| Supplementary Table 1. Radiocarbon Samples, Locations, 14C and Calibrated Ages | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Station | Sample Number | Lab Code | δ13CPDB  (‰) | 14C Age  (BP) | 1σ age range  (cal yr BP) | 2σ age range  (cal yr BP) | Mean Weighted Average Age (cal yr BP) | Material Dated  (All Charcoal) | Deposit Interpretation  (sample from within deposit unless otherwise noted) |
| 1 | **1-11** | AA95854 | -24.3 | 421±38 | 342-346 | 32-363 | 460 | Angular fragment | Associated with charred litter layer underlying a large fire-related debris flow |
|  |  |  |  |  | 462-516 | 365-376 |  |
|  |  |  |  |  |  | 428-530 |  |  |
| 1 | **1-14** | AA95855 | -23.2 | 1267±39 | 1176-1265 | 1084-1112 | 1210 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  |  | 1122-1286 |  |
| 1 | **1-28** | AA95856 | -25.1 | 1035±39 | 922-977 | 803-809 | 950 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  |  | 830-855 |  |
|  |  |  |  |  |  | 905-1015 |  |  |
|  |  |  |  |  |  | 1023-1055 |  |  |
| 1 | **1-44** | 11-1-44Beta | -24.3 | 1730±30 | 1575-1576 | 1560-1710 | 1639 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  | 1605-1639 |  |  |  |
|  |  |  |  |  | 1642-1695 |  |  |  |
| 1 | **1-54** | AA95857 | -25.4 | 971±52 | 797-871 | 745-750 | 870 | Seed, needles, twig | Associated with reworked charred litter layer associated with a large, fire-related debris-flow |
|  |  |  |  |  | 897-932 | 764-968 |  |
| 1 | **1-72** | AA95858 | -22.1 | 1549±40 | 1392-1423 | 1355-1527 | 1450 | Angular fragment | Large, fire-related streamflow |
|  |  |  |  |  | 1430-1444 |  |  |
|  |  |  |  |  | 1457-1516 |  |  |  |
| 1 | **1-92** | AA95859 | -20.8 | 1806±41 | 1703-1814 | 1614-1679 | 1740 | Angular fragments | Large, fire-related debris flow |
|  |  |  |  |  |  | 1683-1828 |  |
|  |  |  |  |  |  | 1847-1862 |  |  |
| 2 | **2-2** | AA95888 | -22.4 | 1688±37 | 1542-1619 | 1526-1695 | 1600 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 1674-1687 |  |  |  |
| 2 | **2-23** | AA95889 | -22.2 | 2057±38 | 1951-1960 | 1926-2125 | 2030 | Angular fragments | Small, fire-related debris flow |
|  |  |  |  |  | 1971-1978 |  |  |
|  |  |  |  |  | 1986-2063 |  |  |  |
|  |  |  |  |  | 2085-2105 |  |  |  |
| 2 | **2-52** | AA95890 | -23.8 | 343±36 | 318-344 | 310-486 | 400 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 345-394 |  |  |
|  |  |  |  |  | 424-464 |  |  |  |
| 3 | **3-3** | AA95882 | -20.5 | 1593±38 | 1417-1468 | 1395-1557 | 1470 | Angular fragment | Large, fire-related hyperconcentrated flow |
|  |  |  |  |  | 1485-1526 |  |  |
| 3 | **3-17** | AA95883 | -23.6 | 4118±42 | 4536-4542 | 4525-4744 | 4660 | Angular fragments | Small, fire-related hyperconcentrated flow which is |
|  |  |  |  |  | 4549-4556 | 4747-4821 |  |
|  |  |  |  |  | 4568-4650 |  |  |  |
|  |  |  |  |  | 4671-4700 |  |  |  |
|  |  |  |  |  | 4759-4807 |  |  |  |
| 3 | **3-39** | AA95884 | -22.2 | 4499±50 | 5051-5090 | 4975-5017 | 5150 | Angular fragment | Large, fire-related hyperconcentrated flow |
|  |  |  |  |  | 5097-5143 | 5031-5310 |  |
|  |  |  |  |  | 5156-5193 |  |  |  |
|  |  |  |  |  | 5212-5287 |  |  |  |
| 5 | **5-32** | AA95860 | -22.1 | 1787±46 | 1627-1666 | 1569-1585 | 1710 | Angular fragment | Associated with charred litter layer underlying a large, fire-related debris flow |
|  |  |  |  |  | 1691-1742 | 1592-1824 |  |
|  |  |  |  |  | 1754-1784 |  |  |  |
|  |  |  |  |  | 1792-1811 |  |  |  |
| 5 | **5-40** | AA95861 | -22.1 | 2013±38 | 1901-1911 | 1879-2060 | 1970 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 1922-1999 | 2089-2101 |  |
| 5 | **5-50** | AA95862 | -25.1 | 3344±41 | 3486-3501 | 3472-3645 | 3580 | Angular fragment | Small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 3506-3523 | 3656-3687 |  |
|  |  |  |  |  | 3555-3637 |  |  |  |
| 5 | **5-57** | AA95863 | -24.6 | 3500±40 | 3720-3804 | 3645-3659 | 3770 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 3807-3832 | 3686-3878 |  |
| 7 | **7-1** | AA95841 | -24 | 220±39 | -1-11 | -2-32 | 200 | Angular fragment | Associated with charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 149-186 | 84-87 |  |
|  |  |  |  |  | 270-305 | 93-96 |  |  |
|  |  |  |  |  |  | 109-111 |  |  |
|  |  |  |  |  |  | 137-223 |  |  |
|  |  |  |  |  |  | 256-318 |  |  |
|  |  |  |  |  |  | 394-424 |  |  |
| 7 | **7-5** | AA95842 | -22.3 | 206±40 | -1-13 | -2-33 | 180 | Angular fragment | Associated with charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 148-188 | 72-115 |  |
|  |  |  |  |  | 198-211 | 135-225 |  |  |
|  |  |  |  |  | 269-299 | 253-311 |  |  |
| 7 | **7-7** | AA95843 | -22 | 352±39 | 320-379 | 314-496 | 400 | Needles, twigs | Associated with charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 387-391 |  |  |  |
|  |  |  |  |  | 427-477 |  |  |  |
| 7 | **7-9** | 11-7-9Beta | -23 | 670±30 | 567-585 | 560-599 | 621 | Angular fragment | Associated with charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 647-668 | 631-675 |  |  |
| 7 | **7-13** | AA95844 | -23.9 | 1326±41 | 1185-1203 | 1176-1305 | 1250 | Angular fragment | Associated with charred litter layer underlying a large, fire-related hyperconcentrated flow |
|  |  |  |  |  | 1242-1251 |  |  |
|  |  |  |  |  | 1255-1296 |  |  |  |
| 7 | **7-18** | AA95845 | -22.8 | 2009±42 | 1898-1913 | 1874-2063 | 1960 | Angular fragment | Associated with string of coarse charcoal underlying a small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 1919-1998 | 2085-2106 |  |
| 7 | **7-24** | AA95846 | -21.6 | 2148±48 | 2057-2159 | 2001-2210 | 2160 | Large twig | Associated with string of coarse charcoal underlying a small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 2171-2177 | 2223-2309 |  |
|  |  |  |  |  | 2247-2300 |  |  |  |
| 7 | **7-28** | AA95847 | -23.8 | 2268±56 | 2161-2168 | 2140-2357 | 2250 | Angular fragment | Associated with discontinuous charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 2178-2243 |  |  |
|  |  |  |  |  | 2301-2345 |  |  |  |
| 10 | **10-21** | AA95848 | -24.6 | 187±38 | -1-18 | -2-34 | 170 | Needles, twigs | Small, fire-related debris flow |
|  |  |  |  |  | 145-215 | 71-116 |  |
|  |  |  |  |  | 267-287 | 133-228 |  |  |
|  |  |  |  |  |  | 252-304 |  |  |
| 10 | **10-57** | AA95849 | -25 | 285±44 | 292-330 | 153-168 | 360 | Needles, twigs | Small, fire-related debris flow |
|  |  |  |  |  | 359-429 | 282-477 |  |
| 10 | **10-93** | AA95850 | -24.3 | 592±39 | 546-564 | 536-654 | 600 | Needles | Associated with discontinuous charred litter layer underlying a small, fire-related streamflow |
|  |  |  |  |  | 590-640 |  |  |  |
| 10 | **10-96** | AA95851 | -26.3 | 747±39 | 665-699 | 572-578 | 690 | Twig | Associated with charred litter layer underlying a small, fire-related streamflow |
|  |  |  |  |  | 703-710 | 652-737 |  |  |
|  |  |  |  |  | 718-722 |  |  |  |
| 10 | **10-115** | AA95852 | -23.6 | 672±38 | 565-588 | 556-606 | 620 | Twig | Small, fire-related debris flow |
|  |  |  |  |  | 643-671 | 625-681 |  |  |
| 10 | **10-128** | AA95853 | -22.4 | 903±38 | 770-803 | 738-915 | 830 | Seed | Associated with charred litter layer underlying a small, fire-related debris flow |
|  |  |  |  |  | 808-831 |  |  |  |
|  |  |  |  |  | 852-906 |  |  |  |
| 11 | **11-8** | AA95879 | -22.1 | 273±36 | 159-162 | 0-4 | 340 | Seed | Small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 286-320 | 152-169 |  |  |
|  |  |  |  |  | 378-427 | 281-336 |  |  |
|  |  |  |  |  |  | 348-459 |  |  |
| 11 | **11-26** | AA95880 | -23 | 336±41 | 316-341 | 307-487 | 400 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  | 347-399 |  |  |
|  |  |  |  |  | 405 |  |  |  |
|  |  |  |  |  | 421-461 |  |  |  |
| 11 | **11-46** | AA95881 | -23.3 | 299±36 | 300-330 | 289-344 | 380 | Angular fragment | Small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 360-369 | 345-466 |  |
|  |  |  |  |  | 370-429 |  |  |  |
| 13 | **13-3** | AA95874 | -23 | 1491±37 | 1339-1407 | 1304-1418 | 1380 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  |  | 1464-1511 |  |
| 13 | **13-7** | AA95875 | -25.5 | 1536±37 | 1376-1420 | 1351-1521 | 1440 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 1434-1439 |  |  |
|  |  |  |  |  | 1469-1514 |  |  |  |
| 13 | **13-8** | AA95876 | -26.7 | 1457±37 | 1310-1370 | 1299-1403 | 1350 | Needles, twigs | Large, fire-related debris flow |
| 13 | **13-16** | AA95877 | -23.7 | 1779±38 | 1620-1673 | 1574-1579 | 1700 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 1687-1739 | 1603-1819 |  |
|  |  |  |  |  | 1758-1776 |  |  |  |
| 13 | **13-19** | AA95878 | -23.2 | 2820±40 | 2865-2965 | 2803-2818 | 2930 | Angular fragments | Large, fire-related debris flow |
|  |  |  |  |  |  | 2844-3064 |  |
| 14 | **14-3** | AA95885 | -24.9 | 2478±39 | 2475 | 2365-2414 | 2560 | Twig | Large, fire-related debris flow |
|  |  |  |  |  | 2486-2550 | 2433-2717 |  |  |
|  |  |  |  |  | 2556-2618 |  |  |  |
|  |  |  |  |  | 2633-2705 |  |  |  |
| 14 | **14-11** | AA95886 | -22.2 | 2755±39 | 2787-2877 | 2772-2946 | 2850 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 2914-2916 |  |  |
| 14 | **14-14** | AA95887 | -22.9 | 2706±39 | 2766-2807 | 2750-2872 | 2810 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 2816-2844 |  |  |
| 16 | **16-5** | AA95864 | -22.8 | 2412±39 | 2353-2487 | 2346-2541 | 2480 | Angular fragment | Large, fire-related debris flow |
|  |  |  |  |  | 2645-2650 | 2591-2615 |  |
|  |  |  |  |  |  | 2636-2698 |  |  |
| 16 | **16-7** | AA95865 | -22.4 | 2639±39 | 2741-2779 | 2721-2812 | 2770 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  |  | 2816-2844 |  |
| 16 | **16-12** | AA95866 | -22.7 | 3155±40 | 3351-3409 | 3267-3291 | 3380 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  | 3425-3441 | 3322-3461 |  |
| 16 | **16-15** | AA95867 | -22.9 | 3488±41 | 3705-3778 | 3642-3666 | 3760 | Angular fragment | Small, fire-related debris flow |
|  |  |  |  |  | 3788-3828 | 3681-3866 |  |
| 16 | **16-21** | AA95868 | -24.8 | 3356±40 | 3511-3518 | 3480-3544 | 3590 | Large twig | Large, fire-related hyperconcentrated flow |
|  |  |  |  |  | 3557-3642 | 3547-3689 |  |
|  |  |  |  |  | 3666-3681 |  |  |  |
| 16 | **16-26** | AA95869 | -21.7 | 3582±40 | 3836-3926 | 3725-3753 | 3880 | Angular fragment | Small, fire-related hyperconcentrated flow |
|  |  |  |  |  | 3949-3960 | 3759-3795 |  |
|  |  |  |  |  |  | 3819-3984 |  |  |
|  |  |  |  |  |  | 4055-4056 |  |  |
| 17 | **17-13** | AA95870 | -23.2 | 1181±37 | 1060-1148 | 981-1036 | 1110 | Angular fragments | Small, fire-related debris flow |
|  |  |  |  |  | 1157-1171 | 1046-1181 |  |
|  |  |  |  |  |  | 1208-1231 |  |  |
| 17 | **17-16** | AA95871 | -25.5 | 609±36 | 553-568 | 544-657 | 600 | Leaves | Associated with a charred litter layer underlying deposit containing sample 11-17-13 |
|  |  |  |  |  | 583-611 |  |  |  |
|  |  |  |  |  | 620-649 |  |  |  |
| 17 | **17-17** | 11-17-17Beta | -25.6 | 850±30 | 730-787 | 689-797 | 761 | Angular fragments | Associated with a charred litter layer underlying deposit containing sample 11-17-13 |
|  |  |  |  |  |  | 818-821 |  |  |
|  |  |  |  |  |  | 870-898 |  |  |
| 17 | **17-20** | AA95872 | -23.9 | 1593±37 | 1417-1468 | 1398-1555 | 1470 | Angular fragment | Associated with a charred litter layer underlying a small, fire-related hyperconcentrated flow deposit |
|  |  |  |  |  | 1485-1526 |  |  |
| 17 | **17-21** | 11-17-21Beta | -24 | 1660±30 | 1528-1572 | 1422-1432 | 1566 | Angular fragment | Associated with sample charred litter layer as 11-17-20 |
|  |  |  |  | 1581-1602 | 1441-1460 |  |
|  |  |  |  |  |  | 1514-1628 |  |  |
|  |  |  |  |  |  | 1656-1664 |  |  |
|  |  |  |  |  |  | 1665-1691 |  |  |
| 17 | **17-24** | AA95873 | -25.5 | 1238±36 | 1091-1107 | 1070-1265 | 1170 | Angular fragment | Large, fire-related hyperconcentrated flow |
|  |  |  |  |  | 1135-1162 |  |  |
|  |  |  |  |  | 1167-1187 |  |  |  |  |
|  |  |  |  |  | 1200-1259 |  |  |  |  |