

APPENDIX A

Site Photographs

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Reach Analysis—Hoko, Clallam, Pysht Rivers Photographic Log



Photo A-1. Hoko River Site ID H-1. (May 12, 2005). Looking west at tension cracks in SR 112 pavement due to bank slumping along Hoko River. Cracks are approximately one foot from the edge of pavement extending 25 feet along the road at MP 11.5. (Photo 2537)



Photo A-2. Hoko River Site ID H-1 (May 12, 2005). Representative unforested bank of Lower Hoko River consisting of silty sand 20 feet high. (Photo Pan 2538-2539)

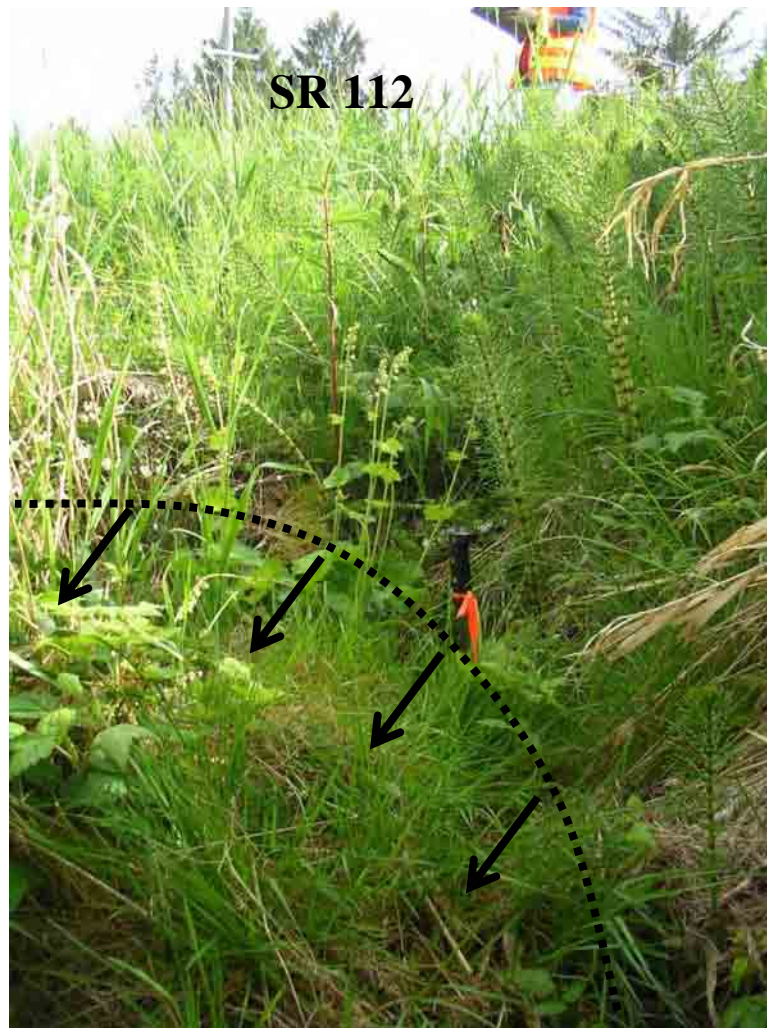


Photo A-3. Hoko River Site ID H-1.(May 12, 2005). Machete in expansion crack of slump head scarp in left bank adjacent to SR 112. Area left of machete is likely to collapse in near future. (Photo 2540)



Figure A-4. Hoko River Site ID H-1 (May 12, 2005). Natural snag adjacent to bank protection work done in 2003(?) using rip and cabled stumps to stabilize left bank along SR 112. (Photo Pan 2541-2550)

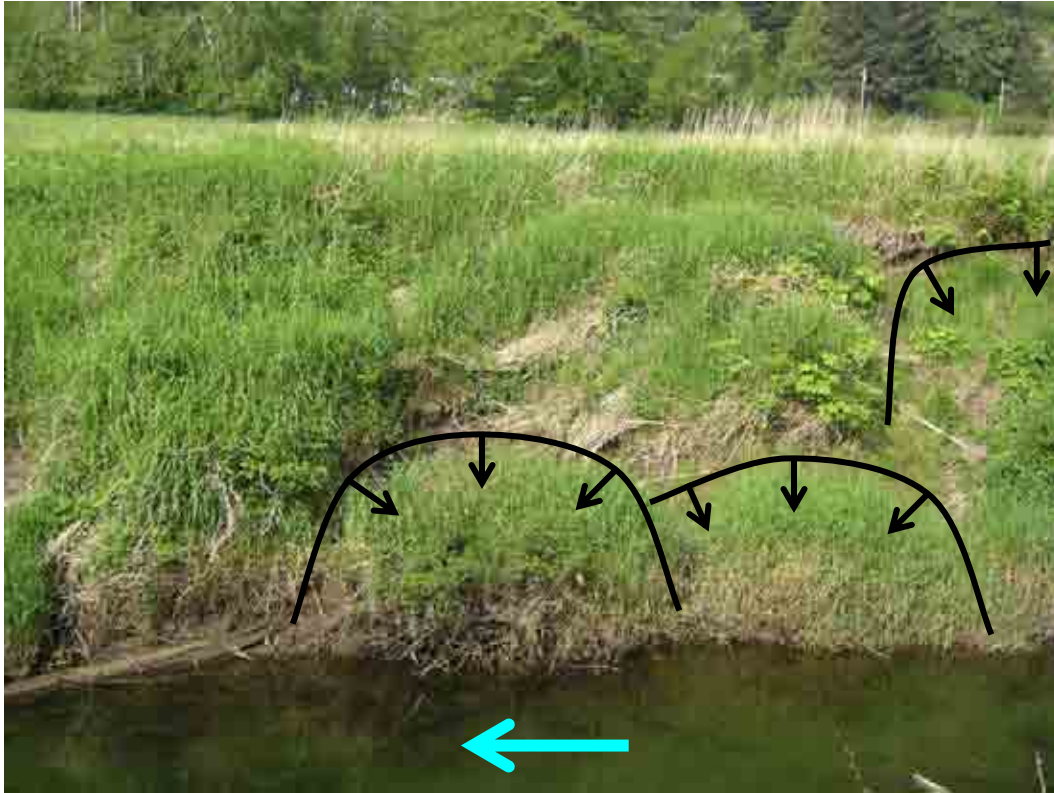


Photo A-5. Hoko River Site ID H-1 (May 12, 2005). Slumping along right bank. (Photo 2551)



Photo A-6 Hoko River Site ID H-1 (May 12, 2005). Looking upstream natural snags may have contributed to bank erosion problem. Site looks stable now. (Photo Pan 2553)



Photo A-7 Hoko River Site ID H-1 (May 12, 2005). Site of 2004(?) bank protection work MP 11.5(?), looking downstream. Tension cracks in pavement visible far left of image. (Photo Pan 2555-2559)



Photo A-8. Hoko River Site ID H-1 (May 12, 2005). Looking upstream. Slump block (Photo Pan 2563-2565)



Photo A-9. Hoko River Site ID H-1 (May 12, 2005). Looking downstream at undercutting of gravel sand toe of bank, apex of meander at MP 11.42. (Photo Pan 2571-2574)



Photo A-10. Hoko River Site ID H-1 (May 12, 2005). Looking west at upstream end of H-1, MP 11.42. Road is raised about 4 feet above floodplain and still susceptible to overtopping flows (note armoring along downstream or north (right) side of road. (Photo 2575)



Photo A-11. Hoko River Site ID H-2 (May 12, 2005) (a) Upstream side of undersized culvert. (b) downstream side of culvert. Culvert is 24 inches in diameter. (Photo Pan 2528-2529 and Pan 2525-2526)



Photo A-12. Hoko River Site ID H-2 (May 12, 2005). Looking west along SR112 and upstream of culvert. Tension cracks in pavement are visible for 25 feet along the right shoulder. (Photo Pan 2530-2532)



Photo A-13. Clallam River Site ID C-1 (May 12, 2005). Looking upstream of “Corp Site” of large (greater than 4 foot) rock rip rap that is situated along the right bank where alder has fallen across the channel. (Photo 2643)



Photo A-14. Clallam River Site ID C-1 (May 12, 2005). Looking upstream at right bank of rip rap at corp site. (Photo Pan 2644-2645)



Photo A-15. Clallam River Site ID C-1 (May 12, 2005). Bank at Corp Site is vertical for the first 8 ft above channel. Total hang height is 15 feet. (Photo 2646)



Photo A-16. Clallam River Site ID C-2 (May 11, 2005). Looking at the right bank. Erosion. Toe of slope erosion. (Photo Pan 2388-2394)



Photo A-17. Clallam River Site ID C-2 (May 11, 2005). Looking at right bank erosion – 220 feet of erosion. (Photo Pan 2395-2401)



Photo A-18. Pysht River Site ID P-1 (May 12, 2005). (Photo Pan 2749-2751)



Photo A-19. Pysht River Site ID P-1 (May 12, 2005). (Photo Pan 2752.)



Photo A-20. Pysht River Site ID P-1 (May 12, 2005). (Photo Pan 2753-2754)



Photo A-21. Pysht River. Site ID P-1 (May 12, 2005). (Photo Pan 2754-2759)



Photo A-22. Pysht River. Site ID P-1 (May 12, 2005). (Photo Pan 2762)



Photo A-23. Pysht River Site ID P-1 (May 12, 2005). (Photo Pan 2765)



Photo A-24. Pysht River Site ID P-1 (May 12, 2005). Substrate is poorly sorted gravel, cobble and coarse sand. Not much armoring of bed. (Photo Pan 2771-2776)



Photo A-25. Pysht River Site ID P-1 (May 12, 2005). Looking downstream along rip rap. Bruce Carpenter on point bar of right bank. Beyond this bend in the river the right bank floodplain is three feet. (Photo Pan 2777)



Photo A-26. Pysht River Site ID P-1 (May 12, 2005). Cracked pavement. (Photo 2778)

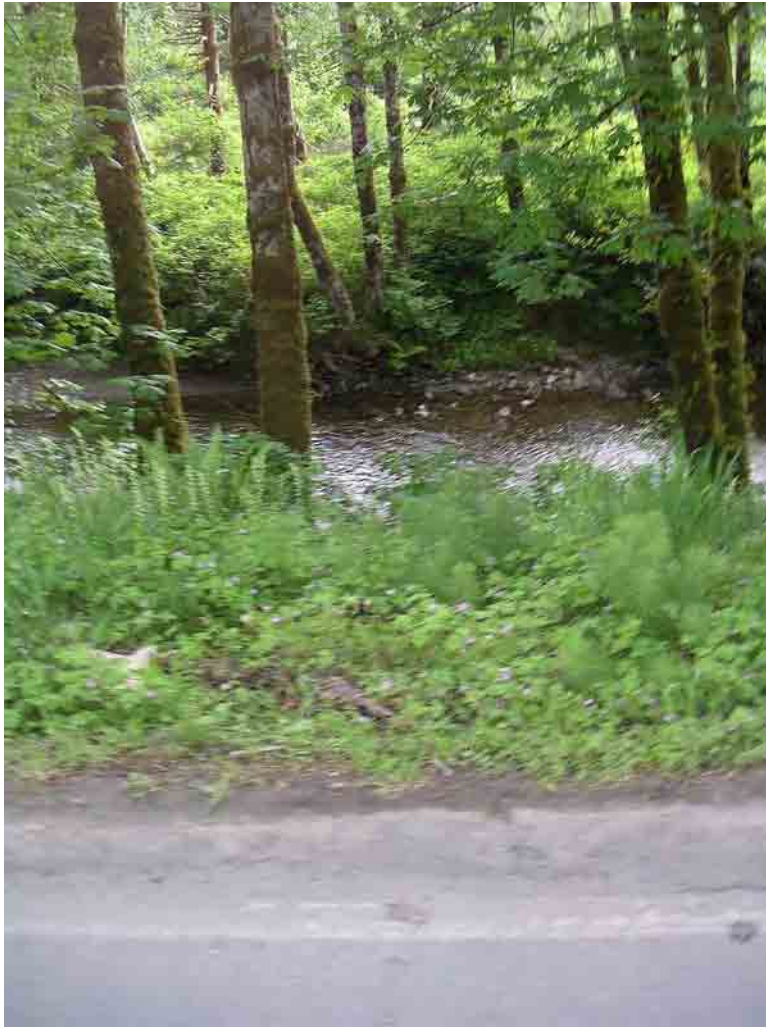


Photo A-27. Pysht River Site ID P-1 (May 12, 2005). Looking south across the river to far bank. Bank height from river is approximately 3 feet. (Photo 2779)



Photo A-26. Pysht River Site ID P-1 (May 12, 2005). Buried log (Photo Pan 2789-2790)



Photo A-27. Pysht River Site ID P-2 (May 11, 2005) Bank Erosion (Photo Pan 2516-2521)



Photo A-28. Pysht River Site ID P-2 (May 11, 2005). Milepost 25. (Photo Pan 2523-2524)



Photo A-29. Pysht River Site ID P-03 (May 11, 2005). Looking upstream . Bank height is approximately 15 feet. Top of bank is 9 feet from the edge of the pavement. Bank erosion – 40 feet. Limited riparian vegetation. (Photo Pan 2497-2498)



Photo A-30. Pysht River Site ID P-3 (May 11, 2005). Looking downstream. Bank erosion, cracked pavement, top of bank is 10 feet from the edge of pavement. (Photo 2499)



Photo A-31. Pysht River Site ID P-3 (May 11, 2005). Detailed view of cracked pavement. Area where road cracks are exhibited is approximately 55 feet in length. End of cracking downstream is coincident with the start of rip rap (41 feet downstream of 30MPH sign). (Photo 2500)



Photo A-32. Pysht River Site ID P-3 (May 11, 2005). Looking down the bank towards channel. Bank is vegetated (Photo 2501)



Photo A-33. Pysht River Site ID P-3 (May 11, 2005). Left bank alder root cohesion. Upstream of milepost 26. (Photo 2502.)



Photo A-34. Pysht River Site ID P-3 (May 11, 2005). Looking downstream. Just upstream of Mile post 26. Wetted channel is approximately 60 feet, bank height is approximately 12 feet. Bankfull depth is ~3 feet. Channel is plane bed devoid of wood and habitat. (Photo Pan 2503-2504)



Photo A-35. Pysht River Site ID P-3 (May 11, 2005). Looking upstream from same location. (Photo Pan 2505-2507)



Photo A-36. Pysht River Site ID P-4 (May 10, 2005) MVA memorial site. (Photo Pan 2282-2284)



Photo A-37. Pysht River Site ID P-4 (May 10, 2005) (Photo Pan 2285-2290)



Photo A-38. Pysht River Site ID P-4 (May 10, 2005). Channel adjacent to memorial site. (Photo Pan 2291-2295)



Photo A-39. Pysht River Site ID P-4 (May 10, 2005). Large coarse gravel bar – distinct armor layer. (Photo 2296)



Photo A-40. Pysht River Site ID P-4 (May 10, 2005) (Photo 2297)



Photo A-41. Pysht River Site ID P-4 (May 10, 2005) Two of three noted spawning redds, spawning starts about 1 mile downstream from this location at “Fridge” Creek (Recter Creek). (Photo 2299)



Photo A-42 Pysht River Site ID P-4 (May 10, 2005). Looking upstream above redds – plane bed channel along rip rap – no wood. (Photo 2300)



Photo A-43. Pysht River Site ID P-4 (May 10, 2005). Just downstream of MP 27. downstream of rip rap is an unprotected bank ~18 feet high. (Photo Pan 2437-2443)



Photo A-44. Pysht River Site ID P-4 (May 10, 2005). Looking at right back from road at P105. (Photos P2444 and P2445)



Photo A-45. Pysht River Site ID P-4 (May 11, 2005). Submerged log across Pysht channel about 25ft downstream of mile post 27 sign. (Photo 2448)



Photo A-46. Pysht River Site ID P-4 (May 11, 2005). Looking downstream on the Pysht River at milepost 28. (Photo 2449-2450)



Photo A-47. Pysht River Site ID P-4 (May 11, 2005). Mile post 27 marker (Photo 2451)



Photo A-48. Pysht River Site ID P-4 (May 11, 2005). Looking downstream of the Pysht River towards the MP 27 sign. (Photo 2452)



Photo A-50. Pysht River Site ID P-4 (May 11, 2005). Panoramic image from the left point bar opposite cabled logs along toe of right bank. Rip rap (Photo Pan 2453-2458)



Photo A-51. Pysht River Site ID P-4 (May 11, 2005). Panoramic image of right bank rip rap. (Photo Pan 2461-2467)



Photo A-52. Pysht River Site ID P-4 (May 11, 2005). Panoramic of right bank. (Photo Pan 2476-2479)



Photo A-53. Pysht River Site ID P-4 (May 11, 2005). Channel spanning logjam (Photo Pan 2487-2493)



Photo A-54. Pysht River Site ID P-4 (May 11, 2005). Directly downstream of channel spanning logjam. (Photo Pan 2483-2486)



Photo A-55. Site ID P-4 (May 11, 2005). Channel spanning logjam. (Photo Pan 2494-2496)



Photo A-56. Pysht River Site ID P-5 Right bank cabled LWD. (Photo Pan2302-2307)



Photo A-57 Pysht River Site ID P-5 Rip rap by corrugated plastic drain pipe standing on tip of bank looking at log step across channel. Saw 3 adult steelhead in river at this site. Deep pool below log step (22mx13mx24m) (Photo Pan 2308-2310)



Photo A-58. Pysht River Site ID P-5 (May 10, 2005). Sand deposition in rock and wood of bank. Large gravel bar on left side of channel. (Photo 2312)



Photo A-59. Pysht River Site ID P-5 (May 10, 2005) 48 feet of cracked pavement just downstream of P24 (Photo Pan 2313-2314)



Photo A-60. Pysht River Site ID P-5 (May 10, 2005) Looking downstream – note Alders across channel 85 yards from photo point. (Photo Pan 2315-2317)



Photo A-61 Pysht River Site ID P-5 (May 10, 2005) (Photo Pan 2318-2319)



Photo A-62 Pysht River Site ID P-5. (May 10, 2005) top of right bank. Pt. 132m to PISI at end of gravel bar where large logjam has formed (see photo Pan 2318-2319). Large alder ~24" dbh is undercut. Tip of bank is 40 feet to highway edge of pavement. (Photo Pan 2320-2321)



Photo A-63 Pysht River Site ID P-5 (May 10, 2005). Looking downstream to spruce 132m away. Channel wide directly upstream of alder logjam is 39m. (Photo 2322)



Photo A-64. Pysht River Site ID P-5 (May 10, 2005). Panoramic from top of right bank downstream of P25 looking at undercut alder logjam and downstream. (Photo Pan 2323-2328.)



**Photo A-65. Pysht River Site ID P-5 (May 10, 2205). Close up of downstream logjam.
(Photo 2329)**



Photo A-66. Pysht River Site ID P-5 (May 10, 2005). Vertical panoramic of top edge of right bank with steel cable (to log downstream along recent repair site) immediately downstream of alder clumps leaning into river. Upstream of alder clump is rock rip rap. (Photo Pan 2330-2332.)



Photo A-67. Pysht River Site P-5 (May 10, 2005) Looking downstream along right bank edge of pavement; rills of runoff along highway. (Photo 2333)



Photo A-68. Pysht River Site ID P-7 Bank erosion (right bank) 42 year extent. 13 feet to edge of pavement. (Photo 2422)



Photo A-69. Pysht River Site ID P-7 Bank erosion. Near MP 28 (108 yards downstream) right bank is 18 feet high (sand). Photo above illustrates bank calving. (Photo Pan 2424-2426)



Photo A-70 Pysht River Site ID P-8 (May 10, 2005). Bank erosion (RB), rip rap at site (some falling), 75-foot rip rap launching, 27-feet of bank slumping, and less than 10 feet EOP. TA notes: From sitka stump u/s end of site. Functional rip-rap is ~95 feet long about 40 feet beyond rip rap is at risk. (Photo Pan 2267-70)



Photo A-71. Pysht River Site ID P-8 (May 10, 2005). Looking upstream. (Photo Pan 2279-81)



**Photo A-72. Site ID P-8. Taken at the toe of bank (~6ft from edge of water on rock).
(Photo 2275-77)**



.Photo A-73 Bank erosion into fill material within the road prism of the historical alignment of State Route 112 at RM 5.9 on the Clallam River (May 11, 2005). The bank height is 10 feet and the banks consists of sand and gravel fill material over alluvial cobble, gravel and sand that typically makes up unmodified stream banks in the study reach. The flow direction is from right to left. (Photo-2368)



Photo A-74 The logjam at the left bank indicates the head of a side-channel at RM 5.9 on the Clallam River (May 11, 2005). LWD in this survey reach largely consists of locally recruited alder. A narrow riparian buffer exists at the right bank between the channel and the historical alignment of State Route 112. Side channel substrate sediment was observed to consist primarily of gravel and sand which was considerably finer than the cobble that dominates the main stem alignment and is evident in the bar at photo center. The flow direction is away from the camera. (Photo Pan 2346-2348)



.Photo A-75 Buried logjam of relic wood at RM 5.9 on the Clallam River (May 11, 2005). Relic wood is wood that was recruited to the channel network prior to the harvest or removal of the adjacent riparian community and is identified by a diameter greater than those of tress within the existing community of riparian vegetation. This LWD spanned a significant portion of the active channel width and serves to store sediment and provide grade control that limits any potential downcutting. The coarse substrate conditions encountered during the field survey are visible. Flow is from right to left. (Photo 2345)



Photo A-76 A low gradient portion of the Clallam River at RM 2.3 (May 12, 2005). Vertical banks consist primarily of silt and sand with some gravel. Riparian vegetation consists of a narrow buffer of deciduous trees and shrubs between the channel alignment and adjacent agricultural fields. The flow direction is towards the camera. (Photo 2577).



Photo A-77. Looking upstream at a logjam on the Pysht River at RM 2.9 (May 10, 2005). A depositional island of sand and gravel is forming downstream of the logjam. (Photo Pan 2121-2122)



Photo A-78. Looking downstream at a submerged logjam on the Pysht River at RM 3.2 (May 10, 2005). A side-channel formed due to flow deflected through the forested floodplain forming a forested island downstream of the logjam. The main stem now conveys a smaller proportion of the total discharge due to conveyance provided by the side-channel. (Photo Pan 2228-2232)