	184	7453.5	1.41	40.33																									pool upstream of U116 but short & enough boulders to include with POW unit 117. 4 steps in POW
9/12/2009	OC jntn to CV Br		118	HGR	27	7480.5	1.42	35																									gradient 11%
9/12/2009	OC jntn to CV Br		119	POW	55	7535.5	1.43	39																								
9/12/2009	OC jntn to CV Br		120	MCP	146	7681.5	1.45	34			4																					
9/12/2009	OC jntn to CV Br		121	CAS	16	7697.5	1.46	33																									gradient 17%
9/12/2009	OC jntn to CV Br		122	RUN	50	7747.5	1.47	22.67																									bedrock step divides run with upper run short & wide
9/12/2009	OC jntn to CV Br			SPLIT	211	7958.5	1.51																										SPLIT with HGR/GLIDE & SMALL MCP (CRLF Adult)
9/12/2009	OC jntn to CV Br		123	MCP	222	8180.5	1.55	30.2			6																						camper reports Ringtails on Yuba @ Peterson Corner
9/12/2009	OC jntn to CV Br		124	RUN	142	8322.5	1.58	27.67																						665898	4363930		Run with a step at downstream end. Series of step runs at upstream end, non-modelable. Gradient 8%.
9/12/2009	OC jntn to CV Br		125	POW	53	8375.5	1.59	52																									CA newt
9/12/2009	OC jntn to CV Br		126	MCP	144	8519.5	1.61	39																									boulders sticking up at downstream pool
9/12/2009	OC jntn to CV Br		127	CAS	18	8537.5	1.62	40																									gradient 17%
9/12/2009	OC jntn to CV Br		128	MCP	34	8571.5	1.62	30			2.75																					
9/12/2009	OC jntn to CV Br		129	CAS	47	8618.5	1.63	37																									gradient 8%, At low flow cascade/hodgepodge. At high flow it's a true hodgepodge. Nonmodelable.
9/12/2009	OC jntn to CV Br		130	RUN	27	8645.5	1.64	45			1.75																						RC 0.75
9/12/2009	OC jntn to CV Br		131	MCP	35	8680.5	1.64	29			3																					
9/12/2009	OC jntn to CV Br		132	RUN	23	8703.5	1.65	22																									Step/Run
9/12/2009	OC jntn to CV Br		133	COP	25	8728.5	1.65	25			2.5																					
9/12/2009	OC jntn to CV Br			SPLIT	272	9000.5	1.70																										Multi-braided split with LGR GLIDES mix.
9/12/2009	OC jntn to CV Br		134	MCP	304	9304.5	1.76	55			6												DTA1 1329, 1330, 1331						66093	4363938		Great Blue Heron, Unit 134 almost looks like dam pool but no obvious dam just braided channels, some sort of deposit g at the downstream & braids at deposit. Photo DTA1 1332 is outflow.
9/12/2009	OC jntn to CV Br			SPLIT	54	9358.5	1.77	38.5																									
9/12/2009	OC jntn to CV Br		135	RUN	23	9381.5	1.78	23												y	at base									666049	4364033		
9/12/2009	OC jntn to CV Br		136	LGR	82	9463.5	1.79	40																									gradient 3%, pooling on perimeter, non modelable
9/12/2009	OC jntn to CV Br		137	POW	60	9523.5	1.80	30																									
9/12/2009	OC jntn to CV Br		138	LGR	64	9587.5	1.82	26																									gradient 2%, ambiguous due to minor surface aggitation @ current flow. Would be LGR @ additional 5 cfs.
9/12/2009	OC jntn to CV Br		139	HGR	30	9617.5	1.82	35																									gradient 9%.

Oregon Creek – Ground-based Habitat Mapping Data (cont.)

Stream: Oregon Creek **Date:** 8/15/2009 **Parent Material:** granitic pluton, metasedimentary
Reach: **Map Gradient (%):** 2.3%

9/12/2009	OC jntn to CV Br		140	STEP	58	9675.5	1.83	36.5			2																			
9/12/2009	OC jntn to CV Br		141	POW	78	9753.5	1.85	40																						
9/12/2009	OC jntn to CV Br		142	STEP	108	9861.5	1.87	36																						
9/12/2009	OC jntn to CV Br		143	MCP	72	9933.5	1.88	25			3																			Mid-pool control
9/12/2009	OC jntn to CV Br		144	RUN	25	9958.5	1.89																							ENDS in a CHUTE flagged at top, END SURVEY FOR 9/12/09
9/12/2009	OC jntn to CV Br		145	MCP	38	9996.5	1.89	27.33			2.5																			bedrock
9/12/2009	OC jntn to CV Br		146	STEP	35	10031.5	1.90	30.5														DTA1 1411								bedrock, 3% gradient, step run unclear because of substrate (chute-like)
9/12/2009	OC jntn to CV Br		147	MCP	66	10097.5	1.91	39.33			2.5											DTA1								width includes midchannel sidebar and associated side pool
9/12/2009	OC jntn to CV Br		148	MCP	78	10175.5	1.93	32.33			3.25											DTA1 1412								pool slit by surfacing bedrock in middle
9/12/2009	OC jntn to CV Br		149	LGR	160	10335.5	1.96	49.67														DTA1 1413								bedrock riffle - some step-like features, 4%
9/12/2009	OC jntn to CV Br		150	MCP	101	10436.5	1.98	40.33			3.75																			
9/12/2009	OC jntn to CV Br		151	MCP	65	10501.5	1.99	33.33			3.25																			two above MCP separated by strong bedrock control
9/12/2009	OC jntn to CV Br		152	HGR	29	10530.5	1.99	35																						bedrock riffle, 4% gradient
9/12/2009	OC jntn to CV Br		153	MCP	91	10621.5	2.01	34			3.25																			head of pool w/ some surface agitation, slightly POW - like but no signifcant control so considered part of MCP.
9/12/2009	OC jntn to CV Br		154	HGR	66	10687.5	2.02	30														DTA1 1414								5% gradient, modelable
9/12/2009	OC jntn to CV Br		155	STEP	50	10737.5	2.03	45												y	at top	DTA1 1415						666092	4364377		oblique flow, multiple water surfaces, pocket-like (poor exp of step), 3% grad.
9/12/2009	OC jntn to CV Br		156	MCP	82	10819.5	2.05	37.67			2																			
9/12/2009	OC jntn to CV Br		157	MCP	32	10851.5	2.06	32			2																			RC = 0.5, max depth = 2, area < 3 meters
9/12/2009	OC jntn to CV Br		158	STEP	28	10879.5	2.06	34.5																						cobble/ boulder bar creates split, few steps
9/12/2009	OC jntn to CV Br		159	POW	156	11035.5	2.09	40														DTA1 1416								bedrock pool/ shallow pocket water - directly under Celestial Valley Road bridge.
9/12/2009	OC jntn to CV Br		160	RUN	45	11080.5	2.10	27.5																						bedrock under bridge
9/12/2009	OC jntn to CV Br		162	MCP	32	11112.5	2.10	36			2.75																			
9/12/2009	OC jntn to CV Br		163	RUN	27	11139.5	2.11	19.5																						
9/12/2009	OC jntn to CV Br		164	MCP	38	11177.5	2.12	27.33			3											LBA 0.5 cfs								tributary LBA ~ 0.5 cfs
9/12/2009	OC jntn to CV Br		165	LGR	230	11407.5	2.16	34.25												y	at top							666246	4364489		california newt!, short run at bottom, one LBA midchannel modelable; modification & some pools formed from mining. SWITCH TO MAPPING @ UTM: 0666246/ 4364489
9/15/2009	CV Br to Pvt Prop		166	MCP	48	11455.5	2.17	34		2	1.06		BLDR	BLD	COB	COB		4	y	at base	RBA 0.5 cfs	DTA1 1417	0	0	n	0	0	666242	4364489		
9/15/2009	CV Br to Pvt Prop		167	STEP	53	11508.5	2.18	33					BLDR	BLD	COB	BLD	10	4	n			DTA1 1418	0	0	n	0	0				3% gradient
9/15/2009	CV Br to Pvt Prop		168	MCP	32	11540.5	2.19	30.5		2	1.13	30	BLDR	BLD	COB	BLD		4	N				0	0	N	0	0				
9/15/2009	CV Br to Pvt Prop		169	MCP	151	11691.5	2.21	31.67		5.5	2.78	50	BLDR	BLD	COB	BLD	30	4	n			DTA1 1419	0	0	n	0	0				pool 168 & 169 separated by strong bedrock boulder outcrop, weak control mid-pool
9/15/2009	CV Br to Pvt Prop		170	LGR	108	11799.5	2.23	30.67					BLDR	BLD	COB	BLD	4	4	y	at top			0	0	n	0	0	666359	4364524		2.5% gradient, 75% of channel RBA riffle-like, although steplike RBA NOT MODELABLE because more than one habitat type across transverse (2/3 riffle, 1/3 run)
9/15/2009	CV Br to Pvt Prop		171	MCP	243	12042.5	2.28	41.67		2	3.5	50	BLDR	COB	SND	SND	15	4	y	at base	LBA < 0.1 cfs	DTA1 1420 LDS	0	0	n	0	0				'+ 0.5 feet for average BF depth
9/15/2009	CV Br to Pvt Prop		172	GLI	274	12316.5	2.33	29.75	2				BLDR	COB	BLD	SND	50	4	n		RBA 1.0 cfs	DTA1 1421 LDS	0	0	n	0	0				
9/15/2009	CV Br to Pvt Prop		173	LGR	264	12580.5	2.38	32.5	1.25				BLDR	COB	BLD	COB		4	n			DTA1 1422	0	0	n	0	0				2% gradient, sedges, banks - heavy blackberry cobble is sand matrix with some boulder. Modelable at higher flows (through rocks and multiple flow line at current flow)
9/15/2009	CV Br to Pvt Prop		174	GLI	43	12623.5	2.39	44	2				BLDR	COB	BLD	COB	5	1	n			DTA1 1423	0	0	n	0	0				Glide at base of pool, poor control between GLI & Pool (U174 & 175)
9/15/2009	CV Br to Pvt Prop		175	MCP	225	12848.5	2.43	32.75	1.75	1.5	3.1	30	BLDR	BLD	COB	BLD		1	y	at top		DTA1 1425 LDS	0	0	n	0	0				poor sc but enough shallow, slow, wide. Photo DTA1 1424 LUS butterfly
9/15/2009	CV Br to Pvt Prop		176	LGR	41	12889.5	2.44	24														DTA1 1427 LDS						666380	4364831		3% grad, boulder and cobble substrate
9/15/2009	CV Br to Pvt Prop		177	MCP	113	13002.5	2.46	28.75			2.5											DTA1 1426								railroad bridge crosses unit, cobble/ boulder substrate, 30% each
9/15/2009	CV Br to Pvt Prop		178	LGR	60	13062.5	2.47	27.67	1.75																					2% gradient
9/15/2009	CV Br to Pvt Prop		179	GLI	78	13140.5	2.49	25.33			1.2																			rc = 0.75, max depth = 1.2 therefore does not meet, slow, therefore Glide
9/15/2009	CV Br to Pvt Prop		180	LGR	27	13167.5	2.49	25																						2%, run-like character
9/15/2009	CV Br to Pvt Prop		181	LGR	156	13323.5	2.52	25.25																						3% gradient
9/15/2009	CV Br to Pvt Prop		182	MCP	337	13660.5	2.59	36			4.25																			strong downstream control < boulders; short run at top, lots of sand surrounds cobbles and boulders but not in big depth, cat tails increase overhanging veg. Boulder/cobble substrate
9/15/2009	CV Br to Pvt Prop		183	LGR	53	13713.5	2.60	25																						boulder/cobble, 3%
9/15/2009	CV Br to Pvt Prop		184	MCP	98	13811.5	2.62	29			2.25																			boulder/cobble w/ sand
9/15/2009	CV Br to Pvt Prop		185	LGR	86	13897.5	2.63	27.67												y								666369	4365161		not modelable, too many WSE's, 4% grad.
9/15/2009	CV Br to Pvt Prop		186	MCP	83	13980.5	2.65	31			2																			cobble/boulder/sand
9/15/2009	CV Br to Pvt Prop		187	LGR	26	14006.5	2.65	28																						2% gradient
9/15/2009	CV Br to Pvt Prop		188	MCP	108	14114.5	2.67	33			2.5																			rc'= 0.6, shallow at top
9/15/2009	CV Br to Pvt Prop		189	LGR	214	14328.5	2.71	33.33																						2.5% grad
9/15/2009	CV Br to Pvt Prop		190	MCP	132	14460.5	2.74	35.33			3																			sand fills pool
9/15/2009	CV Br to Pvt Prop		191	MCP	68	14528.5	2.75	28			3																			boulder control separates 190 &191, fence at goat pasture, modification/disturbance
9/15/2009	CV Br to Pvt Prop		192	HGR	26	14554.5	2.76	27																						6% grad, boulder/riffle, non modelable
9/15/2009	CV Br to Pvt Prop		193	LGR	71	14625.5	2.77	22.5																						3% gradient, lower w/ poorly formed steps; flater/deeper - lumped cobble bar on LBA.
9/15/2009	CV Br to Pvt Prop		194	RUN	46	14671.5	2.78	19.5			1.25																			rc = 0.75, r.d. = 0.5 doesn't meet; deeper therefore run
9/15/2009	CV Br to Pvt Prop		195	LGR	63	14734.5	2.79	24																				666363	4365457		4% gradient, flag, modelable at top only
9/15/2009	CV Br to Pvt Prop		196	RUN	50	14784.5	2.80	34.33																						wide, shallow
9/15/2009	CV Br to Pvt Prop		197	MCP	255	15039.5	2.85	46.33			4.25																			long, deep, filled with sand; adjacent to log yard; +1 for BFD (WD 1-12.50 (w) 1-12,25 (w); 150 LBD BE
9/15/2009	CV Br to Pvt Prop		198	LGR	49	15088.5	2.86	32.5																						3% gradient
9/15/2009	CV Br to Pvt Prop		199	MCP	132	15220.5	2.88	32.33			1.75	30																	666325	4365576		bridge 666325/ 4365576, sand/boulder substrate 30% embedded.
9/15/2009	CV Br to Pvt Prop		200	LGR	278	15498.5	2.94	28.6	1.5																					3%, modelable in flatter sections but multiple flow lines elsewhere
9/15/2009	CV Br to Pvt Prop		201	MCP	94	15592.5	2.95	27.33			1.5																			r.c. = 0.04 > meets
9/15/2009	CV Br to Pvt Prop		202	RUN	50	15642.5	2.96	24																						run uniform, deepr than glide, but slow water
9/15/2009	CV Br to Pvt Prop		203	LGR	112	15754.5	2.98	33																						4%, flat section modlelable
9/15/2009	CV Br to Pvt Prop		204	MCP	193	15947.5	3.02	33.75			3.75	50										DTA1 1428 LDS								sand fills pool, cows, stream side road (boulder/sand), 50% pool tail embeddedness
9/15/2009	CV Br to Pvt Prop		205	LGR	36	15983.5	3.03	27												y	at top										boulder/cobble flat at top (but forgot UTM)
9/15/2009	CV Br to Pvt Prop		206	MCP	94	16077.5	3.04	26.67																				666330	4365849		
9/15/2009	CV Br to Pvt Prop		207	LGR	60	16137.5	3.06	25														DTA1 1429								non modelable, 4% gradient
9/15/2009	CV Br to Pvt Prop		208	RUN	30	16167.5	3.06	27																						
9/15/2009	CV Br to Pvt Prop		209	MCP	201	16368.5	3.10	36			1.75											LBA 0.05 cfs	DTA1 1430-1432								filled with sand - boulder/sand substrate, thick green algae, dogs sand piling into stream, 0.05 cfs culvert/ trib LBA, shallow at head, PHOTOS DTA1 1430-1432 dogs, pool, and bank.
9/15/2009	CV Br to Pvt Prop		210	LGR	29	16397.5	3.11	34																						2% grad
9/15/2009	CV Br to Pvt Prop		211	MCP	123	16520.5	3.13	34.67			2																			RUN/GLIDE at tail (~25' long)
9/15/2009	CV Br to Pvt Prop		212	RUN	34	16554.5	3.14	24.33																						boulder/ cobble
9/15/2009	CV Br to Pvt Prop		213	MCP	54	16608.5	3.15	19			2																			boulder/ cobble, 10' step through not mass and boulders separate 212&213
9/15/2009	CV Br to Pvt Prop		214	HGR	25	16633.5	3.15	29														DTA1 1433								8% gradient, strong boulder -> psuedo steps, oblique flow, non-modelable
9/15/2009	CV Br to Pvt Prop		215	MCP	82	16715.5	3.17	25.67			2									y	at top		DTA1 1434 of unit tail					666409	4366040		flag, long narrow tail (run-like), bldr/cob (less sand), rc = 0.75.

Oregon Creek – Ground-based Habitat Mapping Data (cont.)

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
9/15/2009	CV Br to Pvt Prop		216	LGR	93	16808.5	3.18	31																								4% gradient, modelable
9/15/2009	CV Br to Pvt Prop		217	POW	36	16844.5	3.19	28.5															DTA1 1436									small scale, multi-thread, boulder dominant
9/15/2009	CV Br to Pvt Prop		218	MCP	56	16900.5	3.20	29.67			2																					rc = 0.5, poor sc; wide, flat, shallow
9/15/2009	CV Br to Pvt Prop		219	POW	86	16986.5	3.22	29.75																								rhubarb
9/15/2009	CV Br to Pvt Prop		220	MCP	20	17006.5	3.22	21			2																					
9/15/2009	CV Br to Pvt Prop		221	RUN	17	17023.5	3.22	17																								
9/15/2009	CV Br to Pvt Prop		222	MCP	127	17150.5	3.25	28			2												DTA1 1437 LDS									thick algae, rc = 0.5, tail glide-like.
9/15/2009	CV Br to Pvt Prop		223	POW	32	17182.5	3.25	28															DTA1 1438 LUS									
9/15/2009	CV Br to Pvt Prop		224	LGR	70	17252.5	3.27	26																								boulder, sub cobble, 3% gradient, non-modelable, oblique
9/15/2009	CV Br to Pvt Prop		225	POW	44	17296.5	3.28	25			1.5												DTA1 1439						666538	4366168		rc = 0.5, boulder/cobble, no movement n 1 > t, poor sc. (doesn't meet rd), no flow uniformity THEREFORE POW, END SURVEY.
10/4/2009	Below Log Cabin		226	LGR	120.5	17417	3.30	15.67	1.25				BLDR	BLD	COB	BLD			1	y	at base		DTA2 2127			n			666543	4366181		LGR because surface agitation, although may resemble POW @ high flows, 2% gradient.
10/4/2009	Below Log Cabin		227	RUN	51	17468	3.31	17.5	1.75				BLDR	BLD	COB	BLD			1	n			DTA2 2128			n						Not POW because shallow and no divergent flows. Used unit #225 for truthing.
10/4/2009	Below Log Cabin		228	HGR	86	17554	3.32	17					BLDR	BLD	COB	BLD			1	n			DTA2 2129			n						4%, big boulders
10/4/2009	Below Log Cabin		229	MCP	124	17678	3.35	32		2.875	5	15	BLDR	BLD	COB	BED			3	n			DTA2 2130			n						top of pool run - like due to slight control
10/4/2009	Below Log Cabin		230	CAS	16	17694	3.35	6.33					BLDR	BED	BLD	BED			3	y	at top		DTA2 2131			n			666646	4366242		7% gradient
10/4/2009	Below Log Cabin		231	LGR	29	17723	3.36	12	1.5				BLDR	BLD	COB	BLD			3	y	at base		DTA2 2132			n			666646	4366242		2% gradient
10/4/2009	Below Log Cabin		232	MCP	157	17880	3.39	26.75		3.5	6	10	BLDR	BED	BLD	BLD			2	n			DTA2 2133			n						top of pool narrow & run-like with weak control
10/4/2009	Below Log Cabin		233	LGR	61	17941	3.40	19.33	1.5				BLDR	BLD	COB	BLD			3	n						n						3%, maybe split channel @ higher flows
10/4/2009	Below Log Cabin		234	POW	89	18030	3.41	32					BLDR	BLD	COB	BED			3	n			DTA2 2134			n						
10/4/2009	Below Log Cabin		235	STEP	98	18128	3.43	21					BLDR	BLD	COB	BLD			3	y	at top		DTA2 2135 LDS			n			666614	4366372		weakly stepped but steps present. Modified therefore stranded rocks in wetted channel photos DTA2 2138 LDS. Top step looks like maybe half LGR in higher flows
10/4/2009	Below Log Cabin		236	LGR	61	18189	3.44	16.33	1.5				BLDR	BED	COB	BLD			1	y			DTA2 2139			n			666604	4366353		1% gradient
10/4/2009	Below Log Cabin		237	POW	105	18294	3.46	23					BLDR	BLD	BED	BED			1	n			DTA2 2140			n	22	9				POW best describes, would be GLI but very ununiform/boulder substrate
10/4/2009	Below Log Cabin		238	LGR	136	18430	3.49	19.25	1.7				BLDR	BLD	COB	BLD			3	n			DTA2 2141			n						modified at middle, rock-boulder dam at road crossing; photos DTA2 # 2142, 2143. 2.5% gradient. Red-legged adult frog (Photos: DTA2 #'s 2144, 2145, 2146 are of juvenile RLF, #'s 2147, 2148 are of adult RLF).
10/4/2009	Below Log Cabin		239	RUN	91	18521	3.51	25.33	1.5				BLDR	BLD	COB	BLD			3	n			DTA2 21549			n	1	1				spawn gravel out of water, POW-like, but much too shallow, no scour around boulders, no surface agitation so not LGR
10/4/2009	Below Log Cabin		240	LGR	32	18553	3.51	19.5					BLDR	BLD	COB	BLD			3	y	at top		DTA2 2150			n			666588	4366503		3% gradient
10/4/2009	Below Log Cabin		241	RUN	108	18661	3.53	19.67					BLDR	BLD	COB	BLD			1	y	at base		DTA2 2151			n	5	4	666658	4366498		POW-like, but shallow, little scour, more POW-like at base.
10/4/2009	Below Log Cabin		242	MCP	94	18755	3.55	41.5		2.9	5.5	25	BLDR	BED	BLD	BED			2	n			DTA2 2152			n						
10/4/2009	Below Log Cabin		243	HGR	83	18838	3.57	21.33	1.5				BLDR	BLD	BED	BLD			1	n			DTA2 2153			n						4% gradient, some steps on LBA, not mappable
10/4/2009	Below Log Cabin		244	LGR	47	18885	3.58	25.5					BLDR	BLD	COB	BLD			1	n			DTA2 2154			n						4" fish, LGR due to surface agitation, 1% gradient
10/4/2009	Below Log Cabin		245	RUN	44	18929	3.59	17	1.5				BLDR	BLD	COB	BLD			1	y	at top		DTA2 2155			n			666603	4366620		
10/4/2009	Below Log Cabin		246	LGR	104	19033	3.60	22.33															DTA2 2156									
10/4/2009	Below Log Cabin		247	POW	39	19072	3.61	26.5																								
10/4/2009	Below Log Cabin		248	LGR	44	19116	3.62	27.5																								
10/4/2009	Below Log Cabin		249	MCP	89	19205	3.64	34		2.5																						
10/4/2009	Below Log Cabin			SPLIT	43	19248	3.65																DTA2 2157									
10/4/2009	Below Log Cabin		250	LGR	71	19319	3.66	23															DTA2 2158									1% surface agitation present, channel wide and almost divergent; somei indistinct run-like features, not stepped.
10/4/2009	Below Log Cabin		251	RUN	49	19368	3.67	43																								run-like but shallow with no scour around boulders
10/4/2009	Below Log Cabin		252	LGR	73	19441	3.68	22																								0.50%
10/4/2009	Below Log Cabin		253	LGR	83	19524	3.70	15															DTA2 2159									3%
10/4/2009	Below Log Cabin			SPLIT	111	19635	3.72																									pool rba, run lba
10/4/2009	Below Log Cabin		254	MCP	58	19693	3.73	63		6													DTA2 2160									
10/4/2009	Below Log Cabin		255	FALLS	15	19708	3.73	15																		y			666725	4366817		6' barrier, flagged at top
10/4/2009	Below Log Cabin		256	CHU	22	19730	3.74	30																								
10/4/2009	Below Log Cabin		257	CAS	15	19745	3.74	58																								
10/4/2009	Below Log Cabin		258	POW	63	19808	3.75	41																								
10/4/2009	Below Log Cabin			CAS	15	19823	3.75	58																		y						4' barrier see coordinates for Unit 255
10/4/2009	Below Log Cabin		259	STEP	35	19858	3.76	27																								
10/4/2009	Below Log Cabin			SPLIT	129	19987	3.79																DTA2 2161									divergent, shallow
10/4/2009	Below Log Cabin		260	MCP	62	20049	3.80	36.5																								
10/4/2009	Below Log Cabin		261	LGR	35	20084	3.80	49					BED																			4%
10/4/2009	Below Log Cabin		262	MCP	94	20178	3.82	41																								
10/4/2009	Below Log Cabin		263	FALL	20	20198	3.83	35															DTA2 2163,2164,2166									weir at top substantially reducting flows; irrigation from weir - looks private
10/4/2009	Below Log Cabin		264	MCP	253	20451	3.87	42.5		6													DTA2 2167									
10/4/2009	Below Log Cabin		265	POW	88	20539	3.89	30																								tail is rapid-like
10/4/2009	Below Log Cabin		266	FALL	8	20547	3.89	36					INSIGNIF	BED	BED	BED			1	y	at base		DTA2 2169			y			666921	4366959		4 foot fish migration barrier
10/4/2009	Below Log Cabin		267	MCP	106	20653	3.91	35		2	4		BLDR	BLD	BED	BLD			1	n			DTA2 2170			n						Bedrock "controls" throughout, top of pool is POW-like.
10/4/2009	Below Log Cabin		268	MCP	47	20700	3.92	22		2.25	3.5		BLDR	BED	BLD	BED			1	n			DTA2 2171			n						Riffle at base separates from lower pool, 5% gradient.
10/4/2009	Below Log Cabin		269	HGR	39	20739	3.93	19.5					BLDR	BED	BLD	BED			1	n			DTA2 2172			n						5% gradient
10/4/2009	Below Log Cabin		270	POW	100	20839	3.95	27.33					BLDR	BLD	BED	BED			1	y	at top		DTA2 2173			n			666957	4367034		
10/4/2009	Below Log Cabin		271	MCP	114	20953	3.97	25.67		1.5	3		BLDR	BED	BLD	BED			1	y	at base		DTA2 2174			n			666962	4367038		POW-like at base; shorty HGR separates from POW below
10/4/2009	Below Log Cabin		272	POW	36	20989	3.98	30					BLDR	BED	BLD	BED			1	n			DTA2 2175			n						
10/4/2009	Below Log Cabin		273	HGR	36	21025	3.98	25	1.9				BLDR	BED	BLD	BED			1	n			DTA2 2176			n						6% gradient
10/4/2009	Below Log Cabin		274	RUN	45	21070	3.99	20.33					BLDR	BED	BLD	BLD			1	n			DTA2 2177, 2178			n						POW-like with some steps, but shallow and no scour around boulders
10/4/2009	Below Log Cabin		275	MCP	48	21118	4.00	62.5		3.8	6		BLDR	BED	BLD	BED			1	y	at top		DTA2 2179, 2180	1	1	n			667048	4367070	changed from POW in spite of under cliff and around boulders	UTM is at top of U275, creepy cave here, water goes under bedrock cliff.
10/4/2009	Below Log Cabin		276	STEP	95	21213	4.02	19.33	1.5				BLDR	BLD	COB	BLD			3	y	at base		DTA2 2181			n			667048	4367070		
10/4/2009	Below Log Cabin		277	RUN	135	21348	4.04	21.5					BLDR	BLD	BED	BED			1	n			DTA2 2182			n						
10/4/2009	Below Log Cabin		278	LGR	203	21551	4.08	23.5	1				BLDR	BLD	COB	BLD			1	n			DTA2 2183			n						2% gradient
10/4/2009	Below Log Cabin		279	MCP	172	21723	4.11	35		3.3	6		BLDR	BED	BLD	BED			2	n			DTA2 2184, 2185			n						
10/4/2009	Below Log Cabin		280	RUN	33	21756	4.12	12					BLDR	BED	BLD	BED			1	y	at top		DTA2 2186			n			667047	4367258		narrow channel, bedrock on both sides
10/4/2009	Below Log Cabin		281	CAS	13.5	21769.5	4.12	15					BLDR	BED	BLD	BED			1	Y	at top		DTA2 2187			y	0		667030	4367261		10' perm barrier; weir at top of feature
10/4/2009	Below Log Cabin		282	MCP	101	21870.5	4.14	43			5	35	BLDR	BED	BLD	BED			2	n			DTA2 2188			y						4' weir at top; weir at bottom; gauges here
10/4/2009	Below Log Cabin			SPLIT	19	21889.5	4.15																									rba - pool; lba - run into weir
10/4/2009	Below Log Cabin		283	LGR	84	21973.5	4.16	22	1.25				BLDR	BLD	BED	BLD			1	N			DTA2 2190			n						2% gradient
10/4/2009	Below Log Cabin		284	RUN	66	22039.5	4.17	18.33					BLDR	BLD	COB	SND			1	N			DTA2 2191			n						plunge/step from upper pool into run
10/4/2009	Below Log Cabin		285	MCP	55	22094.5	4.18	22		1.9	3.5	30	BLDR	LBD	COB	BLD			1	Y	at top		DTA2 2192			n			667008	436359		
10/4/2009	Below Log Cabin		286	LGR	108	22202.5	4.21	22.67	1.5				BLDR	BLD	COB	BLD			1	y	at base		DTA2 2193			n						3% gradient
10/4/2009	Below Log Cabin		287	MCP	39	22241.5	4.21	16.5		1.4	2.5		BLDR	BLD	BED	BED			1	N			DTA2 2194			n						
10/4/2009	Below Log Cabin		288	LGR	55	22296.5	4.22	10.33					BLDR	BLD	COB	BLD			1	Y	at top		DTA2 2199									4%
10/4/2009	Below Log Cabin		289	PLP	79	22375.5	4.24			4.7	8	5	BLDR	BLD	BED	BLD			2	y	at base		DTA2 2200			n			667048	4367394	changed from MCP	pool directly below dam

Table 1a. Summary Statistics - Mapped Units

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall	133	0.6%	9	3.1%	25.9			
Cascade	852	4.1%	19	6.6%	30.2			
Chute	157.5	0.8%	6	2.1%	15.3			
Rapid								
High Gradient Riffle	673	3.2%	15	5.2%	26.3			
Low Gradient Riffle	4169.5	19.9%	49	17.0%	26.7			
Glide	946	4.5%	8	2.8%	29.3			
Run	1245	5.9%	24	8.3%	23.5			
Step Run	808	3.9%	12	4.2%	29.1			
Pocket Water	2613	12.5%	38	13.2%	34.6			
Sheet	92	0.4%	1	0.3%	30.3			
Convergance Pool	25	0.1%	1	0.3%	25.0		2.5	
Mid-Channel Pool	8476	40.4%	93	32.3%	30.8	2.4	3.3	7.6
Lateral Scour Pool	206.5	1.0%	2	0.7%	28.0	1.6	3.5	
Trench Pool								
Plunge Pool	582	2.8%	11	3.8%	25.7	3.5	6.0	5.9
TOTAL	**20978.5**	**100.0%**	**288**	**100.0%**	**29.4**	**2.5**	**3.8**	**6.7**
QC			**0**		**Weighted Average By Length (ft)**			

Table 2. Stream Cover

Dominant Cover Type	Number	Relative Frequency
Insignificant	16	14.04%
Boulder	93	81.58%
Vegetation	5	4.39%
Wood	0	
SUM	114	100%

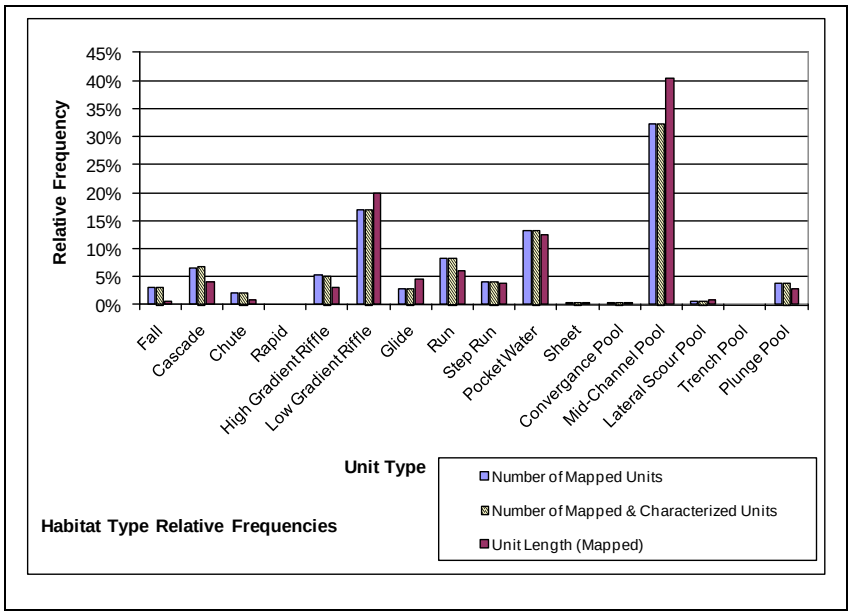
QC

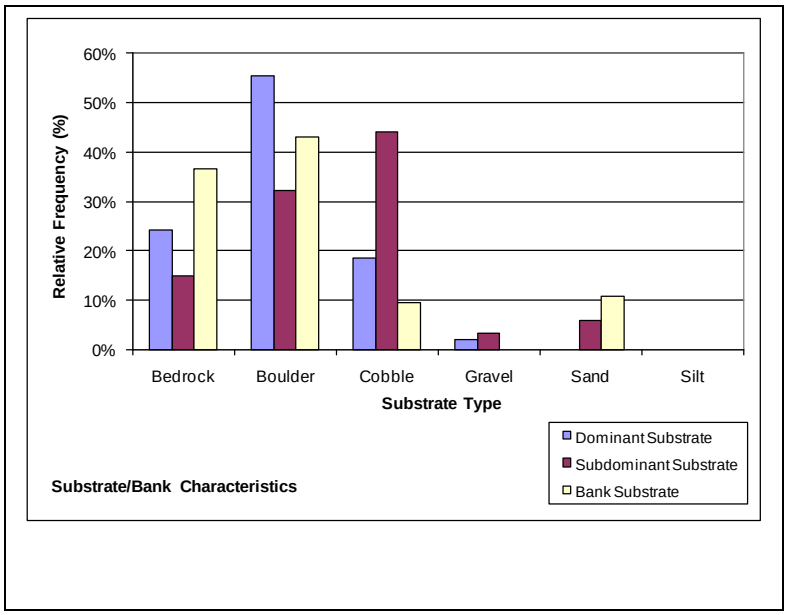
Table 3. Reach Summary

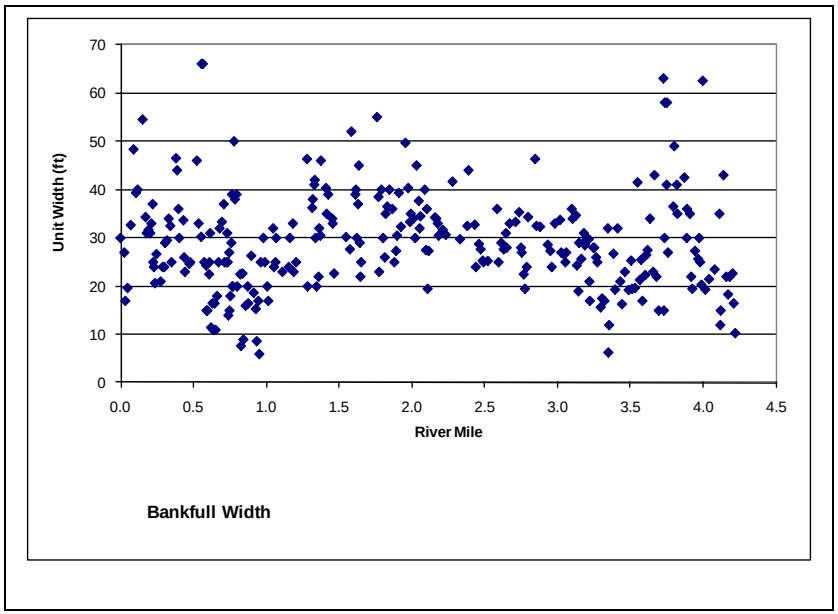
Total Reach Length:	**4.2** mi.	
Total Mapped Length:	4.0 mi.	94.6% mapped
Average Bankfull Width:	29.4 ft.	0.00 mi. charac
Bankfull Depth:	**1.7** ft.	94.67% Total m & c
Width:Depth:	17	
Flood Prone Width:	**0** ft.	
Entrenchment Ratio:	0.0	
Total Spawnable Gravel:	255 ft^2 - trout	
Avg Largest Patch Size:	12 ft^2 - trout	
LWD Density:	2 / mile (bankful)	
Wetted LWD Density:	2 / mile (wetted width)	
Parent Material:	granitic pluton, metasedimentary	
Bank Erosion % of Reach:	0.6%	
Tot No. Passage Barriers:	8	

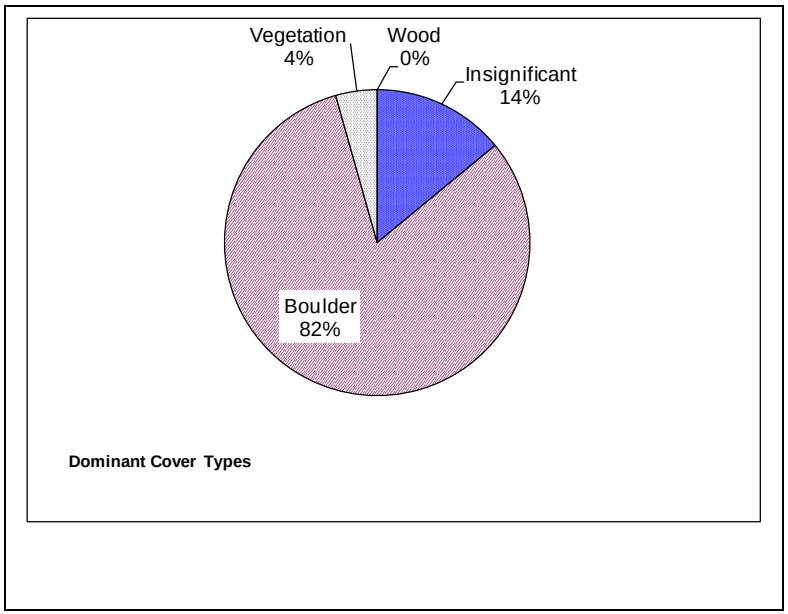
Table 4. Reach Summary - Substrate and Bank Characteristics

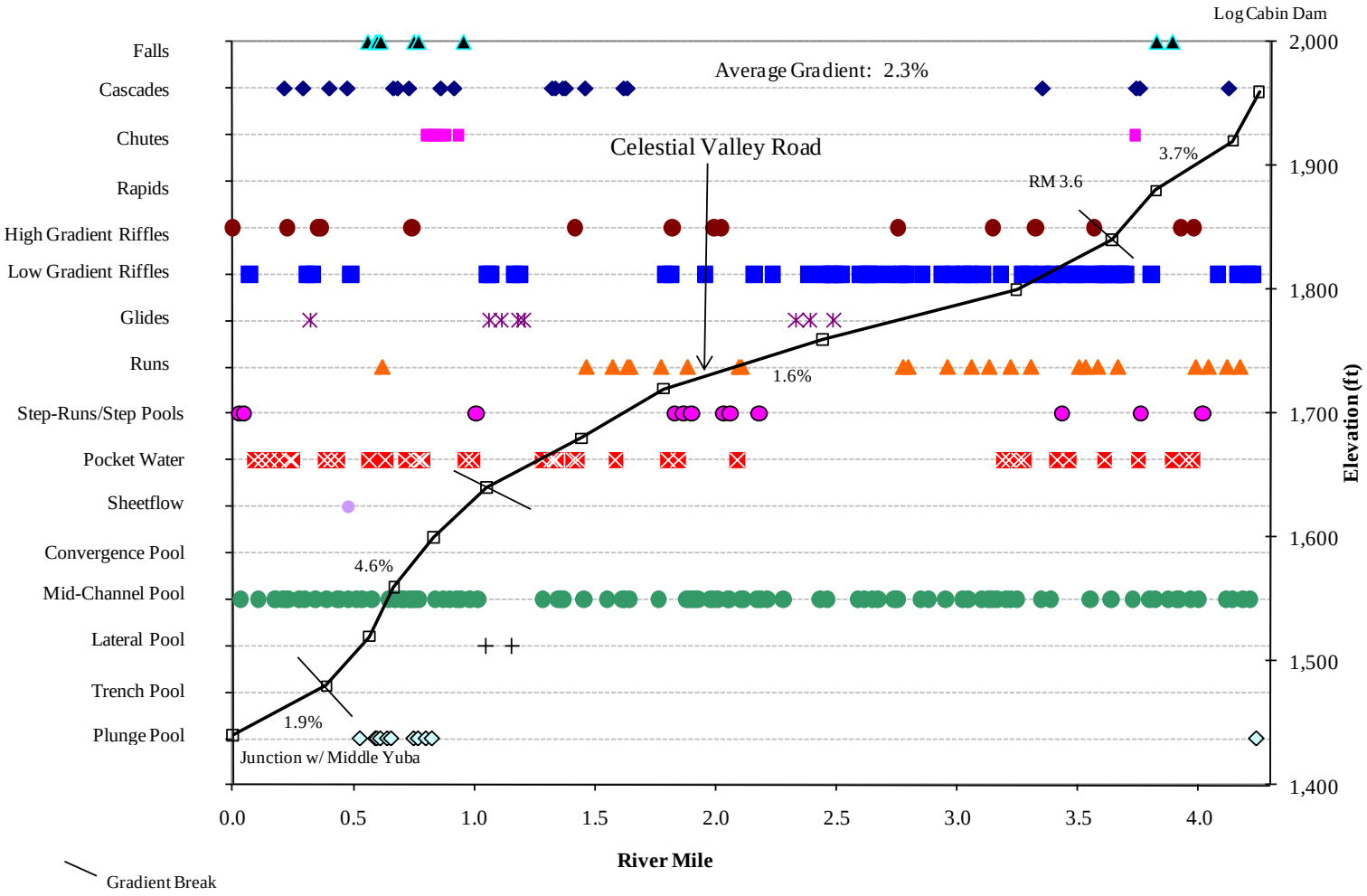
	Dominant Substrate		Subdominant Substrate		Bank Substrate		Bank Substrate Erosion	
	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency
Bedrock	2058.5	24.1%	1284	14.9%	3135	36.7%	0	
Boulder	4749	55.5%	2762	32.1%	3670.5	43.0%	89	36.5%
Cobble	1584.5	18.5%	3789.5	44.0%	814.5	9.5%	90	36.9%
Gravel	164	1.9%	281	3.3%	0		0	
Sand	0		494.5	5.7%	920	10.8%	65	26.6%
Silt	0		0		0		0	
SUM	**8556**	**100.0%**	**8611**	**100.0%**	**8540**	**100.0%**	**244**	**100.0%**


Relative Frequency
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Fall
Cascade
Chute
Rapid
High Gradient Riffle
Low Gradient Riffle
Glide
Run
Step Run
Pocket Water
Sheet
Convergance Pool
Mid-Channel Pool
Lateral Scour Pool
Trench Pool
Plunge Pool
Unit Type
Number of Mapped Units
Number of Mapped & Characterized Units
Unit Length (Mapped)
Habitat Type Relative Frequencies


Relative Frequency (%)
60%
50%
40%
30%
20%
10%
0%
Bedrock
Boulder
Cobble
Gravel
Sand
Silt
Substrate Type
Dominant Substrate
Subdominant Substrate
Bank Substrate
Substrate/Bank Characteristics


Unit Width (ft)
70
60
50
40
30
20
10
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
River Mile
Bankfull Width


Vegetation
4%
Wood
0%
Insignificant
14%
Boulder
82%
Dominant Cover Types



Oregon Creek – Habitat Mapping Units using ground-mapped data.