

**Table 1. Estimated Ground-Water Discharge to Principal Stream Reaches in the Upper Klamath Lake Basin, Oregon. Oregon Water Resources Department, 2006**

[Estimated gains and losses in cubic feet per second; RM = river mile; OWRD = Oregon Water Resources Department; USGS = U.S. Geological Survey; Unless otherwise noted, values are derived by taking the average of estimated discharge in the Fall (Sept, Oct, Nov)]						
Stream Name	Reach*	Estimated gain (+) or loss (-) (ft <sup>3</sup> /s)	Data Source	Period of Record	Methods	Remarks
LONG CR	Headwaters to T31S, R12E, S5	9	USFS Gage	10/1992-9/1997	Index regression to Eagle Cr abv Skull Cr, n New Bridge, OR (# 13288200)	Reference OWRD # 61420205
LONG CR	T31S, R12E, S5 to Mouth (Sycan Marsh)	7	N/A	N/A	Regional regression	Ungaged drainage area below USFS Gage (OWRD # 61420205)
SYCAN R	Headwaters to Sycan Marsh (RM 46.5)	8	USFS Gage	10/1992-9/1997	Index regression to Deep Cr abv Adel, OR (# 10371500).	Reference OWRD # 61420209
SYCAN MARSH	Sycan Marsh	-10 — -20	USFS Gages	10/1992-9/1997	Mass balance and index regression of USFS gage below Sycan Marsh to Chewaucan R nr Paisley (# 10384000).	Reference OWRD # 61420210. Gains calculated from mass balance with upstream estimates during the Fall.
SYCAN R	Sycan Marsh Outlet (RM 35) to RM 30 (abv Torrent Springs)	0	OWRD Synoptic Measurement	8/2000	Synoptic measurement	Overall gains from synoptic measurements below Sycan Marsh on 08/2000 is similar to average difference in Fall flows from gages # 61420210 to # 11499100.
TORRENT SPRINGS	Above and below Torrent Spring on Sycan R (RM 30 to RM 24)	12	OWRD/USFS Synoptic Measurements (5)	10/1997, 10/1998, 08/1999, 10/1999, 08/2000	Average	Synoptic measurement on 08/2000, plus additional synoptic measurements taken at RM 35 and RM 24. Overall gains from synoptic measurements below Sycan Marsh on 08/2000 is similar to average difference in Fall flows from gages.
SYCAN R	Below Torrent Springs (RM 24) to confluence with Blue Cr (RM 11)	0	OWRD Synoptic Measurement	8/2000	Synoptic measurement	Overall gains from synoptic measurements below Sycan Marsh on 08/2000 is similar to average difference in Fall flows from gages # 61420210 to # 11499100.
BROWN SPRING	1/4 mi below spring	4	OWRD Synoptic Measurement	8/2000	Synoptic measurement	Overall gains from synoptic measurements below Sycan Marsh on 08/2000 is similar to average difference in Fall flows from gages # 61420210 to # 11499100.
SYCAN R	Blue Cr confluence (RM 11) to OWRD Gage (RM 3)	5	OWRD Synoptic Measurement	8/2000	Synoptic measurement	Overall gains from synoptic measurements below Sycan Marsh on 08/2000 is similar to average difference in Fall flows from gages # 61420210 to # 11499100.
S FK SPRAGUE	Headwaters to abv Brownworth Cr (RM 15.2)	14	USFS Gage	10/1992-9/1997	Index regression to Chewaucan nr Paisley, OR (# 10384000)	Reference OWRD # 61420208
BROWNSWORTH CR	Entire drainage	5	USFS Measurements (46)	12/1991-4/1997	Miscellaneous measurement regression to Chewaucan nr Paisley, OR (# 10384000)	Reference OWRD # 21420206
FRITZ & DEMING CR	Entire drainage of both creeks	5	N/A	N/A	Regional regression	
S FK SPRAGUE R	Brownworth Cr (RM 15.2) to Picnic Area (RM 10.2)	0	USFS Measurements (34)	1/1992-3/1996	Miscellaneous measurement regression to Chewaucan nr Paisley, OR (# 10384000). Mass balance.	Reference OWRD # 21420201. Gains calculated from difference with upstream inflows.
N FK SPRAGUE R	Headwaters to abv Sandhill Crossing (RM 23.5)	16	USFS Gage	10/1992-9/1997	Index regression to Chewaucan nr Paisley, OR (# 10384000)	Reference OWRD # 61420206
N FK SPRAGUE R	Sandhill Crossing to The Elbow (RM 23.5 to RM 12.2)	43	USFS Measurements (46)	1/1992-5/1997	Miscellaneous measurement regression to Chewaucan nr Paisley (#10384000). Mass balance.	Reference OWRD # 21420202. Gains calculated from difference with upstream inflows.
MERYL CR	Headwaters to approximately 1.5 miles above mouth	13	USGS/OWRD Measurements (5)	9/1915, 9/1954, 10/1970, 9/1983, 11/2000	Average	Majority of measurements approximately 1.5 miles from mouth.
FIVEMILE CR	Headwaters to approximately 4.0 miles above mouth	20	USGS/OWRD Measurements (280)	8/1917-9/1973	Miscellaneous measurement regression to Williamson R blw Sprague R nr Chiloquin, OR (# 11502500).	Measurements at old USGS site # 11497000. Used data as miscellaneous measurement site due to large amounts of missing data.
N FK SPRAGUE R	The Elbow (RM 12.2) to RM 1.5	0	OWRD Synoptic Measurement	11/2000	Synoptic measurement	No gains other than tributary inflows.
UPPER SPRAGUE	SF Sprague @ Picnic Area (RM 10.2) to Sprague @ Cinder Pit (RM 77.5)	26	OWRD/USGS Synoptic Measurements (2)	11/2000, 10/1970	Average	Good agreement between seepage measurements. Discharge recorded at Beatty gage during synoptic measurements was close to long term average.
UPPER SPRAGUE	Cinder Pit (RM 77.5) to OWRD Gage @ Beatty Gap (RM 75)	26	OWRD/USGS Synoptic Measurements (2)	11/2000, 10/1970	Average	Large difference between synoptic measurements.
UPPER SPRAGUE	OWRD Gage @ Beatty Gap (RM 75) to blw old RR crossing (RM 74.2)	34	OWRD/USGS Synoptic Measurements (3)	10/1970, 11/2000, 10/2002	Average	Estimate includes gains from Medicine Springs (14 cfs from 7 meas).
SPRING CR	Headwater to mouth (Sprague RM 73.2). Note, Spring Creek is too short to show on figures; enters Sprague near Brown Creek.	18	OWRD Synoptic Measurements (2)	11/2000, 10/2002	Average	Good agreement between synoptic measurements.
BROWN CR	Headwater to one mile above confluence (Sprague RM 73)	3	OWRD Synoptic Measurements (2)	11/2000, 10/2002	Average	Good agreement between synoptic measurements.

SPRAGUE R	Near old RR crossing (RM 74.2) to Watchdog Butte (RM 49)	7	OWRD/USGS Synoptic Measurements (2)	11/2000, 10/1970	Average	Gains within measurement error. However, some springs in the vicinity RM 69 & 70. Springs measured 4 cfs in 10/2002. Synoptic measurements made when flows recorded at USGS gage nr Chiloquin were similar to long term average.
WHISKEY CR	Headwaters to approximately 1.0 mile above mouth	13	OWRD/USGS Synoptic Measurements (3)	10/1970,11/2000, 10/2002	Average	About 10 cfs difference between 1970 measurement and early 2000 measurements.
SPRAGUE R	Watchdog Butte (RM 49) to below Trout Cr confluence (RM 37)	0	OWRD	11/1/2000	Synoptic measurement	Synoptic measurements made when flows recorded at USGS gage nr Chiloquin were similar to long-term average Fall flow.
SPRAGUE R	Trout Cr confluence (RM 37) to bridge near Lone Pine (RM 33)	0	OWRD Synoptic Measurements (2)	11/2000, 10/2002	Average	Synoptic measurements on 10/1970 demonstrate gain of 30 cfs. Recent results do not concur with this finding.
SPRAGUE R	bridge near Lone Pine (RM 33) to above Wolff Ranch (RM 28.5)	4	OWRD/USGS Synoptic Measurements (3)	10/1970, 11/2000, 10/2002	Average	Good agreement between all synoptic runs. Gains within measurement error.
SPRAGUE R	abv Wolff Ranch (RM 28.5) to blw Kamkaun Sprgs (RM 23.2)	50	OWRD Synoptic Measurements	11/2000	Synoptic measurement	Good agreement with average of 26 direct measurements on Kamkaun/McReady springs made from 04/1920-09/1973
SPRAGUE R	Kamkaun Sprgs (RM 23.2) to Hwy Bridge nr Braymill (RM 10.1)	19	OWRD Synoptic Measurement	11/2000	Synoptic measurement	Gains probably in the vicinity of Whitehorse springs
SPRAGUE R	Braymill (RM 10.1) to Chiloquin (RM 5.2)	0	OWRD Synoptic Measurement	11/2000	Synoptic measurement	
WILLIAMSON R	Head of River Springs (RM 86)	8	OWRD Synoptic Measurement	11/2002	Synoptic measurement	Dry conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 85% of average Fall flows.
WILLIAMSON R	Head of River (RM 86) to downstream side of reservoir below Bull Pasture (RM 81)	8	OWRD Synoptic Measurement	11/2002	Synoptic measurement	Dry conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 85% of average Fall flows.
WILLIAMSON R	Reservoir (RM 81) to above Wickiup Springs (RM 79.8)	14	OWRD Synoptic Measurement	11/2002	Synoptic measurement	Dry conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 85% of average Fall flows.
WICKIUP SPRG	RM 79.8	24	OWRD Synoptic Measurement	11/2002	Synoptic measurement	Dry conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 85% of average Fall flows.
WILLIAMSON R	blw Wickiup Springs (RM 79.8) to OWRD gage blw Sheep Cr (RM 67.7)	0	OWRD Synoptic Measurement	11/2002	Synoptic measurement	Dry conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 85% of average Fall flows.
JACKSON CR	Headwaters to road crossing	6	USFS Measurements (68)	11/1991-4/1997	Miscellaneous measurement regression to Chewaucan nr Paisley, OR (# 10384000).	Reference OWRD # 21420110
JACK CR	Headwaters to Silver Lake Road	2	OWRD Synoptic Measurement	3/2000	Synoptic measurement	Wet conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 120% of average Fall flows.
WILLIAMSON R	OWRD gage blw Sheep Cr (RM 67.7) to above Cholo Ditch (RM 58.3)	18	OWRD Synoptic Measurement	3/2000	Synoptic measurement	Wet conditions. Synoptic measurements made when OWRD Gage below Sheep Cr (# 11491400) at 120% of average Fall flows.
KLAMATH MARSH	Cholo Ditch (RM 58.3) to Kirks Reef (RM 27)	50	USFWS marsh stage measurements and OWRD, USGS, USFWS Gage Data	1971-2000	Mass balance. Annual Average	Mass balanced used gaged inflows and outflows, precipitation recorded at Chemult, and marsh evapotranspiration rates from USFWS rates coupled with ungaged tributary flow estimates
BIG SPRINGS CR	Headwaters to confluence owith Lenz Cr	34	OWRD Measurements (33)	10/1916-9/1987	Average	Synoptic measurements demonstrate some gains to creek below confluence with Lenz Cr and above mouth
MILLER CR	Headwaters to National Forest Boundary (RM 8.3)	8	USFS Gage	10/1992-09/1997	Index regression to Eagle Cr abv Skull Cr, nr New Bridge, OR (# 13288200)	Reference OWRD # 61420102
SINK CR	Headwaters to RM 6.2	4	USFS Gage	10/1995-09/1997	Index regression to Eagle Cr abv Skull Cr, nr New Bridge, OR (# 13288200)	Reference OWRD # 61420104
SCOTT CR	Headwaters to above Highway 232 (RM 4.6)	9	OWRD(52) & USFS(50) Measurements	06/1929-05/1993 (OWRD) & 08/1991-05/1997 (USFS)	Miscellaneous measurement regression to Deschutes River blw Snow Cr, nr Lapine OR (# 14050000)	Reference OWRD # 21420107
SAND CR	Headwaters to above Highway 232 (RM 5.8)	23	USFS Gage	10/1992-09/1997	Index regression to Deschutes River blw Snow Cr, nr Lapine OR (# 14050000)	Reference OWRD # 61420103
WILLIAMSON R	Kirks Reef (RM 27) to base of falls near Calimus (RM 22.2)	0	OWRD Synoptic Measurement	10/2002	Synoptic measurement	
WILLIAMSON R	Calimus (RM 22.2) to old USGS STA#11494000 (RM 19.7)	22	OWRD Measurements (16)	10/1955-09/1973	Average	Average of difference in concurrent flows recorded at Kirk (# 11493500) and blw Rd 9730 (# 11494000). From synoptic measurements on 10/2002, gains appear to occur below Calimus.
LARKIN CR	at Williamson confluence (RM 19.2)	10	OWRD Measurements (27)	10/1923-11/1985	Average	Reference OWRD # 21420105
LARKIN HW SPRGS	at Williamson confluence (RM 17.5)	10	OWRD Synoptic Measurement	10/2002	Synoptic measurement	
WILLIAMSON R	USGS gage (#114914000) (RM 19.7) to Larkin Springs confluence (RM 17.5)	6	OWRD Synoptic Measurement	10/2002	Synoptic measurement	
SPRING CR	just above Williamson confluence at RM 16.5	300	OWRD Measurements (39)	9/1908-9/1993	Average	Small year to year variability

WOOD R	Headwater springs to Dixon Rd (RM 16.2)	250	OWRD Measurements (68)	11/1925-09/1989	Index regression to Fall River nr Lapine, OR (# 14057500)	Reference OWRD # 21420395
ANNIE CR	Headwaters to NP Boundary (RM 5.7)	56	USFS Gage	10/1992-09/1997	Index regression to Deschutes River blw Snow Cr, nr Lapine OR (# 14050000)	Reference OWRD # 61420301
SUN CR	Headwaters to NP Boundary (RM 5.0)	13	NPS Measurements (99)	07/1989-09/1997	Miscellaneous measurement regression to Deschutes River blw Snow Cr, nr Lapine OR (# 14050000)	Reference OWRD # 21420310
FORT CR	Headwaters to near Hwy 62 (RM 1.0)	84	OWRD Measurements (22)	11/1954-03/1981	Index regression to Fall River nr Lapine, OR (# 14057500)	Reference OWRD # 21420398
CROOKED CR	Headwaters to above Tecumseh Springs (RM 5.4) nr Hwy 62	43	OWRD Measurements (16)	11/1983-09/1987	Average of all measurements	
TECUMSEH SPRGS	Tecumseh Springs	27	USGS/OWRD Measurements (7)	08/1907-10/1909	Average of all measurements	
AGENCY CR	Headwaters to mouth	21	USGS/OWRD Measurements (5)	4/1924-8/1954	Average of all measurements	
SEVENMILE CR	Headwaters to RM 17	18	USFS Gage	10/1992-09/1997	Index regression to N Umpqua River Abv Copeland Ck nr Toketee Falls, OR (#14316500)	Reference OWRD # 61420303
CRANE CR	Headwaters to Sevenmile Rd	11	USGS Measurements (3)	05/1905-08/1911	Average of all measurements	
MARES EGG SPRING	Headwaters to mouth	12	OWRD Measurement (1)	10/1954		Four measurements averaged 2.4 cfs during summer of 1992 and 1994
SEVENMILE CR	RM 17 to Sevenmile Rd	60	OWRD Measurements (9)	10/1908-10/1959	Average	Unknown upstream diversions. OWRD # 21420393
CHERRY CR	Headwaters to West Side Rd Crossing	12	USFS Gage	10/1992-09/1997	Index regression to Rogue R abv Prospect, OR (#1 4328000)	Reference OWRD # 61420302 & # 21420397
FOURMILE CR	Headwaters to West Side Rd Crossing	0	USGS Gage	10/1964-09/1967	Index regression to Deer Cr Ab Crane Prairie Res, Nr La Pine, OR (# 14052000)	USGS #11505600, regulated at Fourmile Lake
UPPER KLAMATH LAKE	Upper Klamath Lake	350	USGS Gages	10/1964-09/1967	Mass balance. Annual average.	Published water balanced study from Hubbard (1970). Analysis used measured inflows, outflows, lake elevations, and evaporation estimates. Agrees with other estimates (Cooper, 2004)
CLEAR LAKE	Drainage to Clear Lake Reservoir Dam (RM 78)	40	USGS Gage, USBR Data	10/1904-09/1951	Average	10/1904-05/1909 USGS gage, 06/1909-09/1951 reported in USBR Water Supply Paper (1954)
LOST R	Clear Lake Reservoir (RM 78) to Malone Dam (64.5)	2	USBR data	08/1987-08/02	Mass balance. November average used only, due to missing data in other months.	Discharge in river and canals below Malone Dam minus Clear Lake mean monthly releases. Gains within uncertainty of estimate.
GERBER RESERVOIR	Drainage to Gerber Reservoir	10	USGS Gage, USBR data	10/1904-09/1951	Average	Flows at Gerber as reported in USBR Water Supply Paper (1954)
LOST R	Malone Dam (RM 64.5) to Gift Rd (RM 58)	11	OWRD Synoptic Measurement	12/1997	Synoptic measurement	
LOST R	Gift Rd (RM 58) to Keller Bridge (RM 50.3)	16	OWRD Synoptic Measurement	12/1997	Synoptic measurement	
LOST R	Keller Bridge (RM 50.3) to east Bonanza (RM 45.1)	9	OWRD Synoptic Measurement	12/1997	Synoptic measurement	Synoptic overall gains (73 cfs) from Keller Bridge to Harpold Dam is close to the average (82 cfs) of 13 measurements taken from 11/1925-12/2001
LOST R	east Bonanza (RM 45.1) to Harpold Bridge (RM 43.9)	61	OWRD Synoptic Measurement	12/1997	Synoptic measurement	Synoptic overall gains (73 cfs) from Keller Bridge to Harpold Dam is close to the average (82 cfs) of 13 measurements taken from 11/1925-12/2001
LOST R	Harpold Bridge (RM 43.9) to Harpold Dam (RM 40.8)	3	OWRD Synoptic Measurement	12/1997	Synoptic measurement	Synoptic overall gains (73 cfs) from Keller Bridge to Harpold Dam is close to the average (82 cfs) of 13 measurements taken from 11/1925-12/2001
LOST R	Harpold Dam (RM 40.8) to Kirsh Bridge (RM 34.8)	10	OWRD Synoptic Measurement	12/1997	Synoptic measurement	
LOST R	Kirsh Bridge (RM 34.8) to Stevenson Park (RM 30.5)	29	OWRD Synoptic Measurement	12/1997	Synoptic measurement	
MILLER CR	Gerber Reservoir to mouth	4	OWRD Measurement and USBR reservoir outflow data	12/1997	Mass balance from measurement and reservoir release data.	
KLAMATH R	Keno Dam (RM 230.5) to below JC Boyle PP (RM 218.1)	194	USGS Gage and Pacific Corp Reservoir Data	10/1967-10/1987, 10/1989-09/2001	Average. Mass balance. Derived from monthly mean discharge and reservoir content data. Excludes gains from Spencer Cr.	USGS gages: (#11509500) Klamath River at Keno, OR and (#11510700) Klamath River below JC Boyle PP near Keno, OR. Minus gains estimate from Spencer Creek.
SPENCER CR	Headwaters to mouth	27	USGS Gage	10/1925-09/1931	Index regression to Rogue River Above Prospect, OR (# 14328000)	USGS # 11510000. Restarted in 2002 by OWRD
FALL CR	Headwaters to mouth	36	USGS Gage	07/1928-09/1959	Index regression to McCloud R nr McCloud CA (# 11367500)	USGS # 11512000
JENNY CR	Headwaters to mouth	9	USGS Gage	10/1922-09/1928	Index regression to S FK Little Butte Cr nr Lake Creek, OR (# 14341500)	USGS # 11516500
KLAMATH R	below JC Boyle PP (RM 218.1) to Iron Gate Dam	92	USGS Gage and Pacific Corp Reservoir Data	10/1967-09/2000	Average. Mass balance from monthly mean discharge, reservoir content data, and tributary flow listed in table. Excludes gains from tributaries listed in table.	Klamath River below JC Boyle PP near Keno, OR (#11510700) to Klamath River blw Iron Gate Dam, CA (#11516530). Minus gain estimates from tributaries.

\* River miles in Reach column are from Oregon Water Resources Department Klamath Drainage Basin Map, Map No. 14.6, 1971.