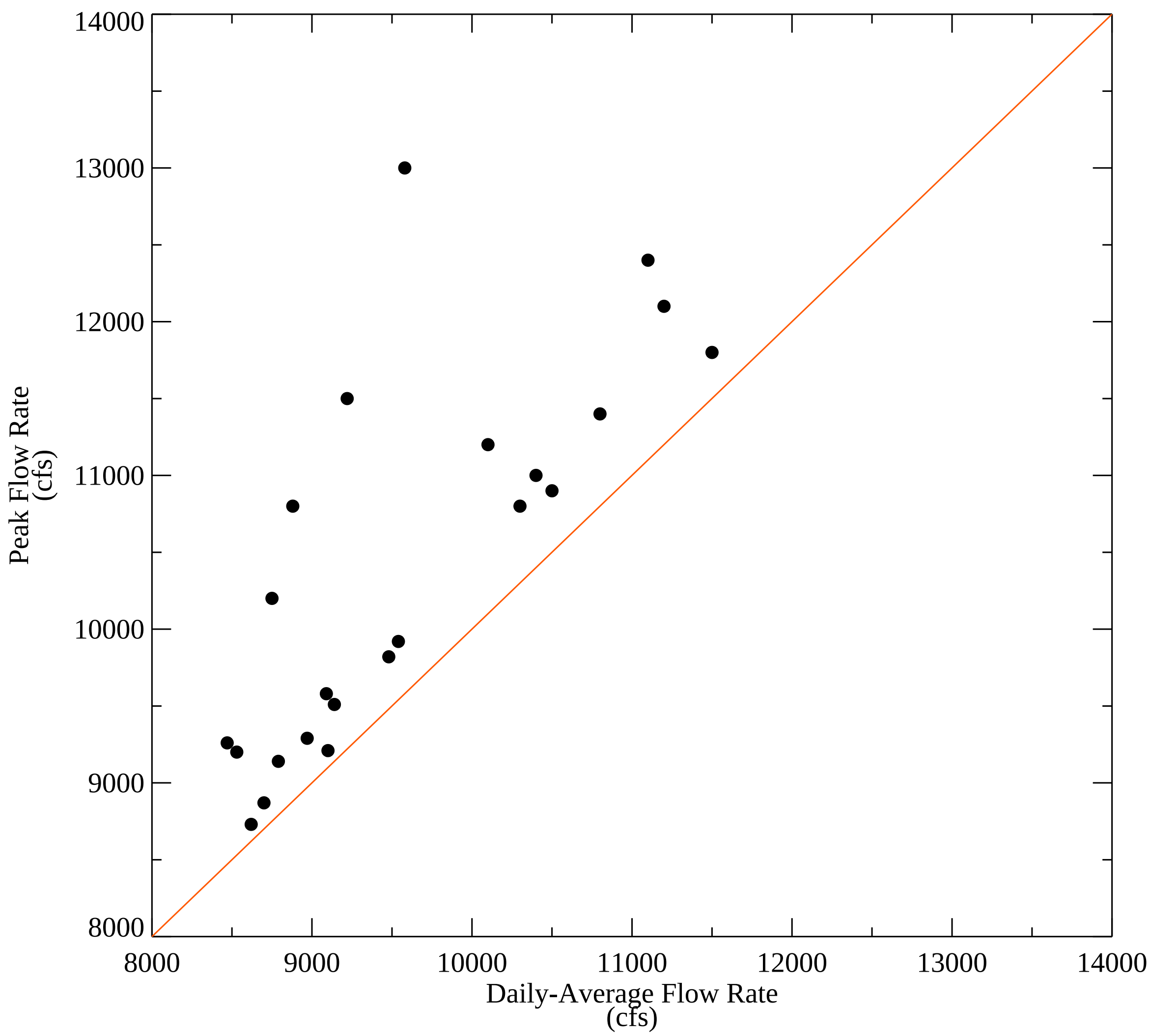


Figure E-1. Comparison of daily-average and peak flow rates in the Green River during high-flow conditions (flow greater than 2-year high-flow event).

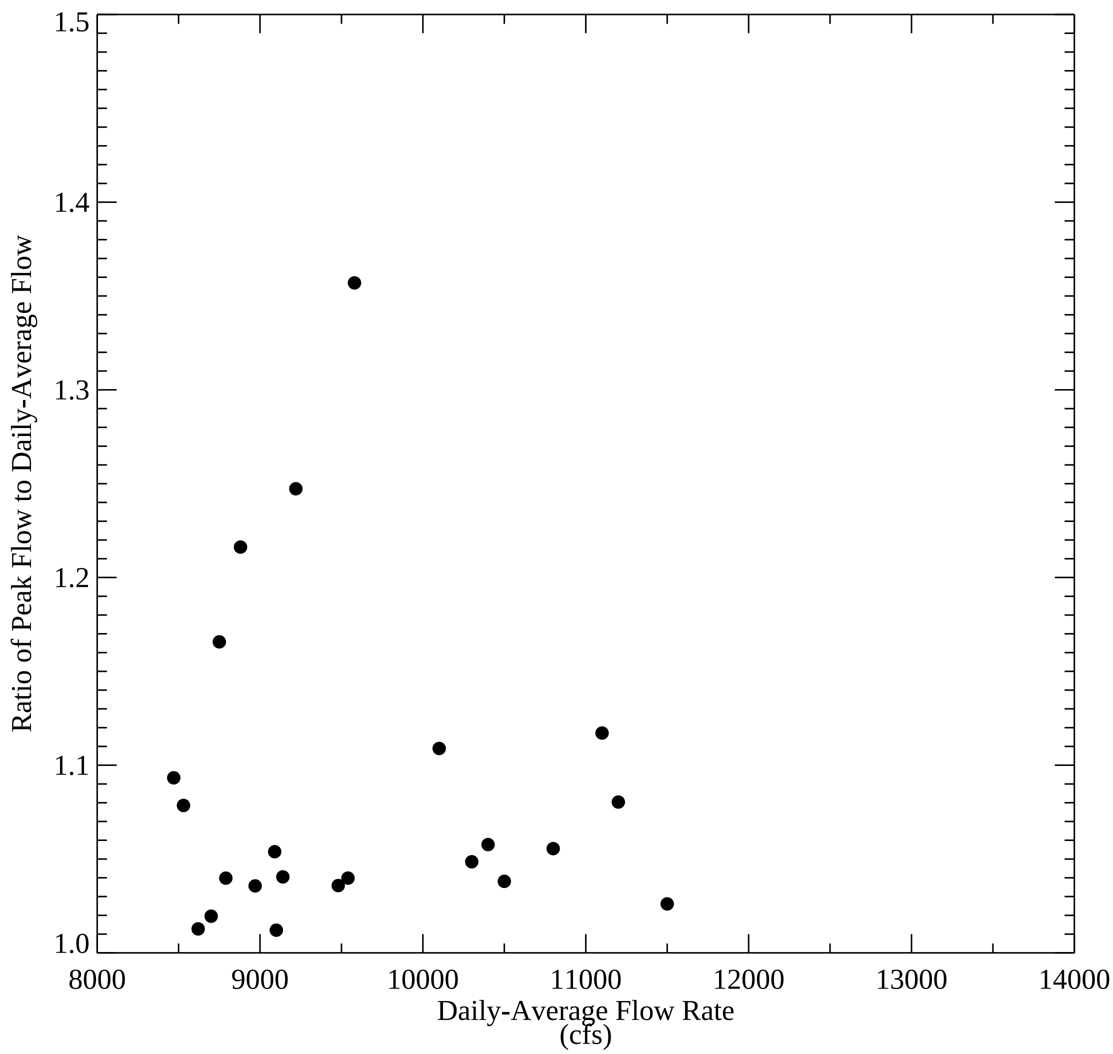


Figure E-2. Ratio of peak flow to daily-average flow as a function of daily-average flow rate during high-flow conditions (flow greater than 2-year high-flow event).

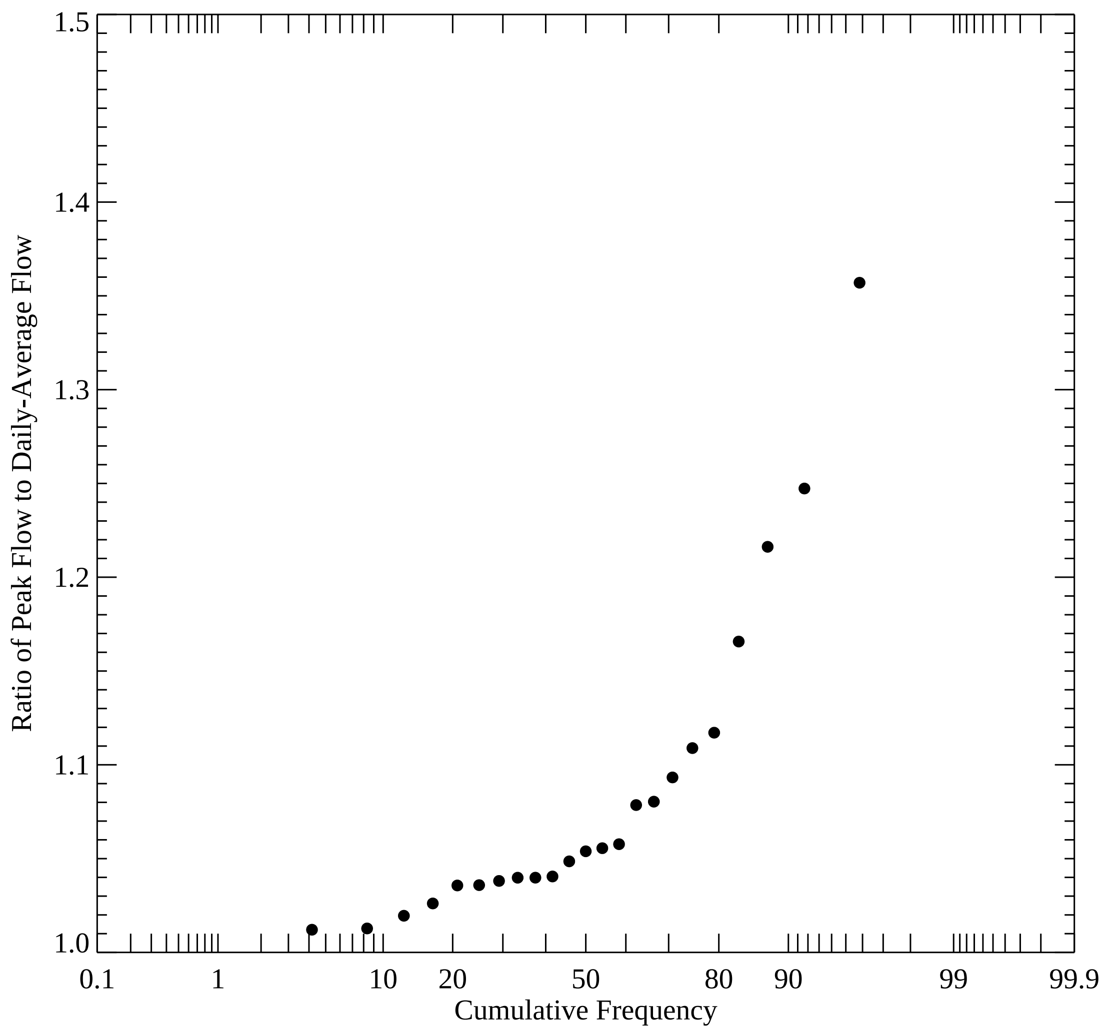


Figure E-3. Cumulative frequency distribution of ratio of peak flow to daily-average flow during high-flow conditions (flow greater than 2-year high-flow event).

FC - D:\RETldw\Analysis\Data\flow\peak_flow_vs_daily_flow.pro
Tue Jun 12 14:21:57 2007

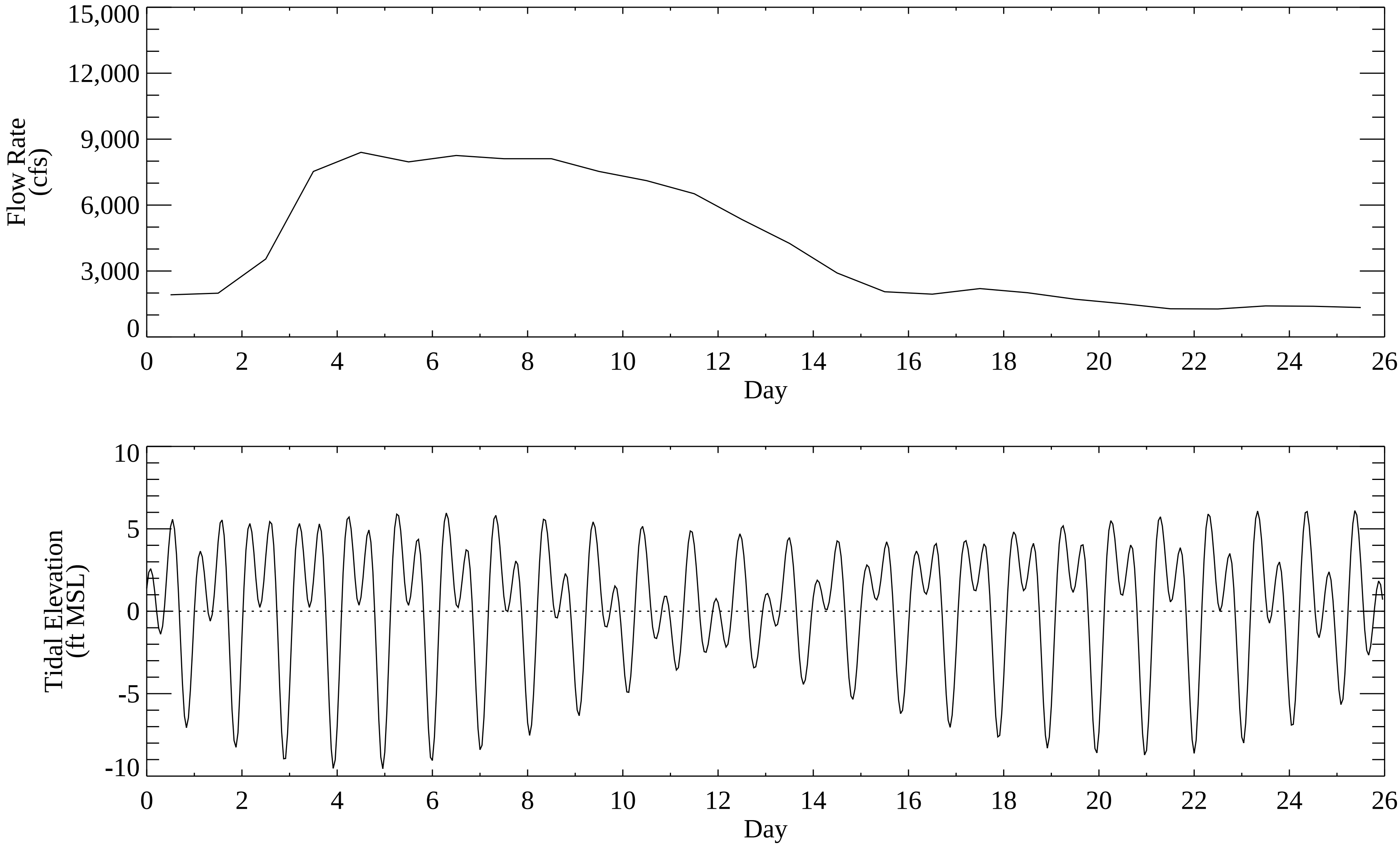


Figure E-4. Time variable river flow rate and tidal elevation used as boundary conditions for 2-year high-flow event.

AC - D:\RETldw\Anaylsis\Model_Output\plot_highflow_events_04242007.pro
Mon Jun 11 15:01:42 2007

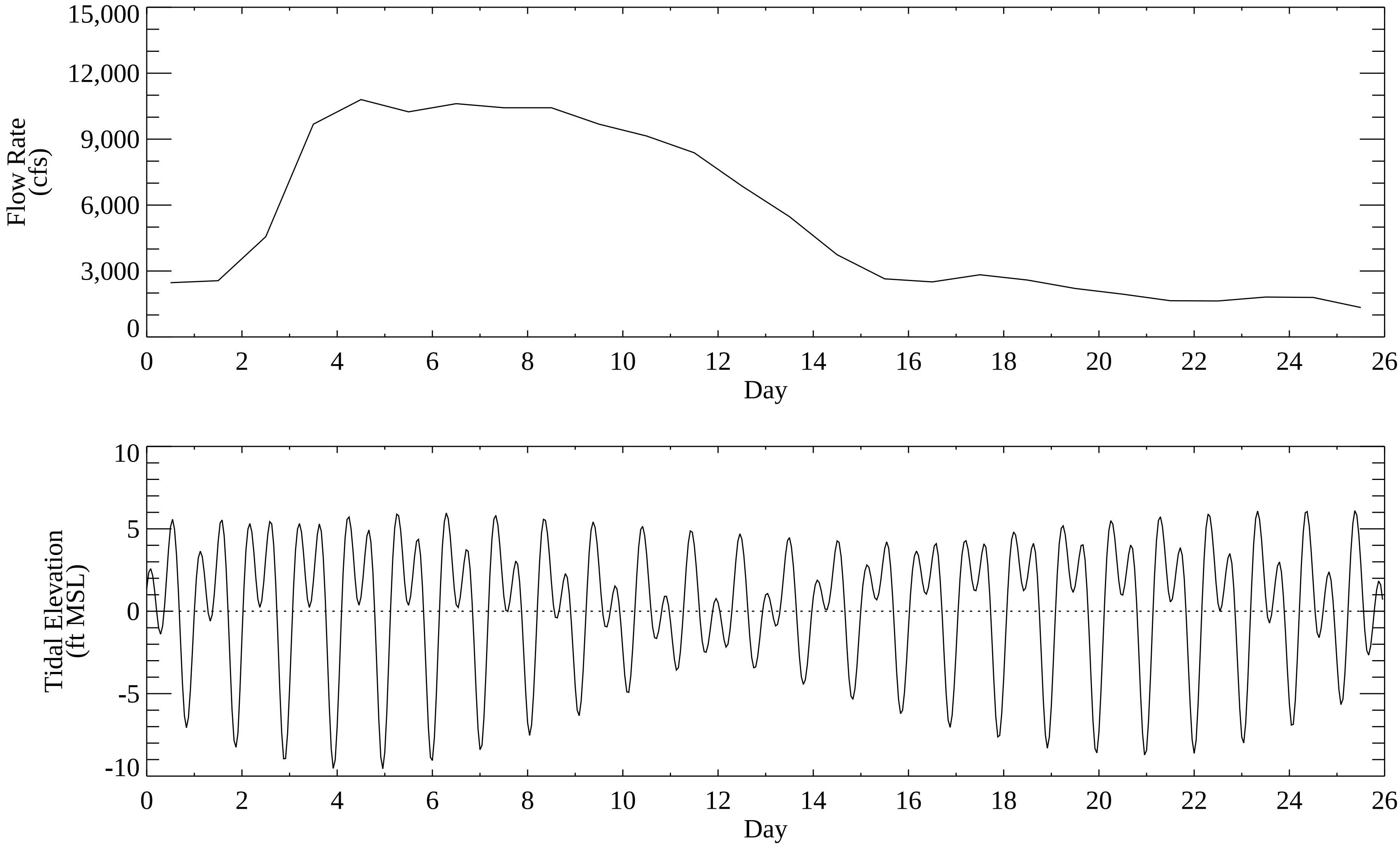
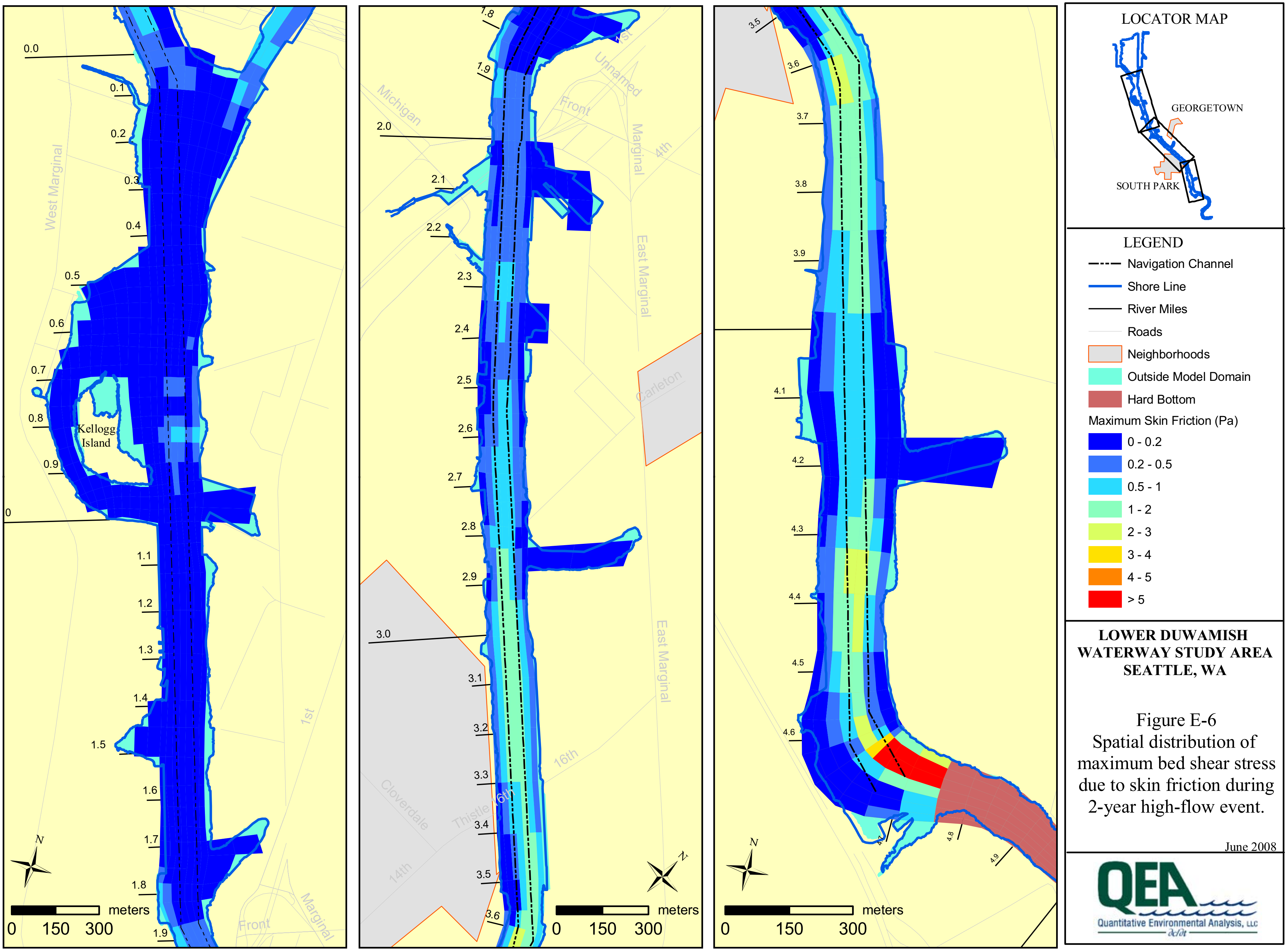


Figure E-5. Time variable river flow rate and tidal elevation used as boundary conditions for 10-year high-flow event.

AC - D:\RETldw\Anaylsis\Model_Output\plot_highflow_events_04242007.pro
Mon Jun 11 15:03:12 2007



LOWER DUWAMISH WATERWAY STUDY AREA
SEATTLE, WA

Figure E-6
Spatial distribution of maximum bed shear stress due to skin friction during 2-year high-flow event.

June 2008

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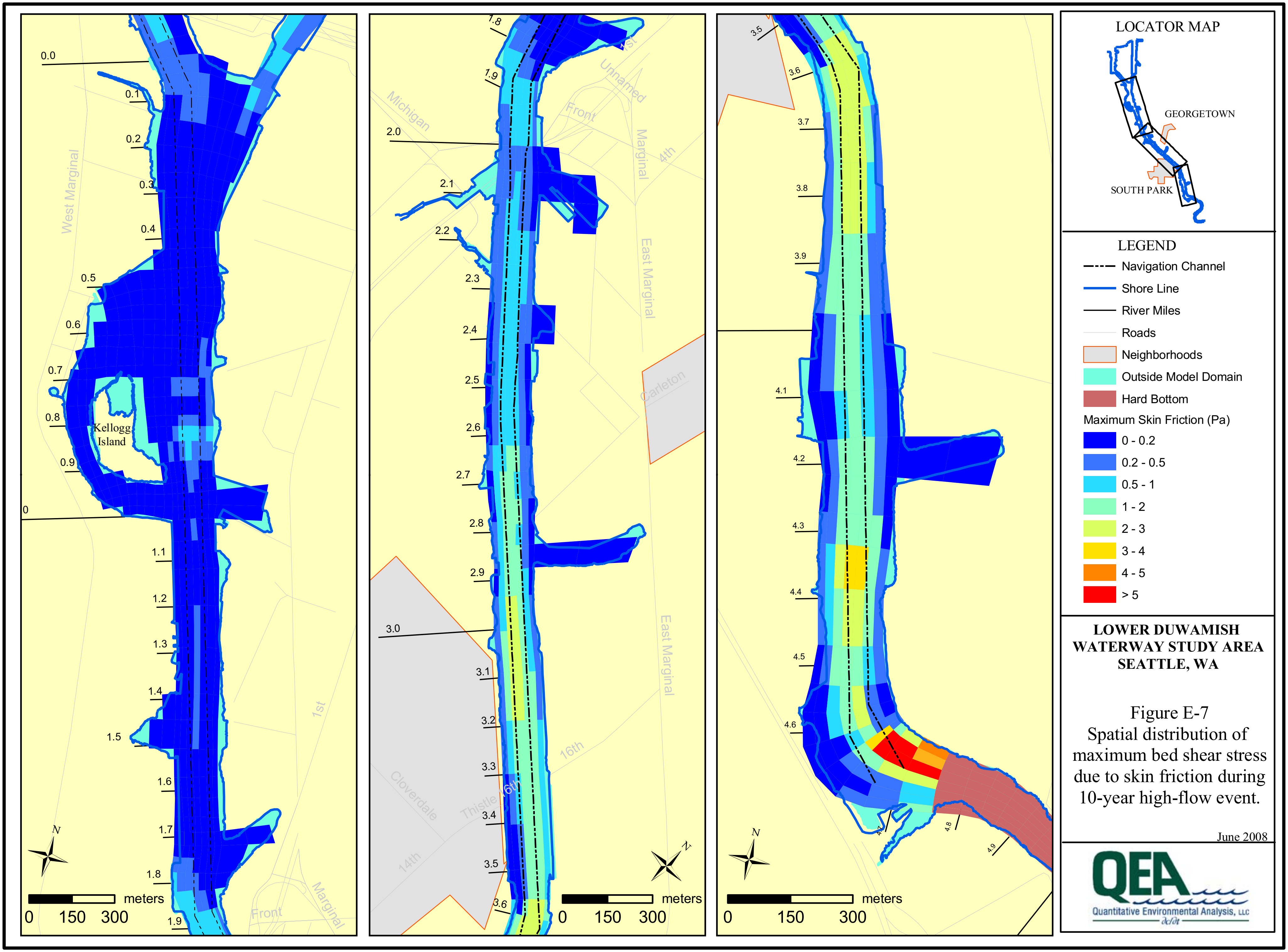
FC- \\Gis_station\d_drive\Private\RETldw\GRID\RETldw_model_grid_bed_shear.mxd



LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-7
Spatial distribution of maximum bed shear stress due to skin friction during 10-year high-flow event.

June 2008

QEA Quantitative Environmental Analysis, LLC

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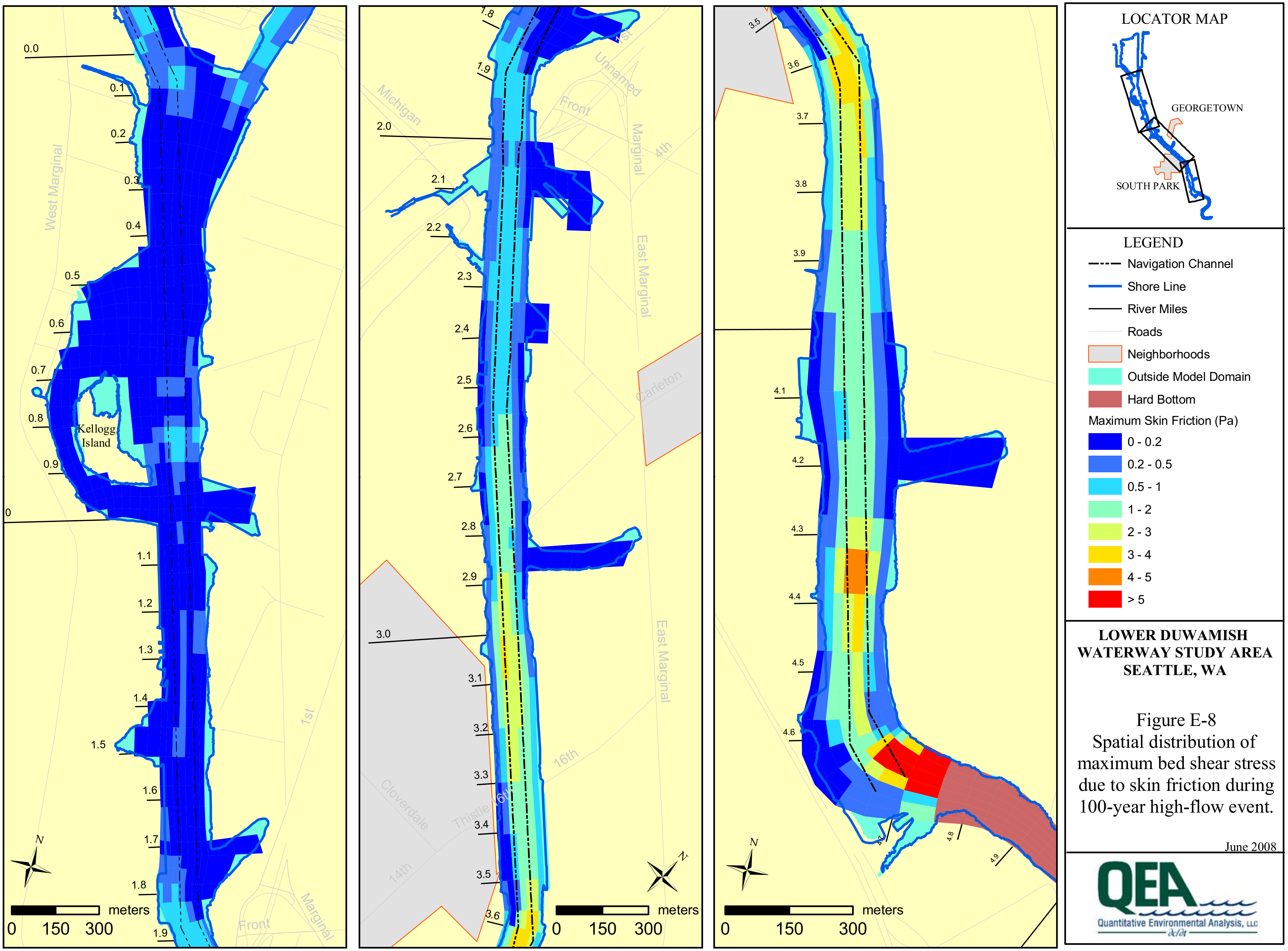

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-8
Spatial distribution of maximum bed shear stress due to skin friction during 100-year high-flow event.

June 2008

QEA Quantitative Environmental Analysis, LLC

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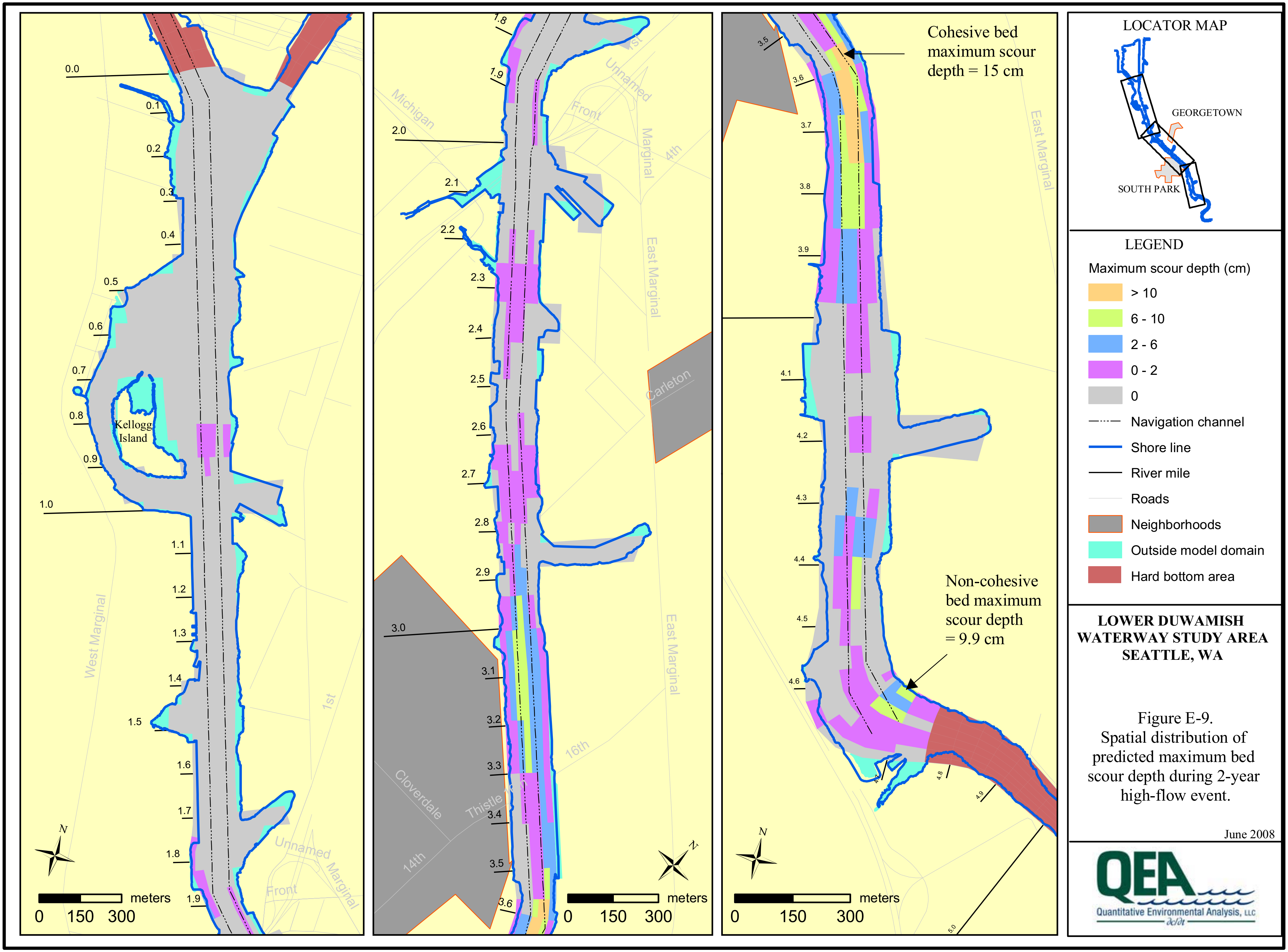
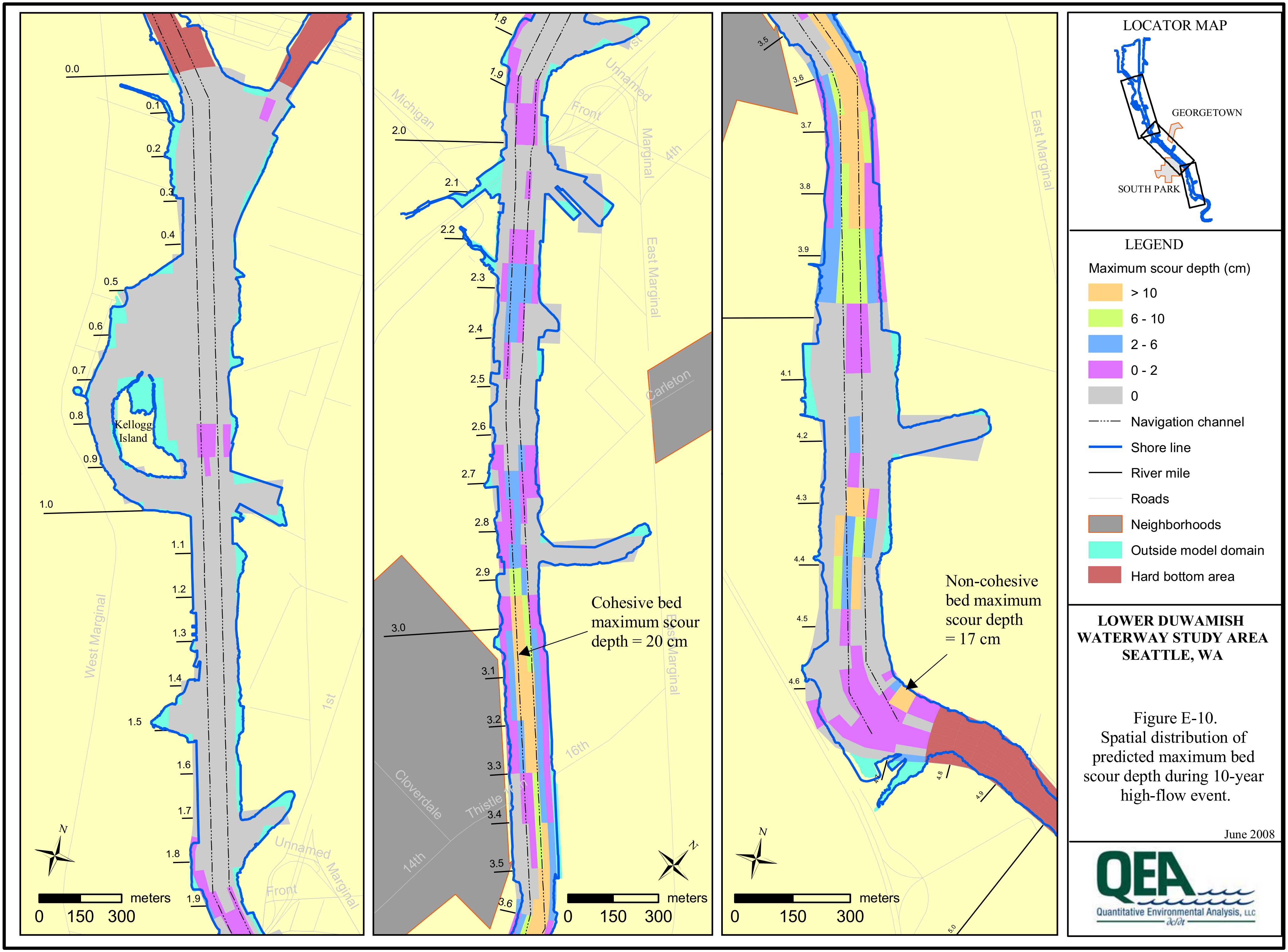


Figure E-9.
Spatial distribution of predicted maximum bed scour depth during 2-year high-flow event.

FC/AC - \\gis_station\d_drive\Private\RETIdw\GIS_plot\sensitivity_plot_max_sco_04102008.mxd



LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-10.
Spatial distribution of predicted maximum bed scour depth during 10-year high-flow event.

June 2008

FC/AC - \\gis_station\d_drive\Private\RETldw\GIS_plot\sensitivity_plot_max_sco_04102008.mxd

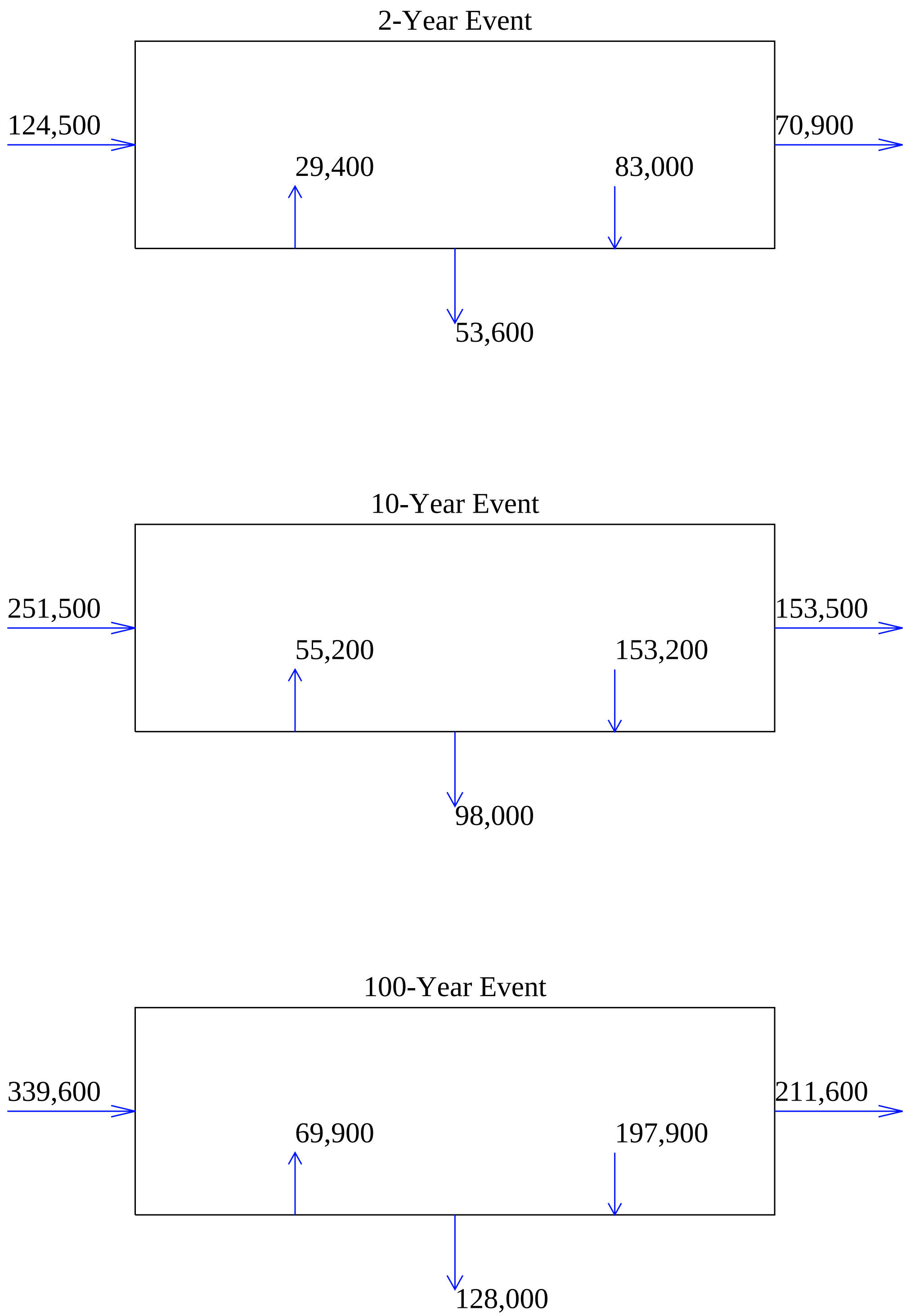


Figure E-11. Sediment mass balances for 2, 10, and 100-year high-flow events.

Sediment mass in metric tons.
The arrow on the left going into the box represents the total in-coming sediment load.
The arrow on the right going out of the box represents the total out-going sediment mass.
Inside the box, the upward arrow represents total erosion mass. The downward arrow represents the total deposition mass. The middle downward arrow under the box represents the net deposition mass.

FC - D:\RETldw\Analysis\Model_output\Plot_mass_balance\Appendix_E_080417.pro
Thu Apr 17 11:55:54 2008

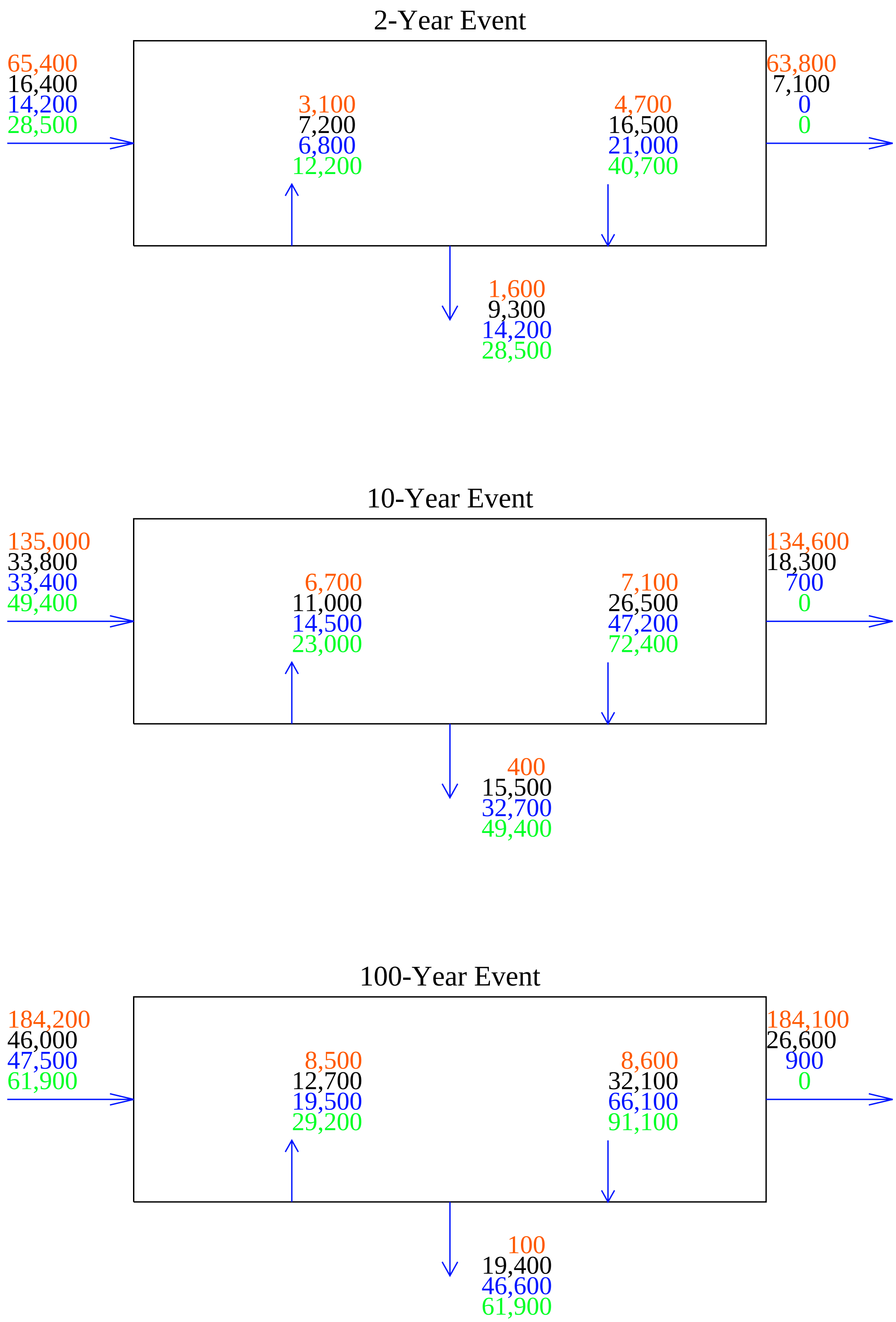


Figure E-12. Sediment mass balances for 2, 10, and 100-year high-flow events for each sediment class.

Sediment mass in metric tons. labels that next to each arrow from top to bottom are sediment mass for class 1A, 1B, 2 and 3.
The arrow on the left going into the box represents the total in-coming sediment load.
The arrow on the right going out of the box represents the total out-going sediment mass.
Inside the box, the upward arrow represents total erosion mass. The downward arrow represents the total deposition mass. The middle downward arrow under the box represents the net deposition mass.

FC - D:\RETldw\Analysis\Model_output\Plot_mass_balance\appendix_E_12_080417.pro
Thu Apr 17 14:50:06 2008

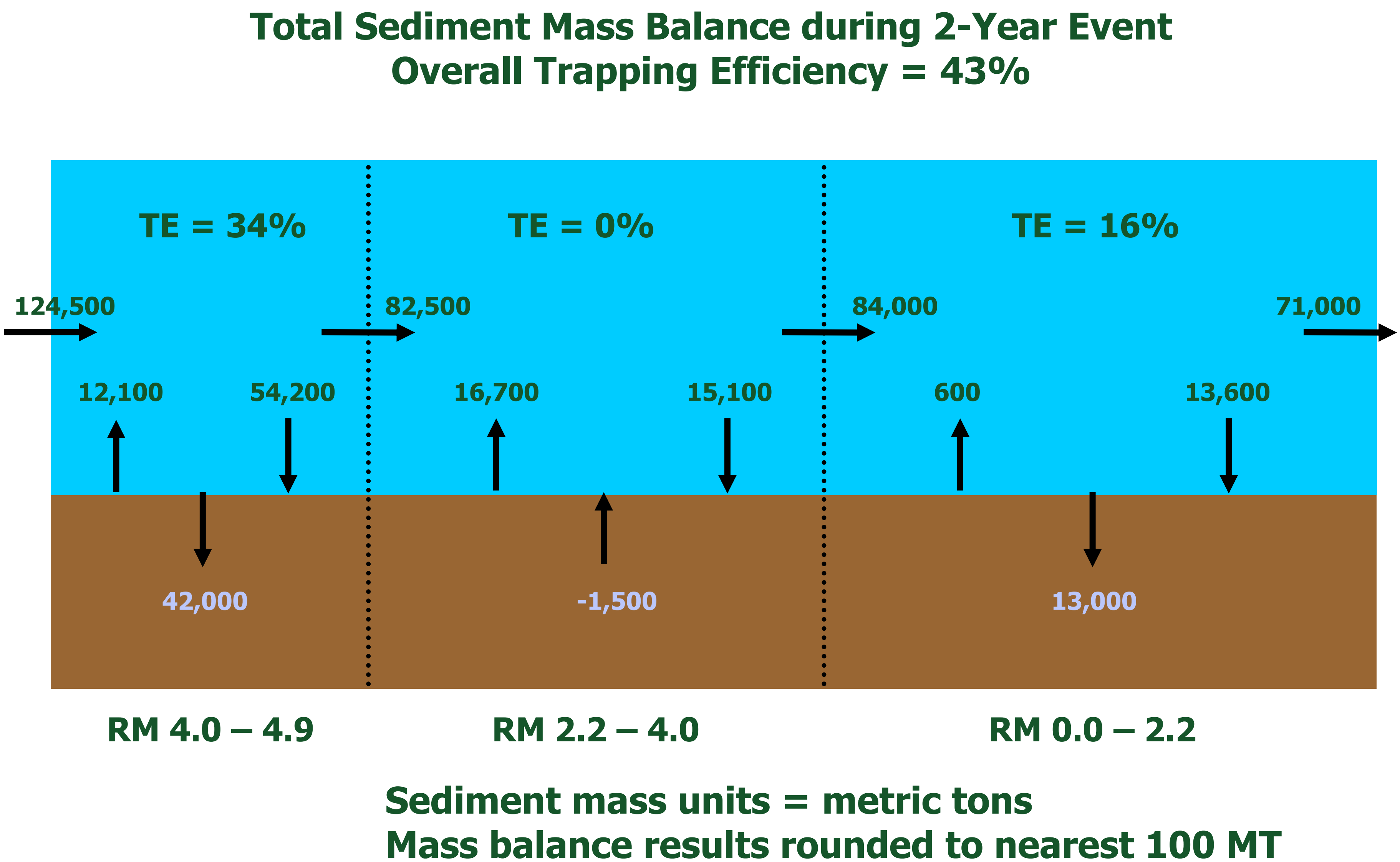


Figure E-13. Total sediment mass balances for 2-year high-flow event.

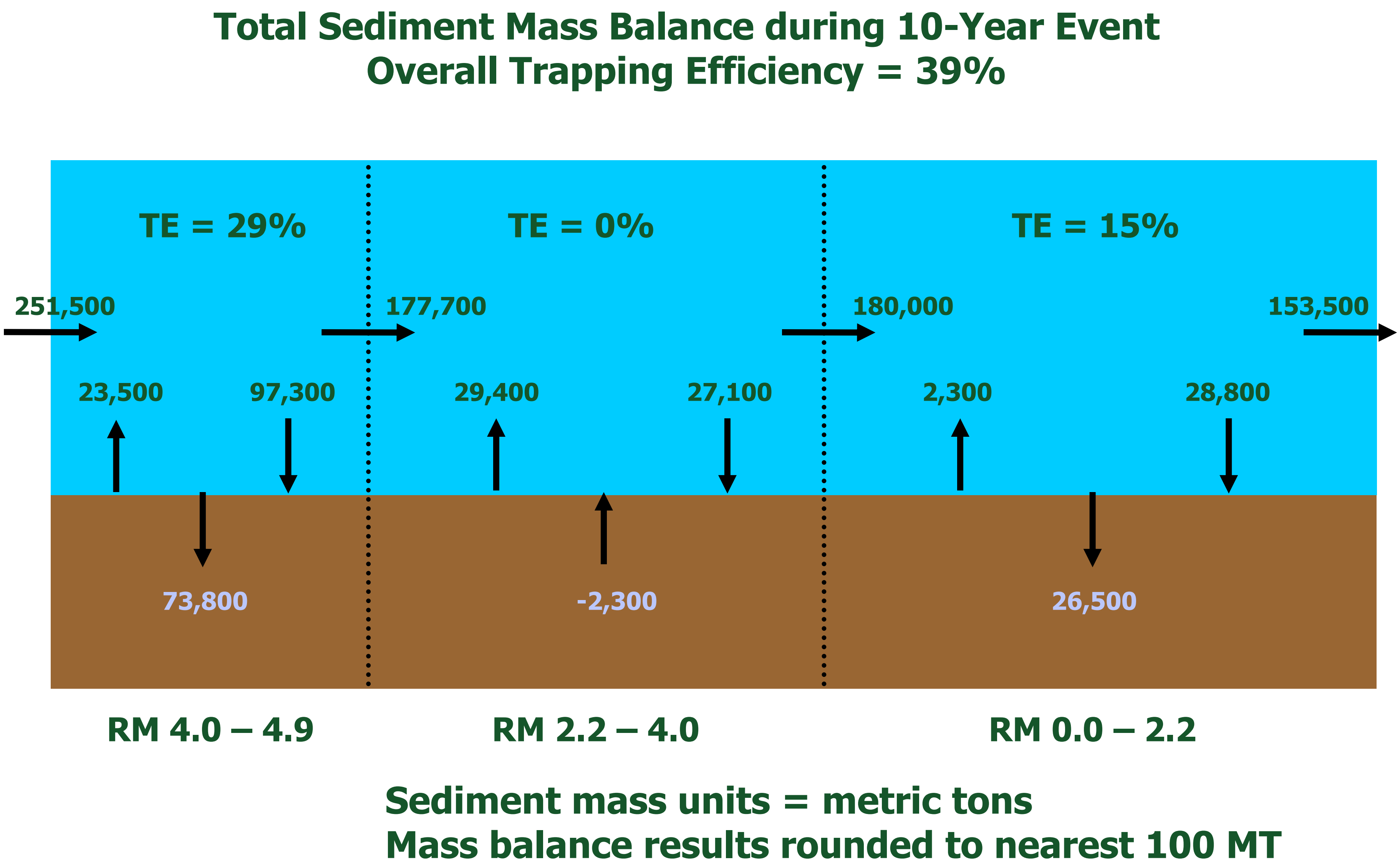


Figure E-14. Total sediment mass balances for 10-year high-flow event.

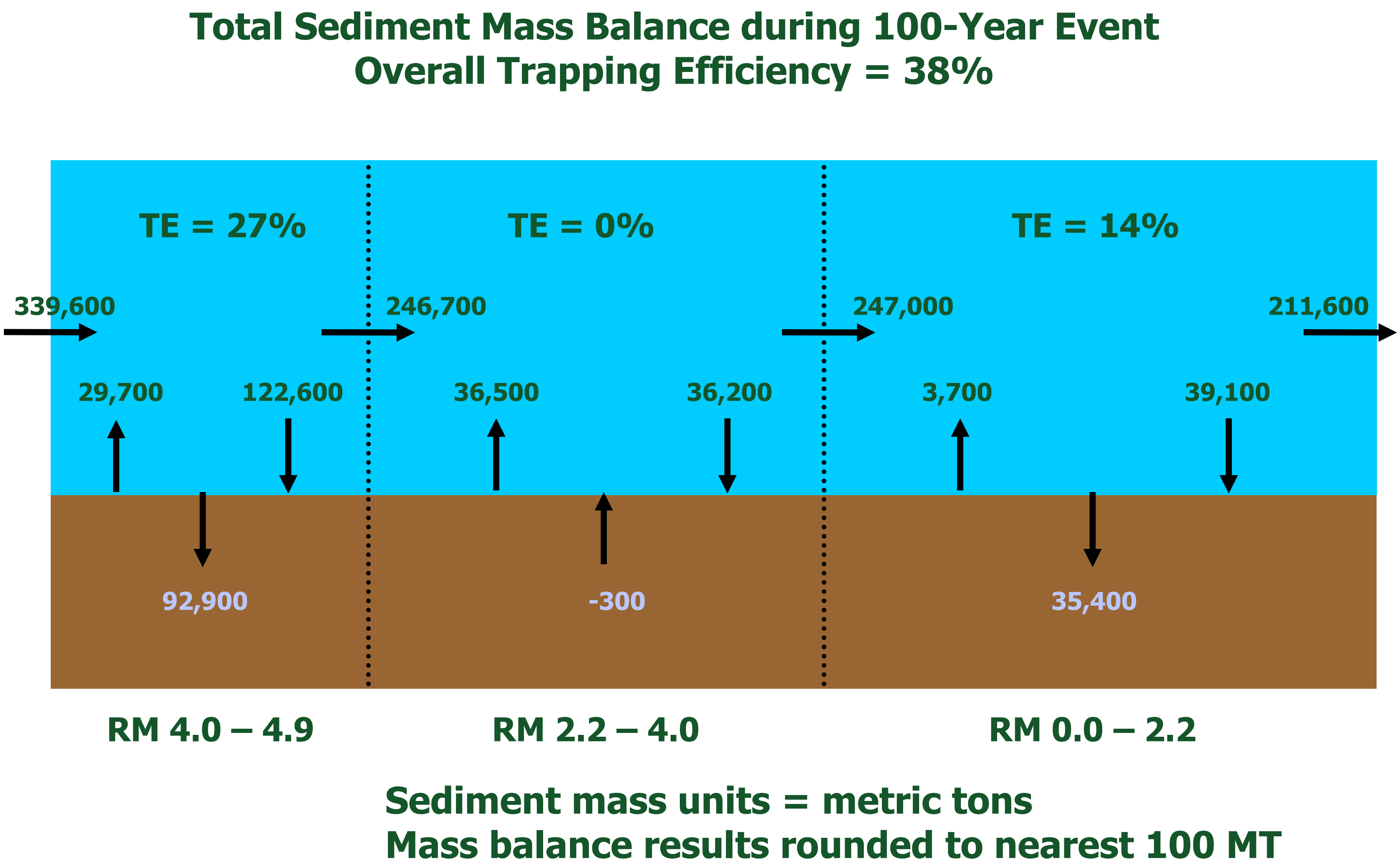


Figure E-15. Total sediment mass balances for 100-year high-flow event.

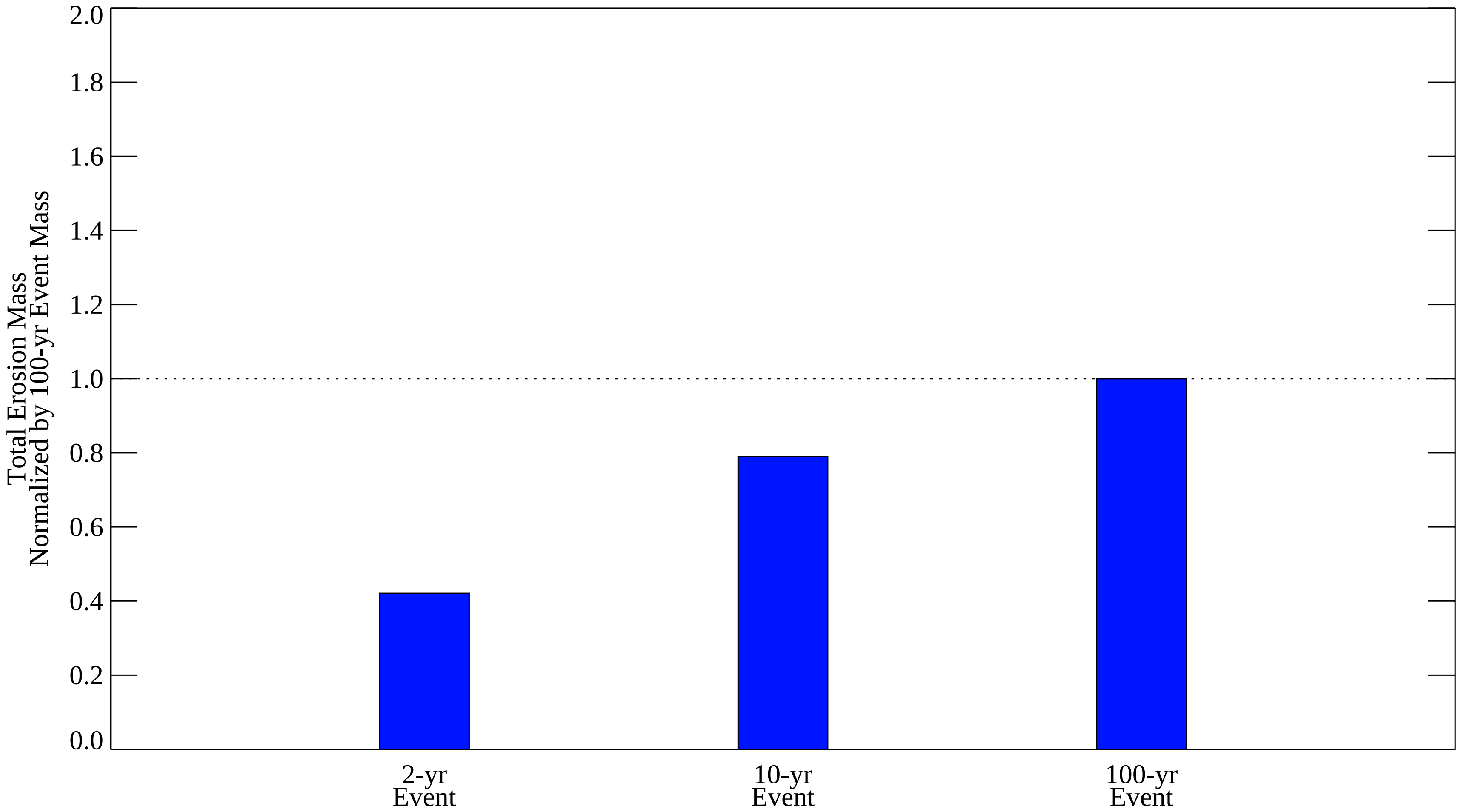


Figure E-16. Comparison of 2, 10, and 100-year high-flow events: normalized erosion mass. Normalization mass is 69,900 metric tons.

FC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080417.pro
Fri Apr 18 15:26:02 2008

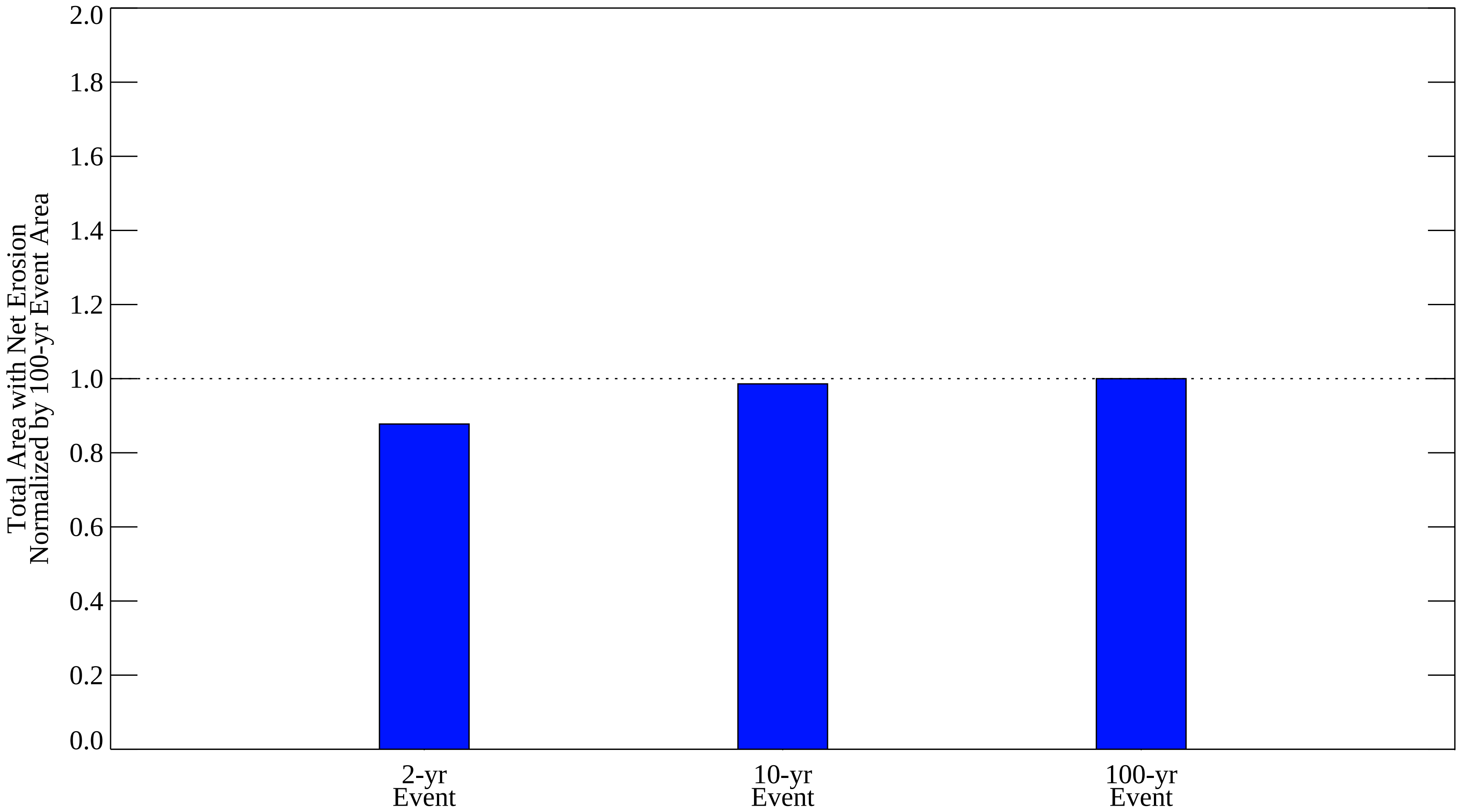


Figure E-17. Comparison of 2, 10, and 100-year high-flow events: normalized net erosional area. Normalization area is 70 acres.

FC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080417.pro
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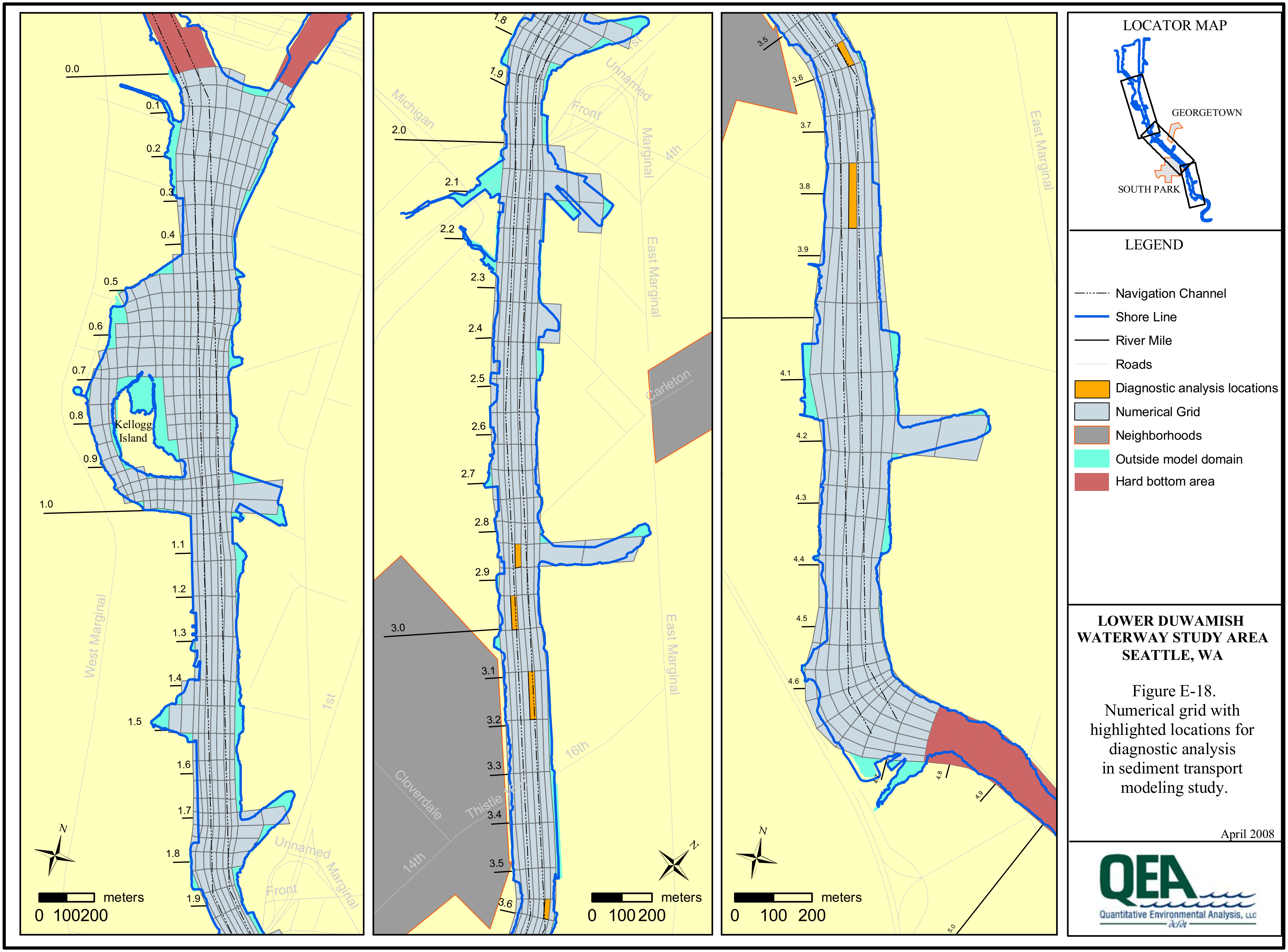

Figure E-18.
Numerical grid with highlighted locations for diagnostic analysis in sediment transport modeling study.

FC/AC - \\Fanghui\D_DRIVE\RETldw\Map\sensitivity_plot.mxd

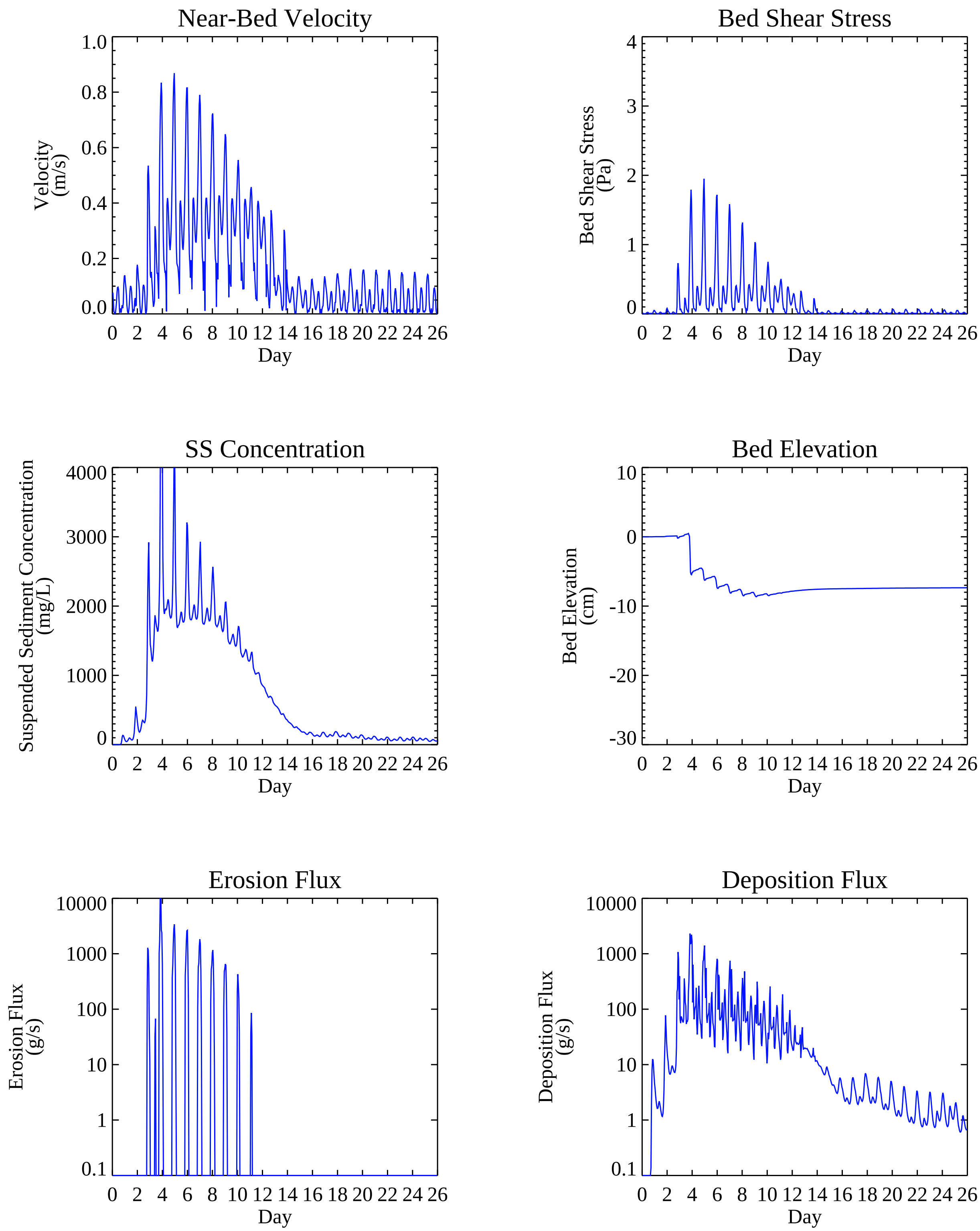

Figure E-19. Time histories of selected variables at a specific grid cell during 100-year high-flow event: RM 2.85

FC - \\Fanghui\D_DRIVE\RETldw\Analysis\Model_output\6p_plot_sensitivity\plot_sensitivity_6p_080417.pro
Thu Jun 12 17:29:59 2008

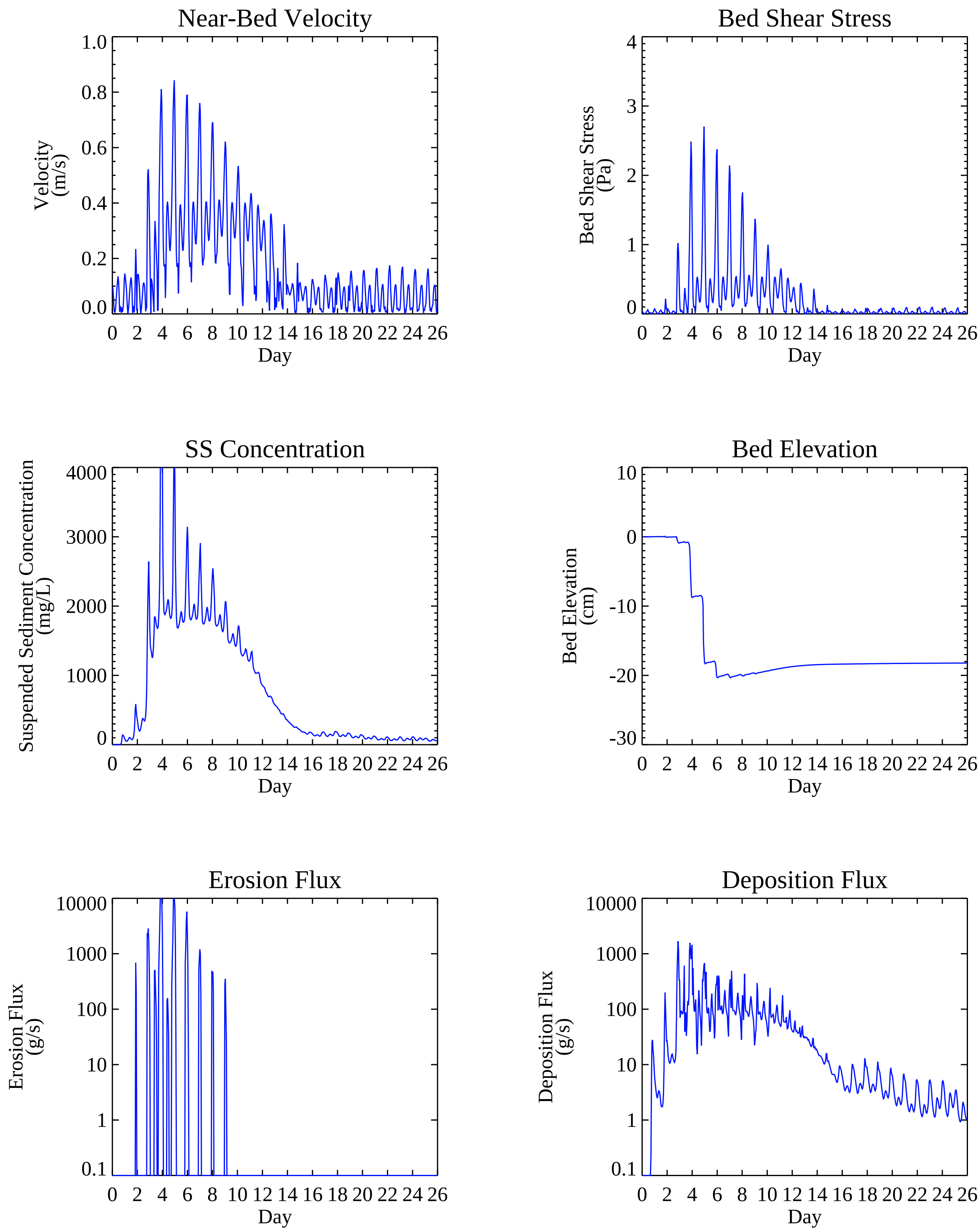

Figure E-20. Time histories of selected variables at a specific grid cell during 100-year high-flow event: RM 2.96

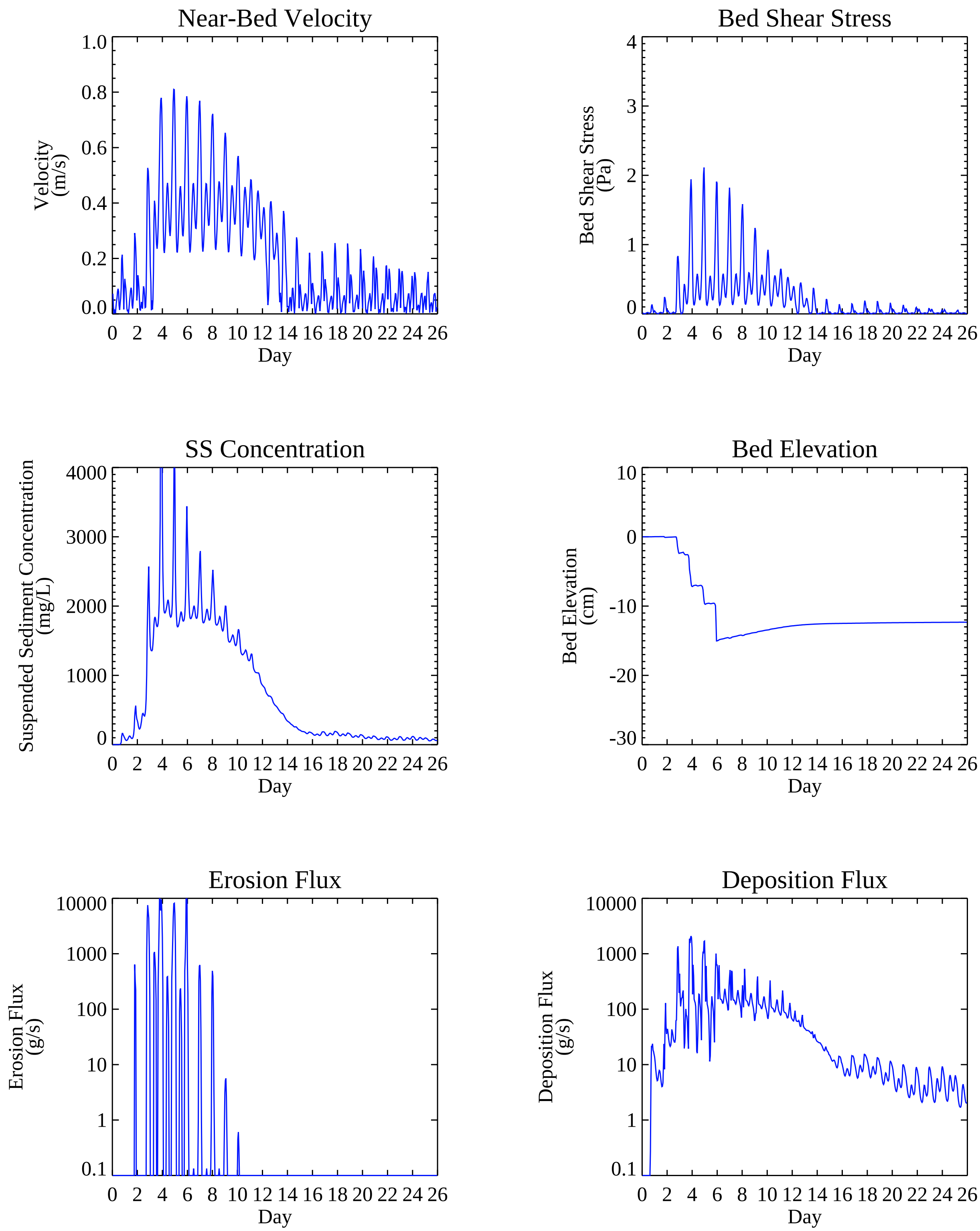

Figure E-21. Time histories of selected variables at a specific grid cell during 100-year high-flow event: RM 3.10

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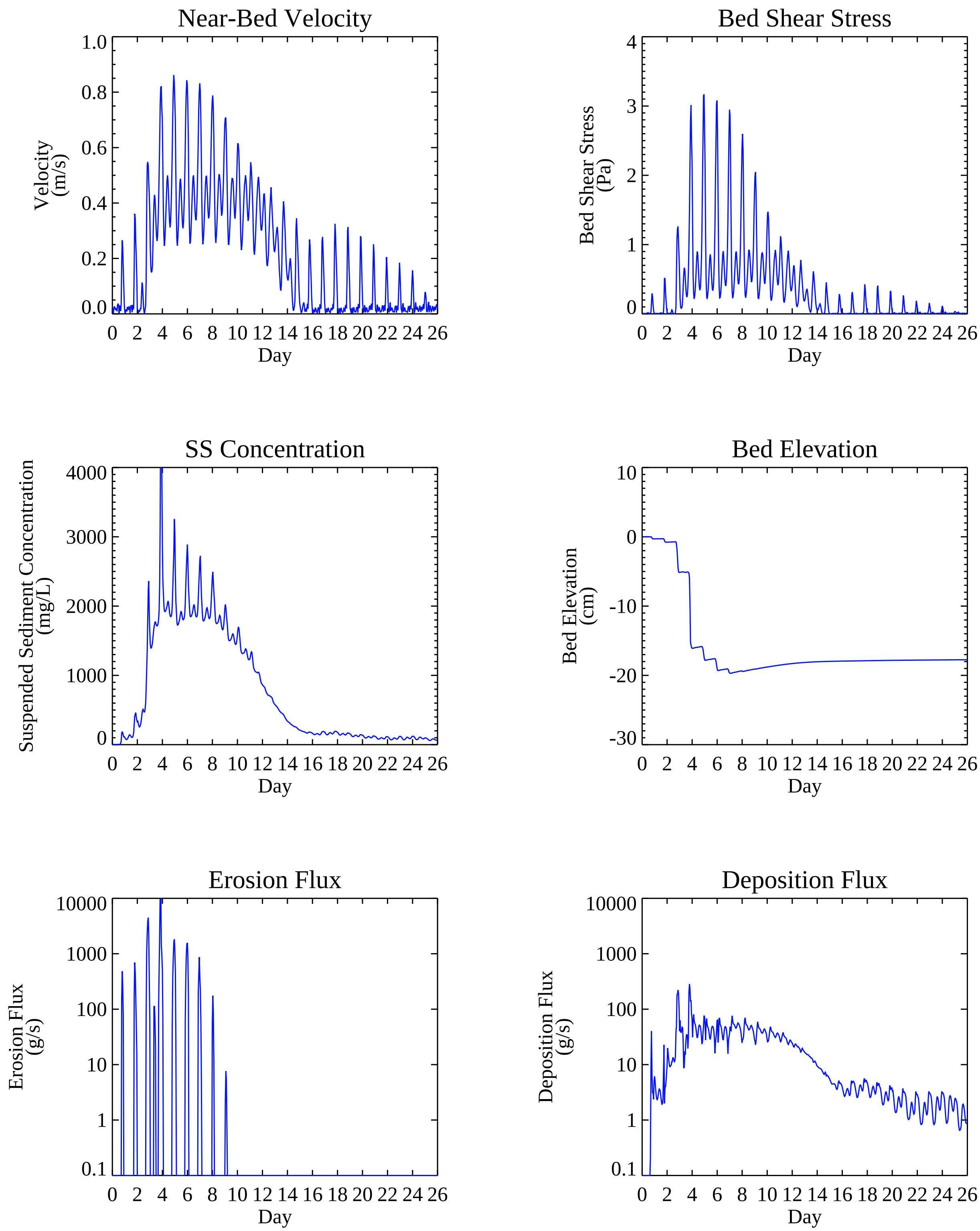

Figure E-22. Time histories of selected variables at a specific grid cell during 100-year high-flow event: RM 3.60

FC - \\Fanghui\D_DRIVE\RETldw\Analysis\Model_output\6p_plot_sensitivity\plot_sensitivity_6p_080417.pro
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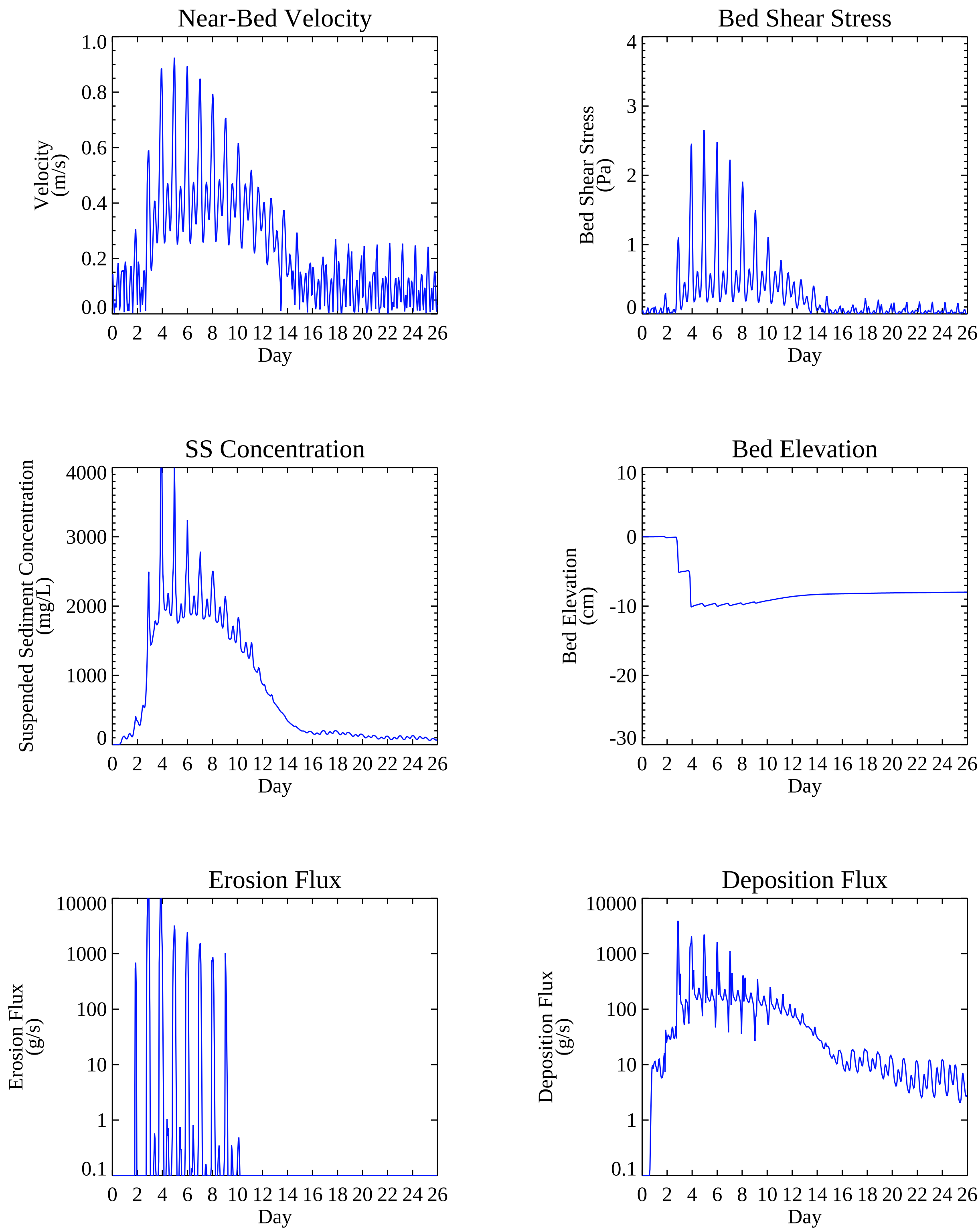

Figure E-23. Time histories of selected variables at a specific grid cell during 100-year high-flow event: RM 3.80

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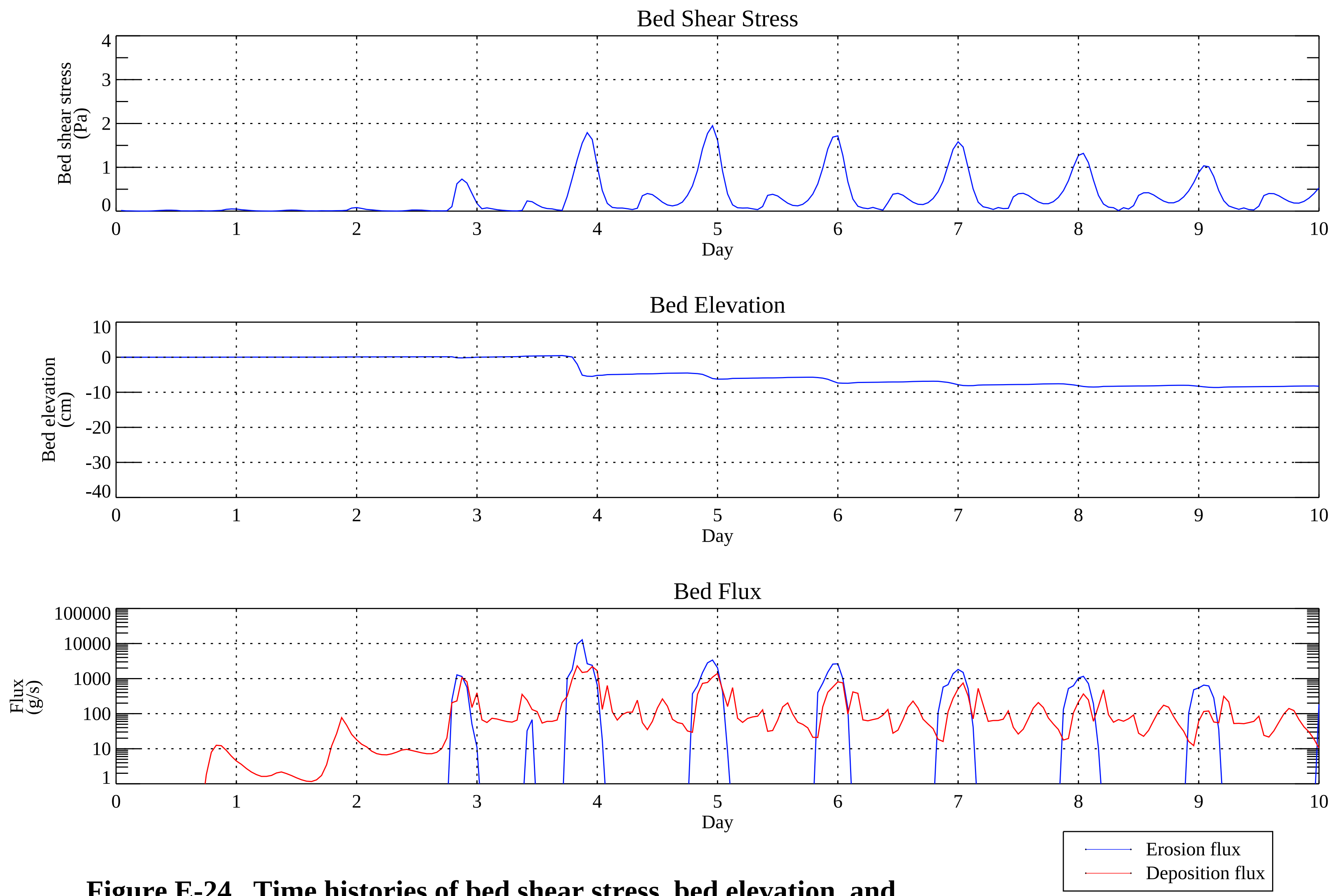

Figure E-24. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85

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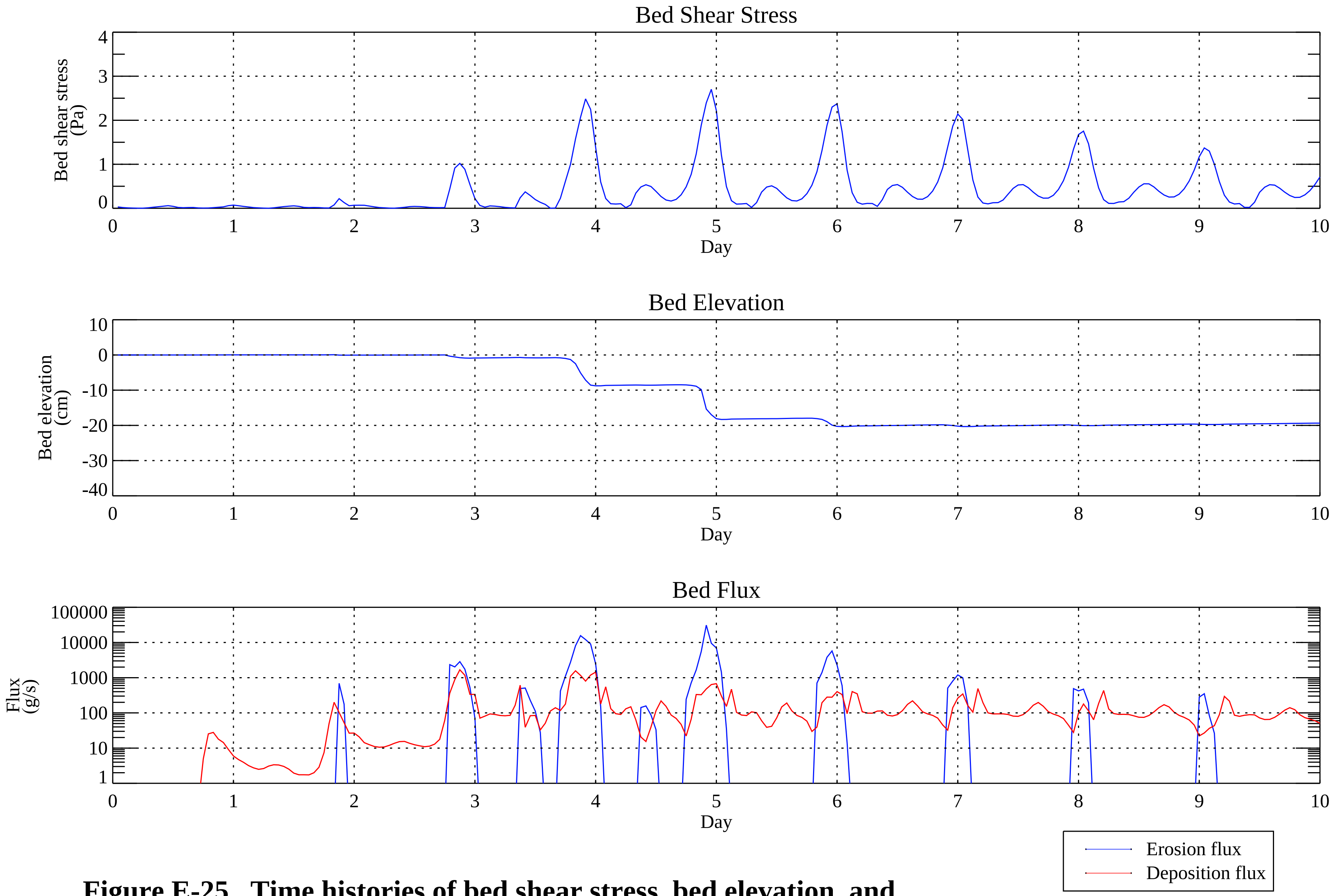

Figure E-25. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96

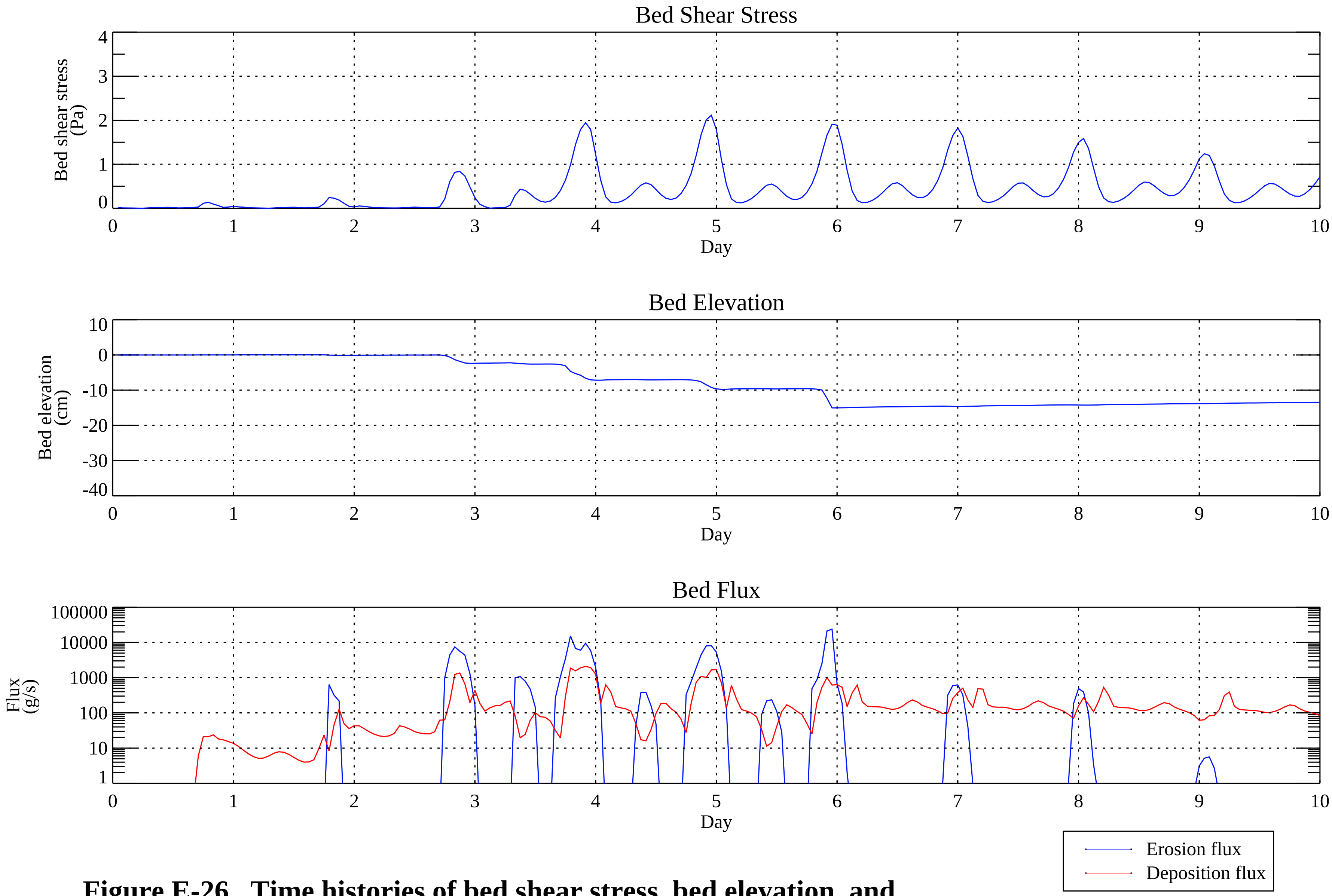

Figure E-26. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10

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Thu Apr 17 16:53:14 2008

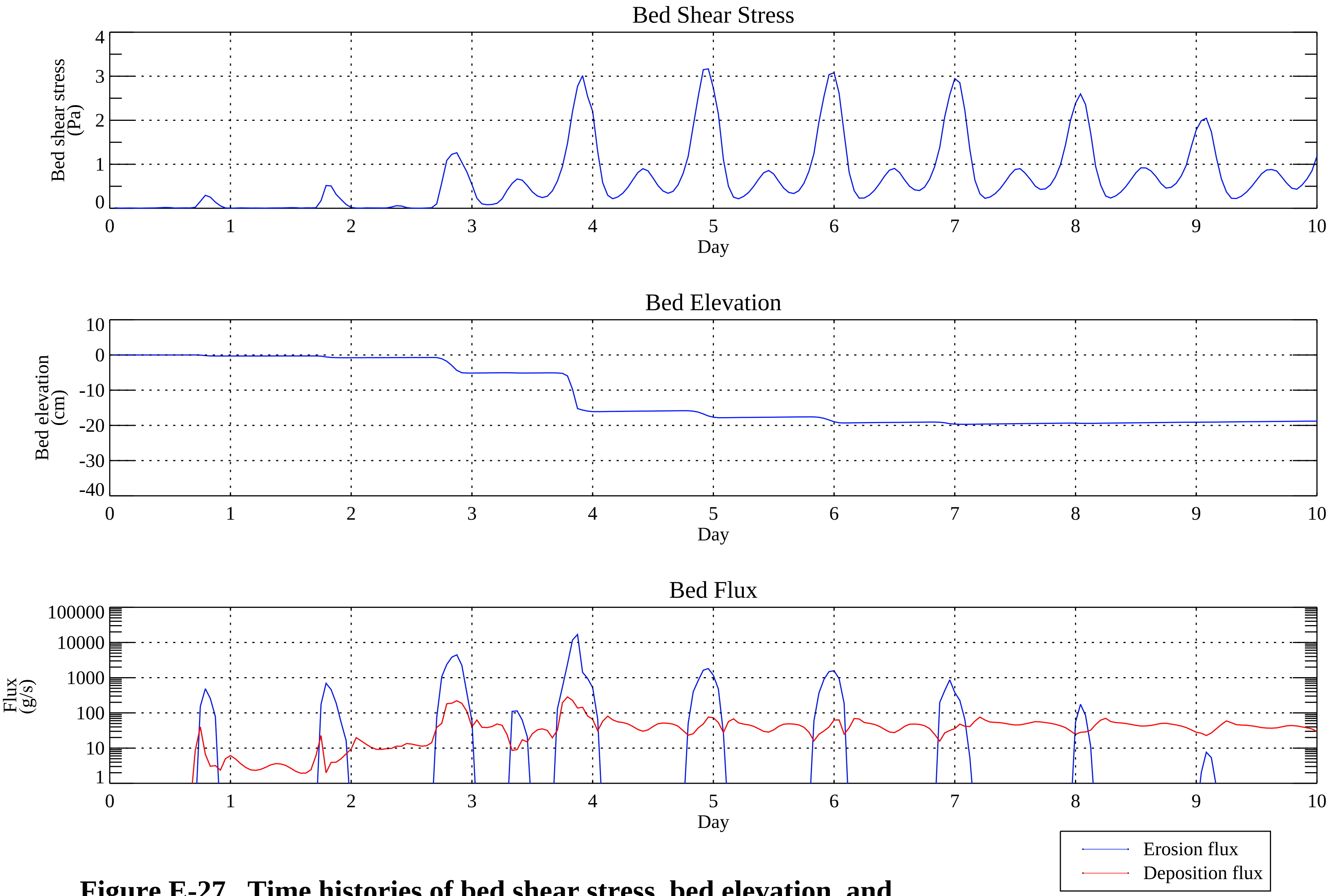

Figure E-27. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60

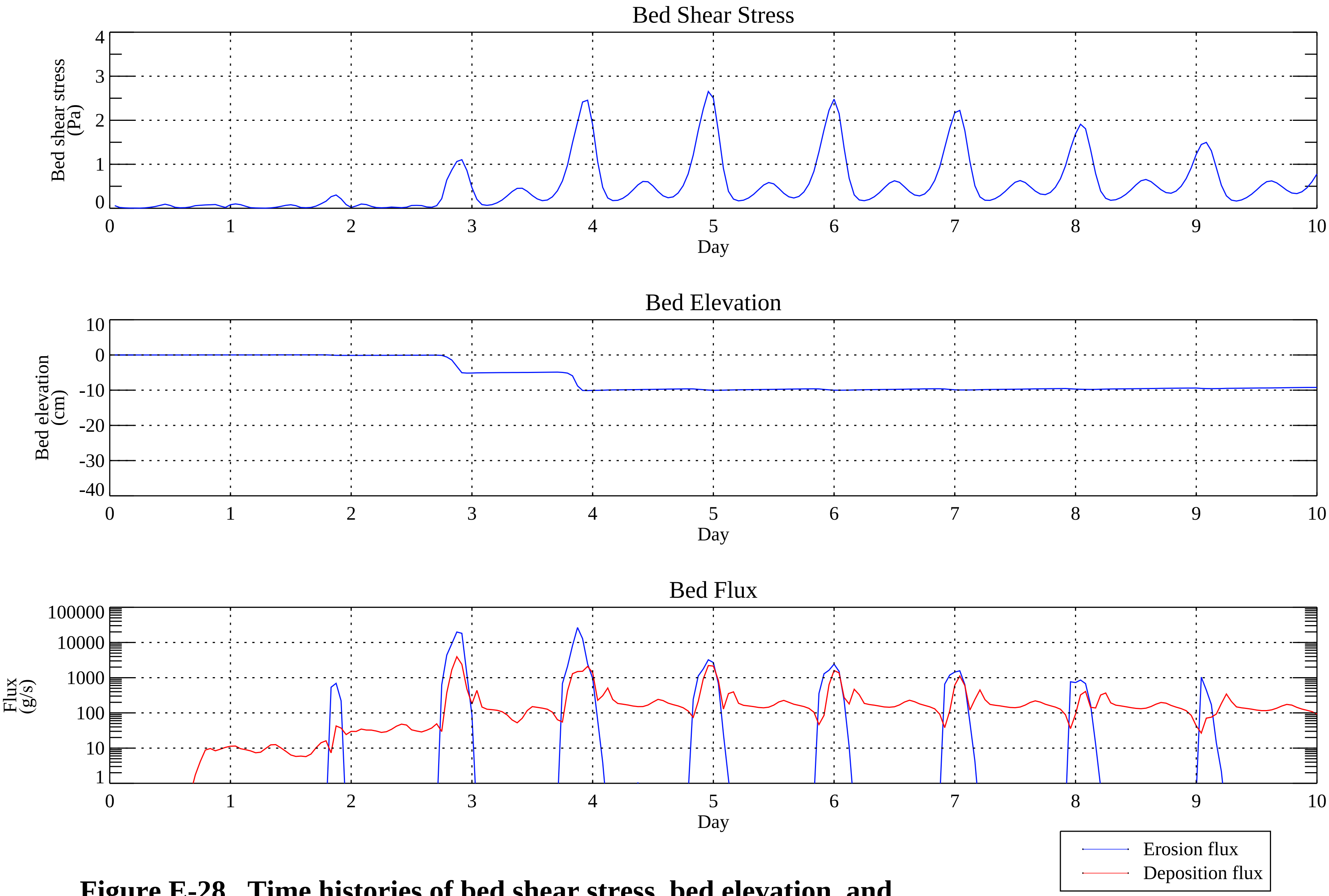

Figure E-28. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80

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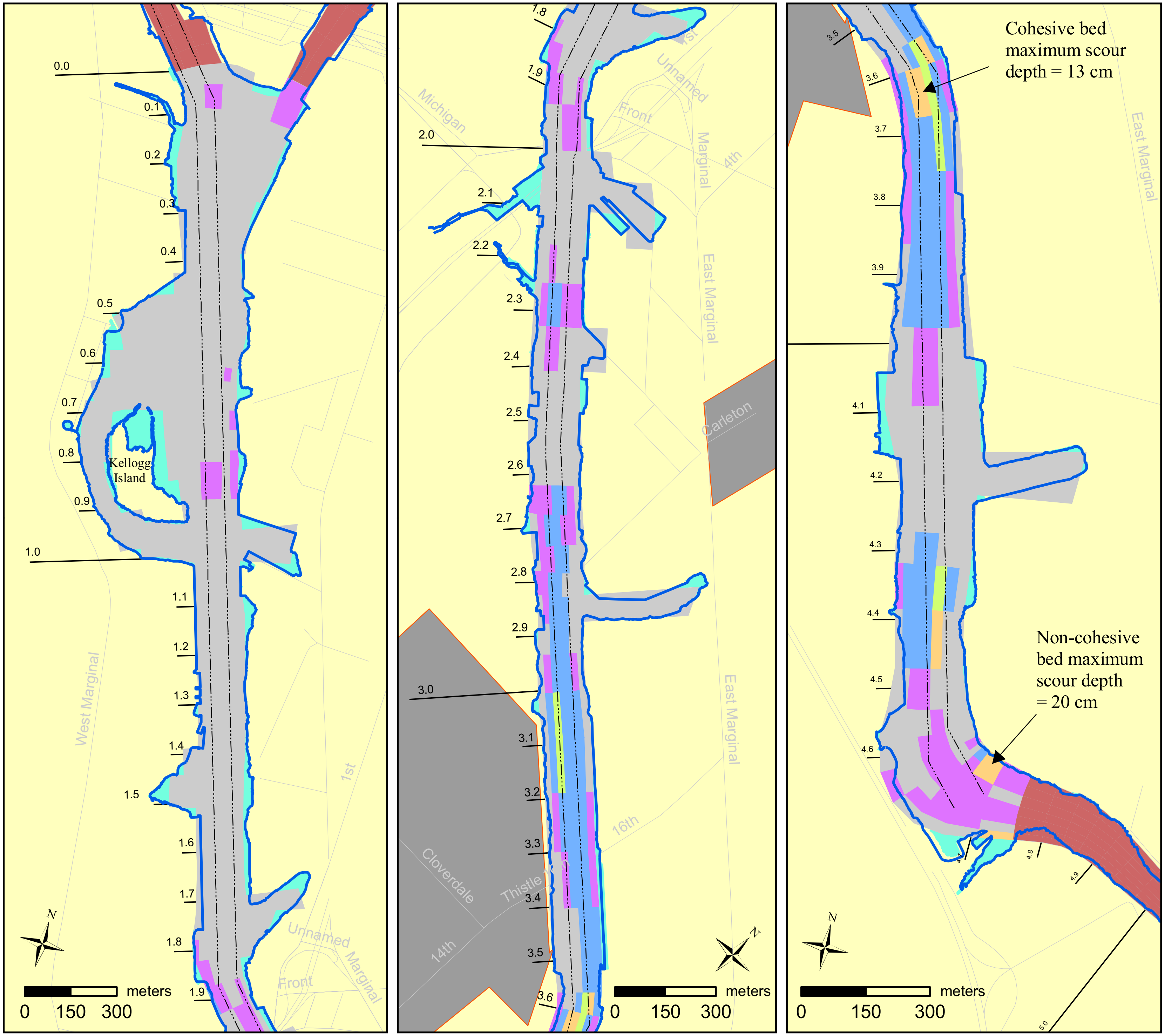

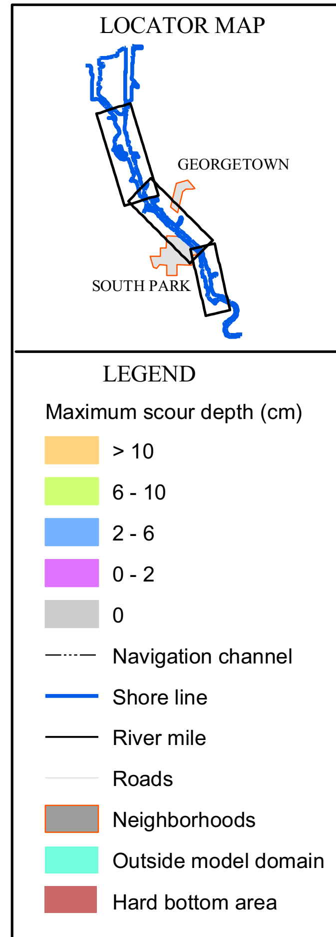

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-29.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: lower-bound erosion parameters.

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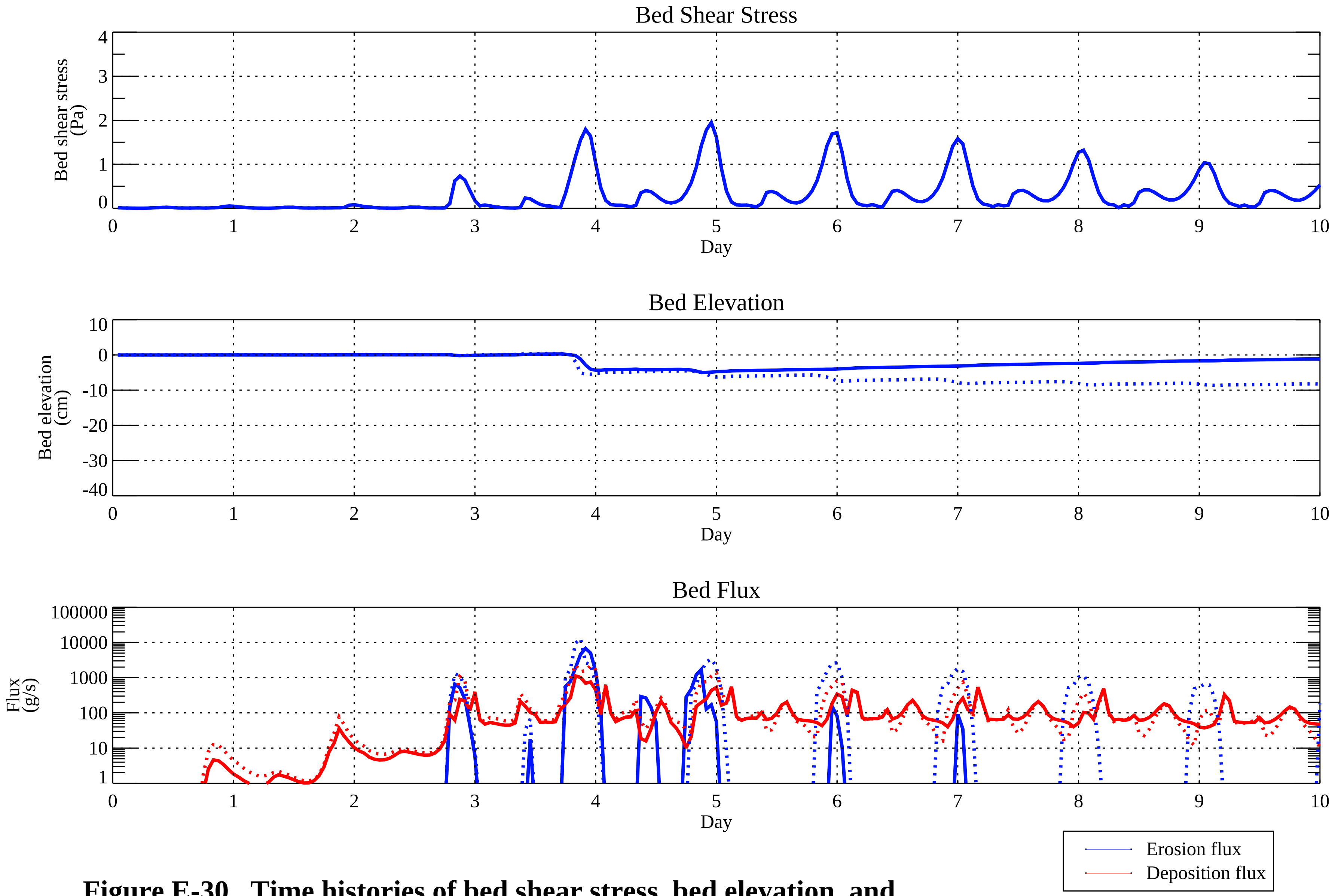

Figure E-30. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (lower-bound erosion parameters). Dotted line represents the base case results.

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Mon Jun 16 10:30:37 2008

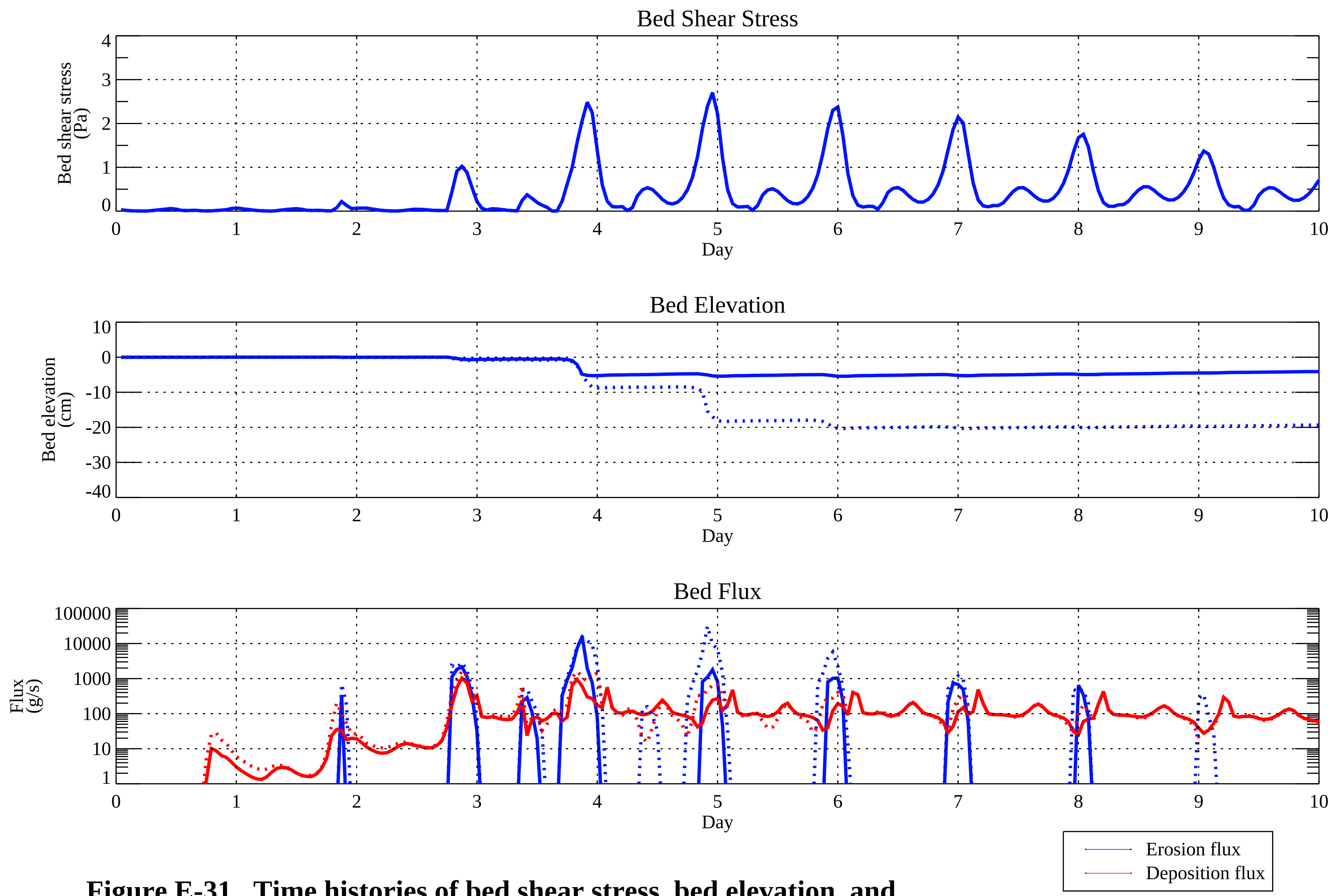

Figure E-31. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (lower-bound erosion parameters). Dotted line represents the base case results.

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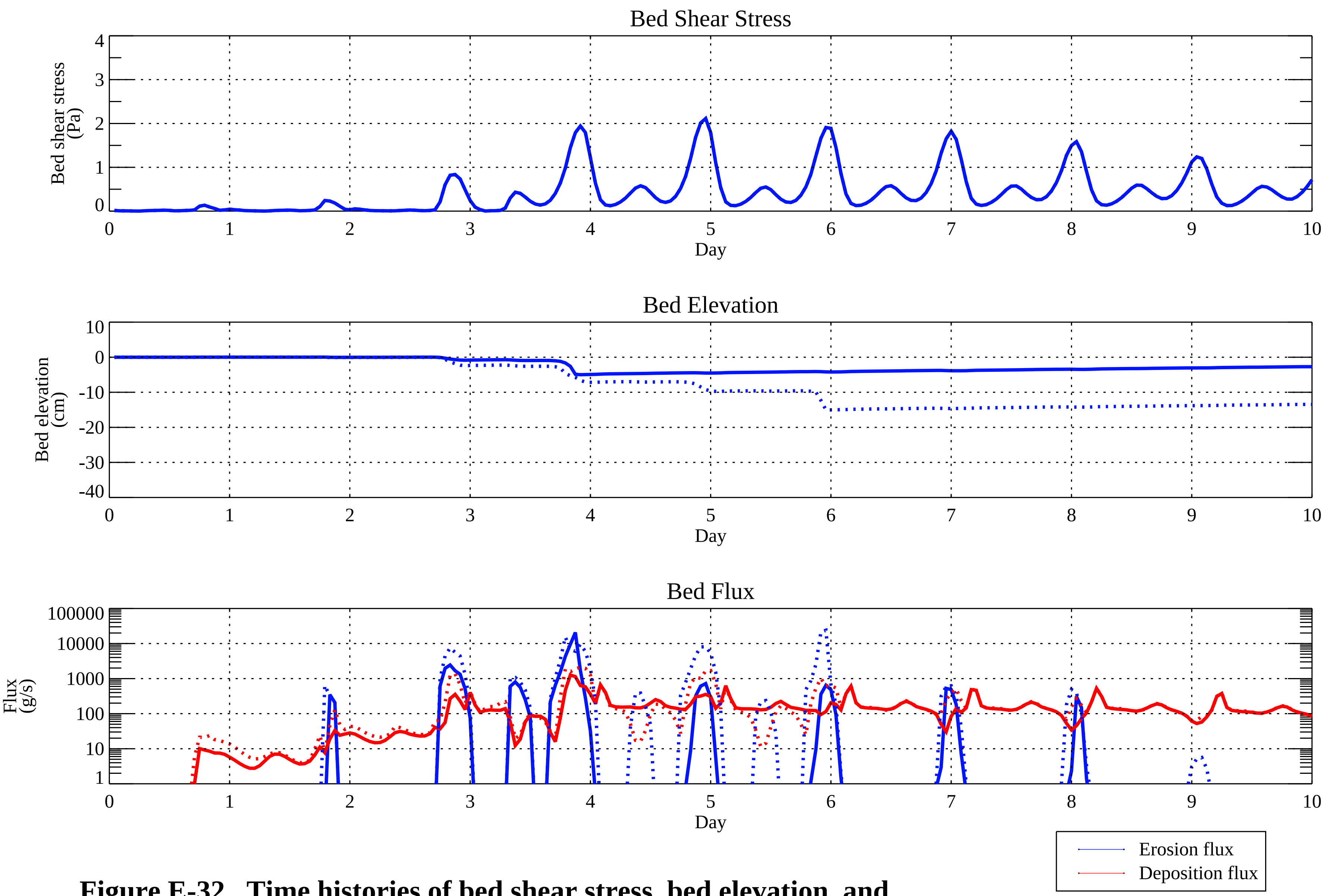

Figure E-32. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (lower-bound erosion parameters). Dotted line represents the base case results.

Figure E-33. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (lower-bound erosion parameters). Dotted line represents the base case results.

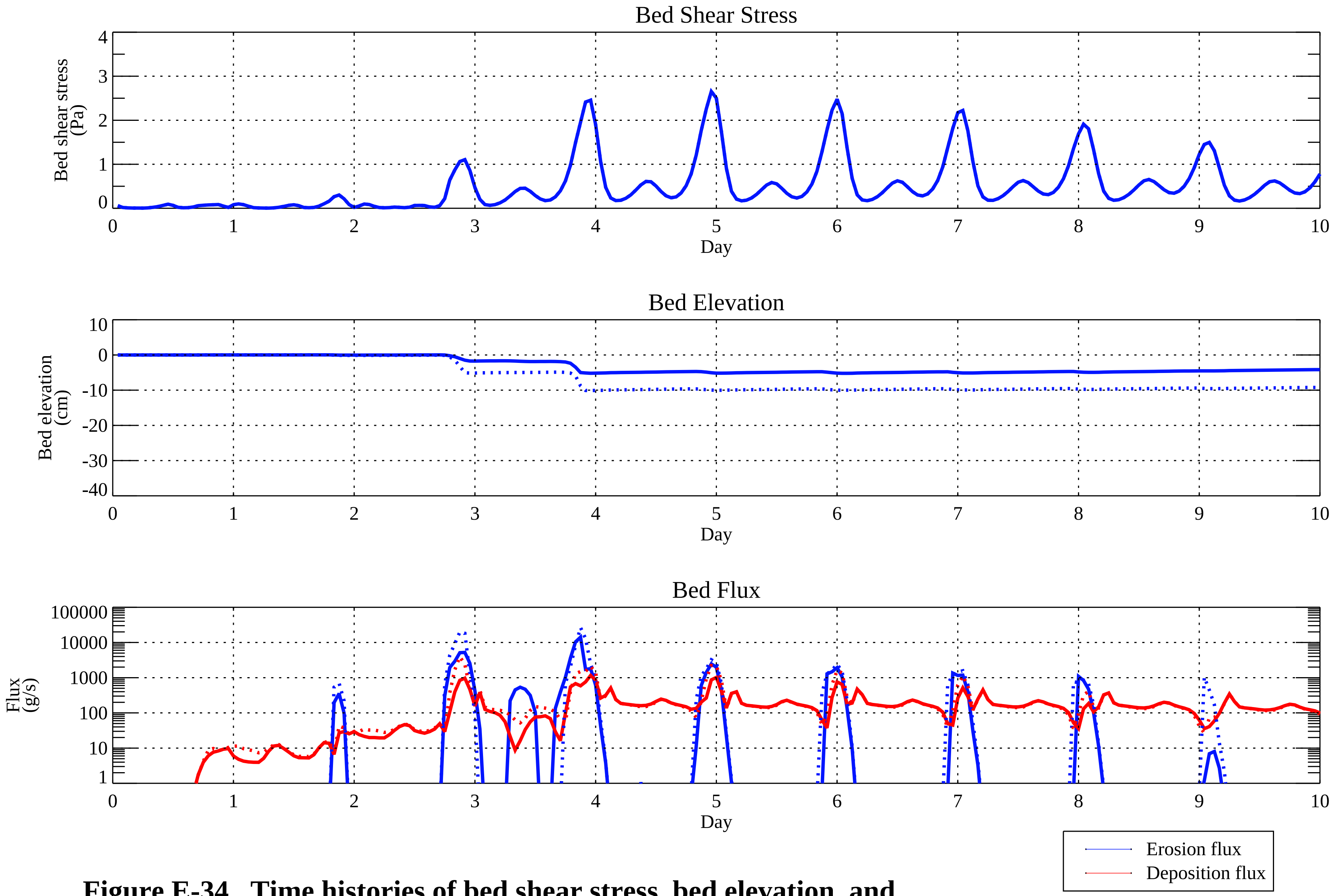

Figure E-34. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (lower-bound erosion parameters). Dotted line represents the base case results.

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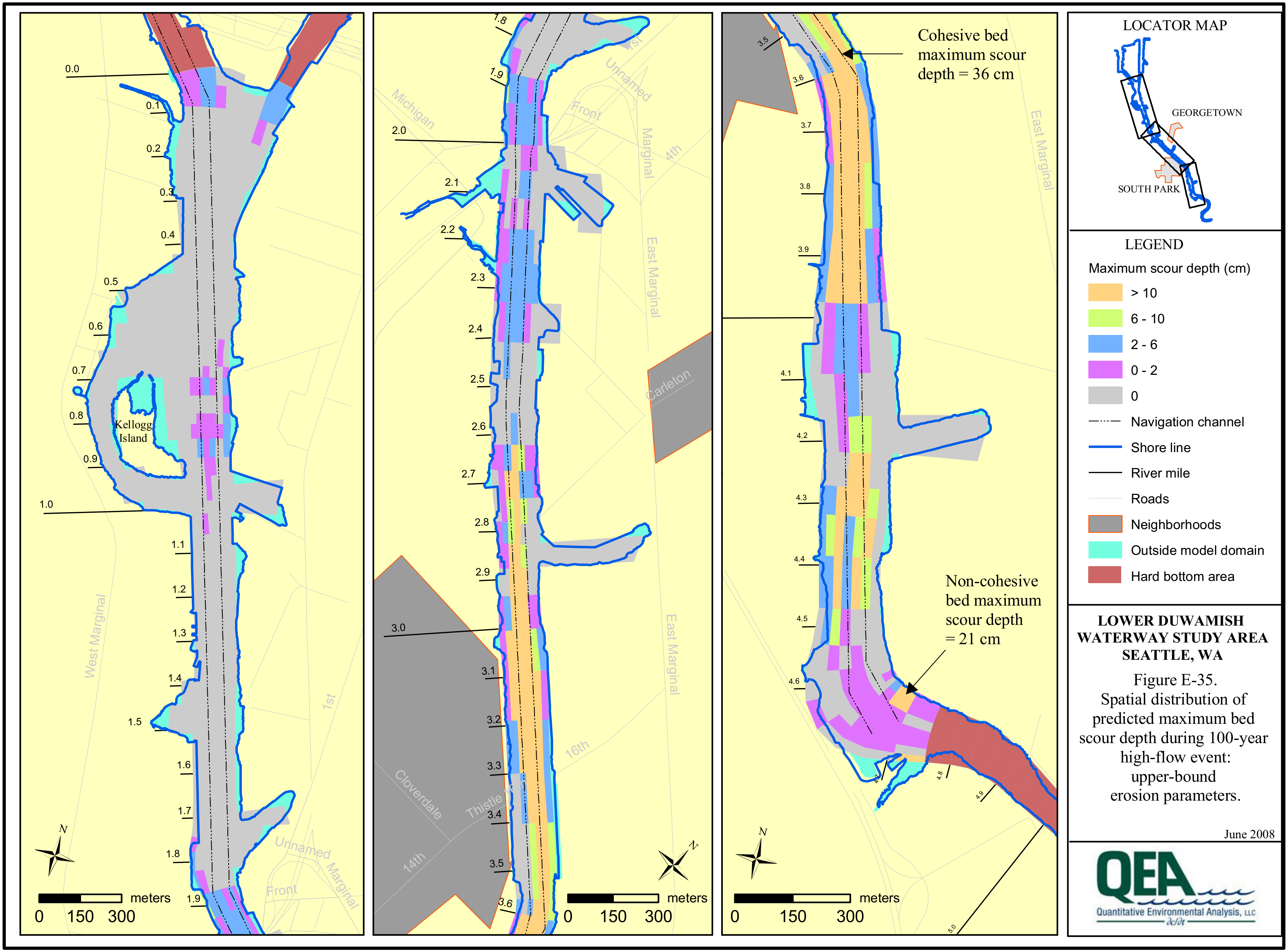

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-35.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: upper-bound erosion parameters.

June 2008

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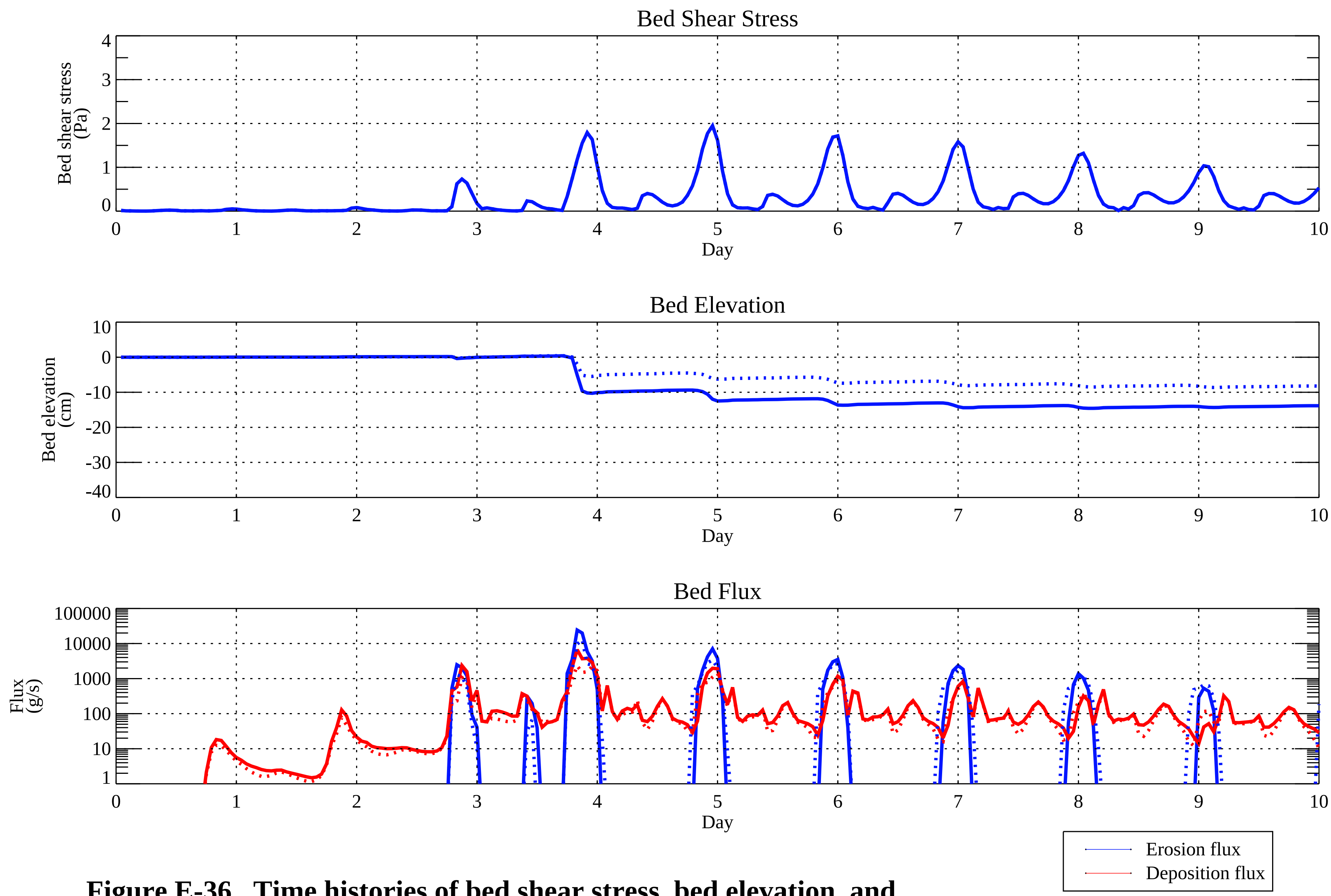

Figure E-36. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (upper-bound erosion parameters). Dotted line represents the base case results.

FC - D:\RETldw\Analysis\Model_output\6p_plot_sensitivity\plot_sensitivity_6p_080512_diag.pro
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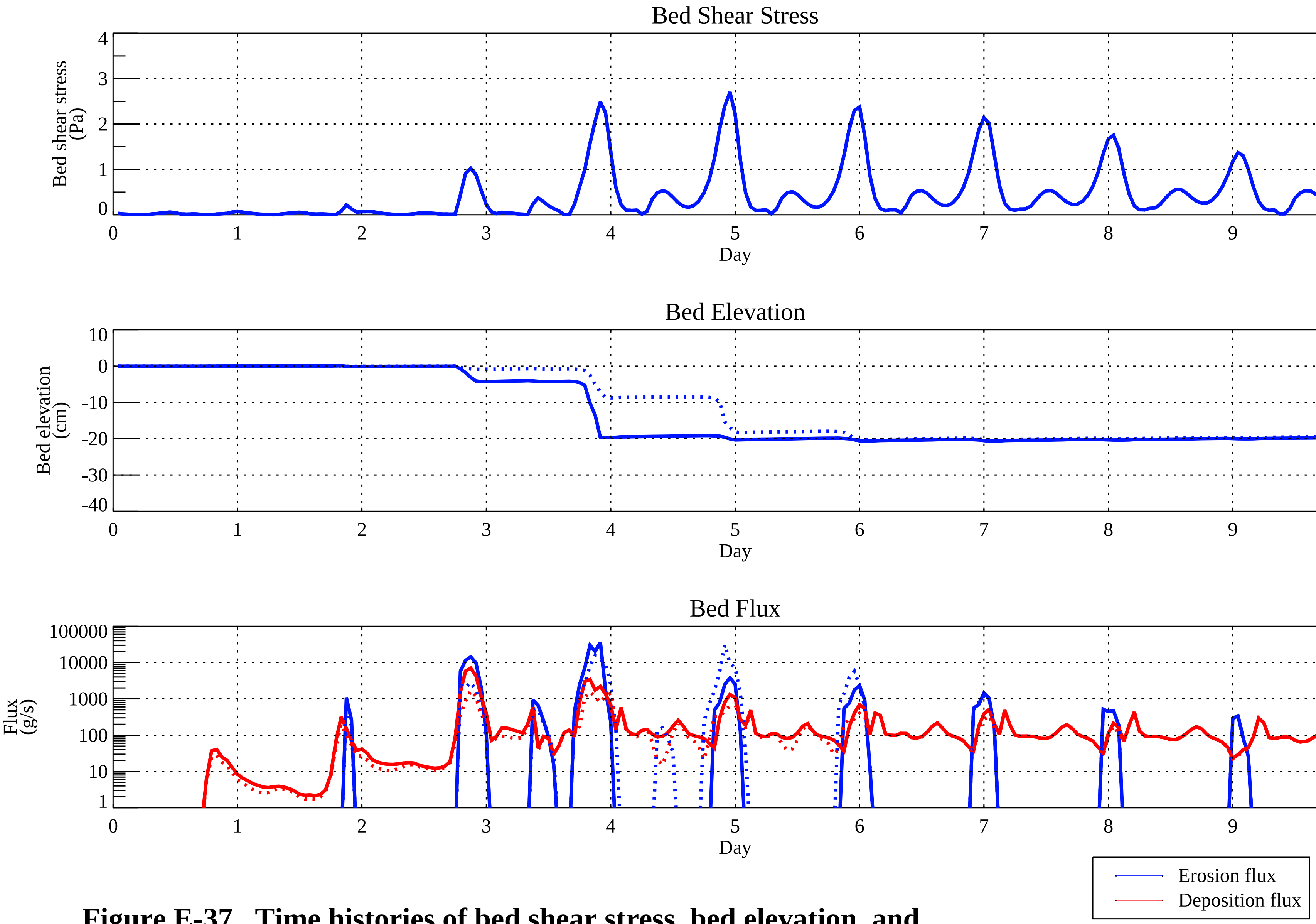

Figure E-37. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (upper-bound erosion parameters). Dotted line represents the base case results.

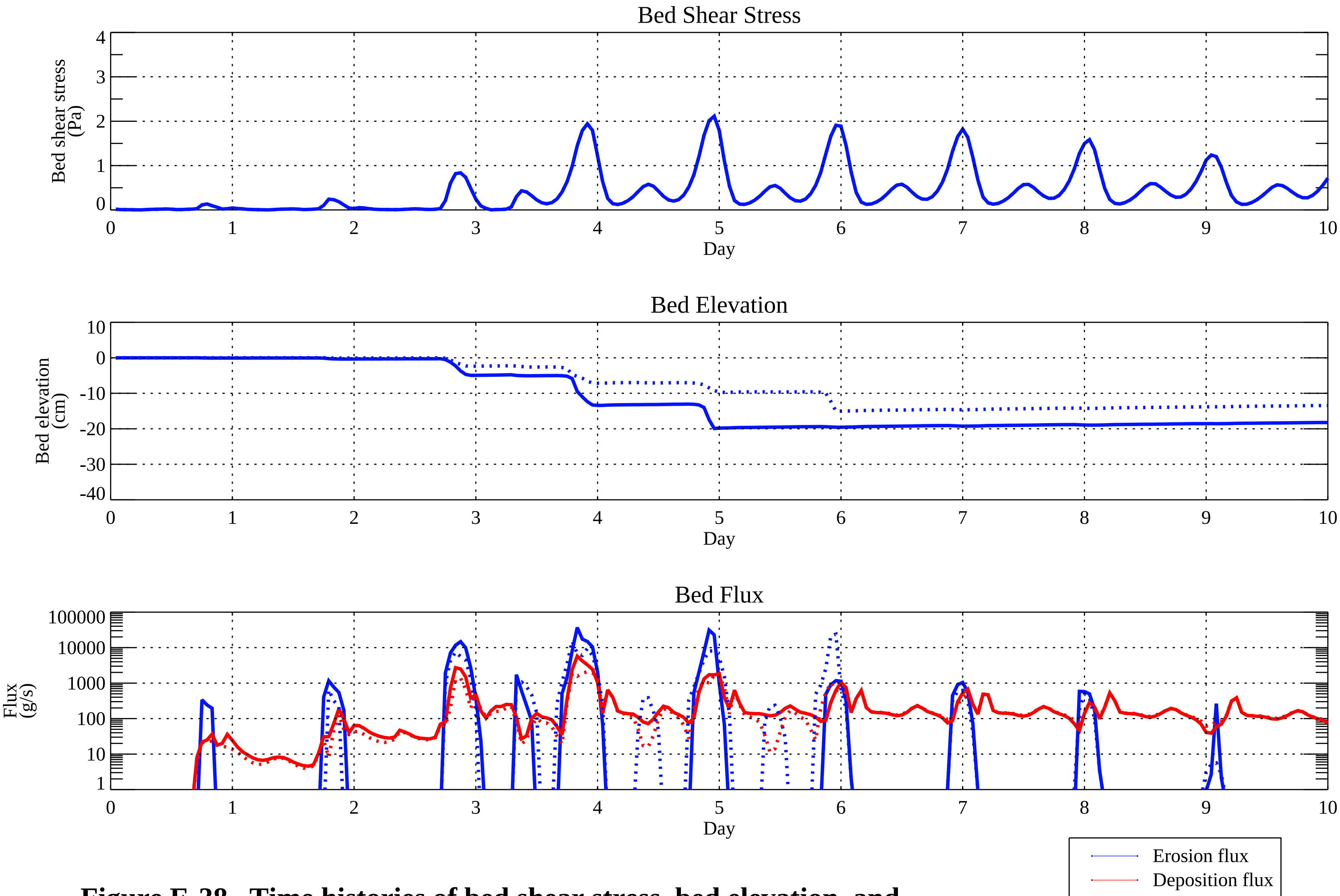

Figure E-38. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (upper-bound erosion parameters). Dotted line represents the base case results.

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Mon Jun 16 10:34:13 2008

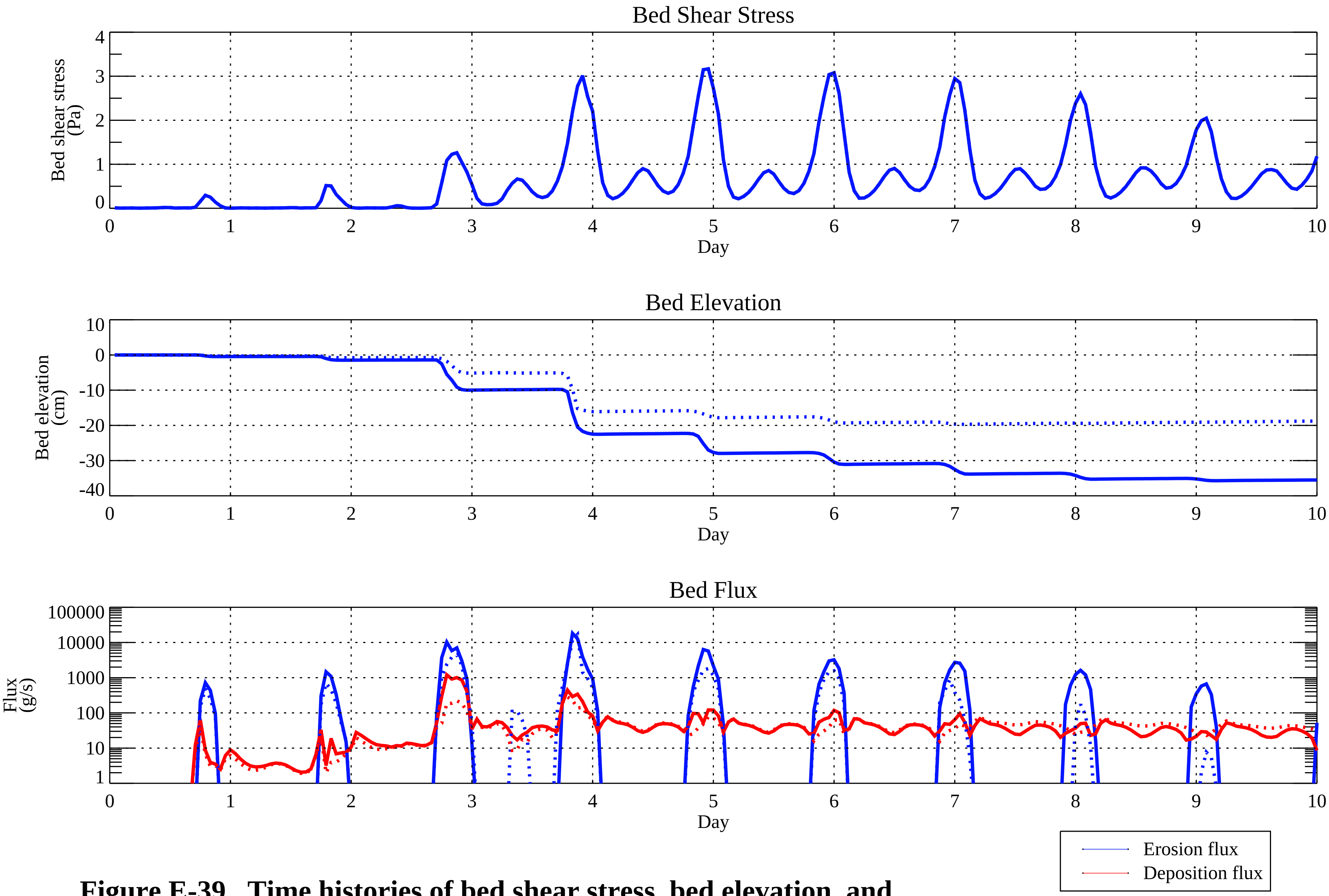


Figure E-39. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (upper-bound erosion parameters). Dotted line represents the base case results.

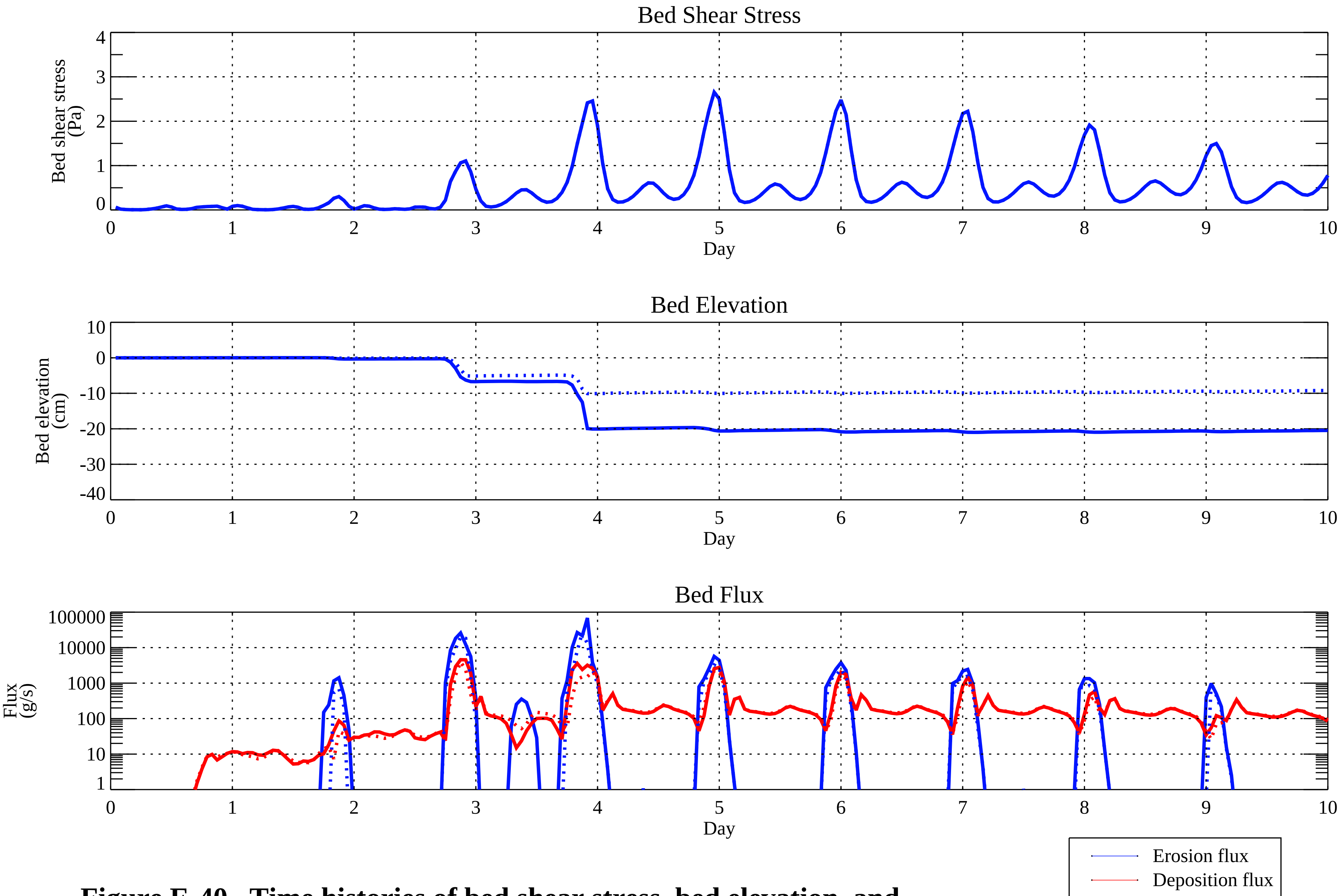
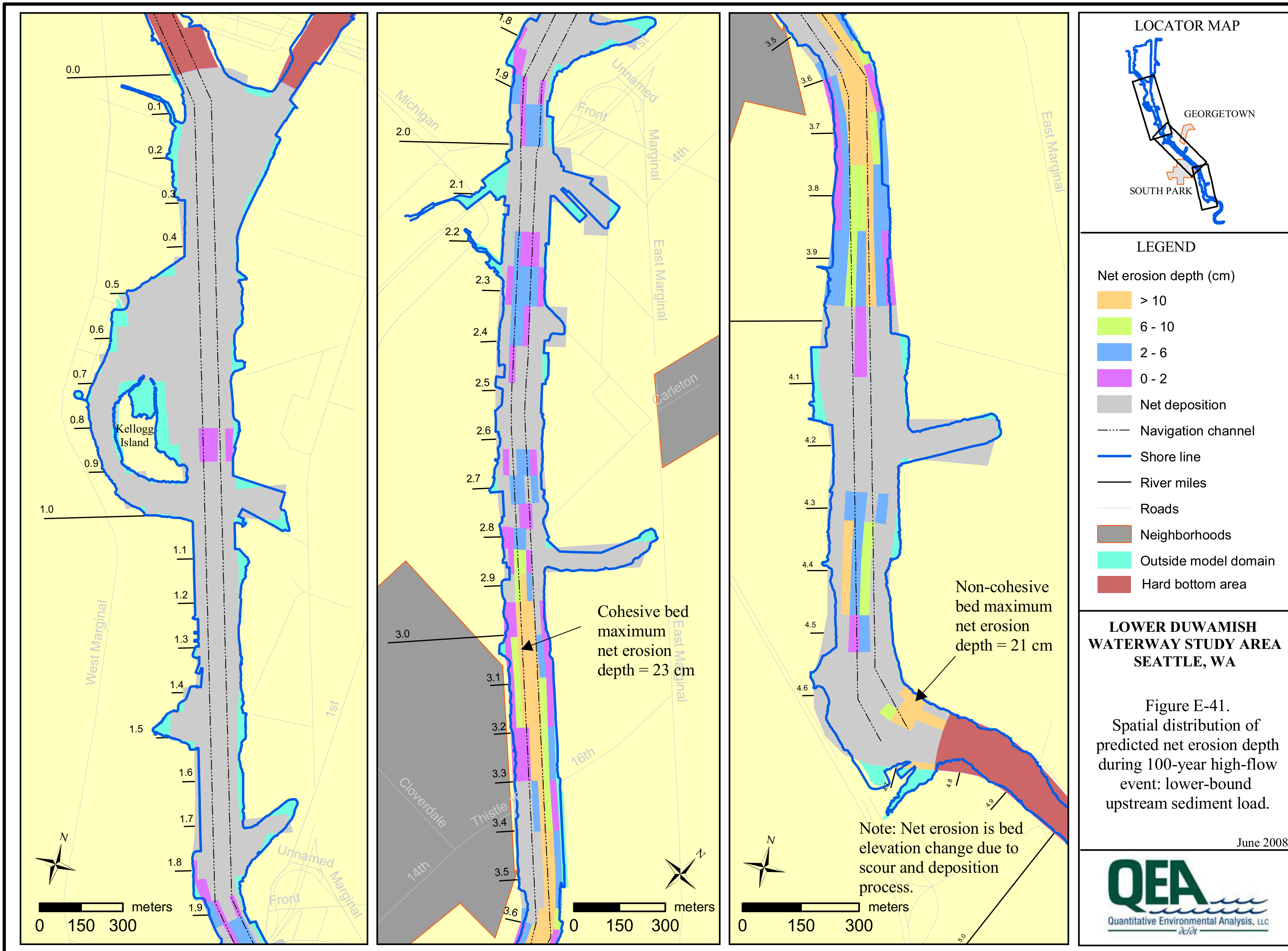


Figure E-40. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (upper-bound erosion parameters). Dotted line represents the base case results.

FC - D:\RETldw\Analysis\Model_output\6p_plot_sensitivity\plot_sensitivity_6p_080512_diag.pro
Mon Jun 16 10:34:13 2008



LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-41.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: lower-bound upstream sediment load.

June 2008

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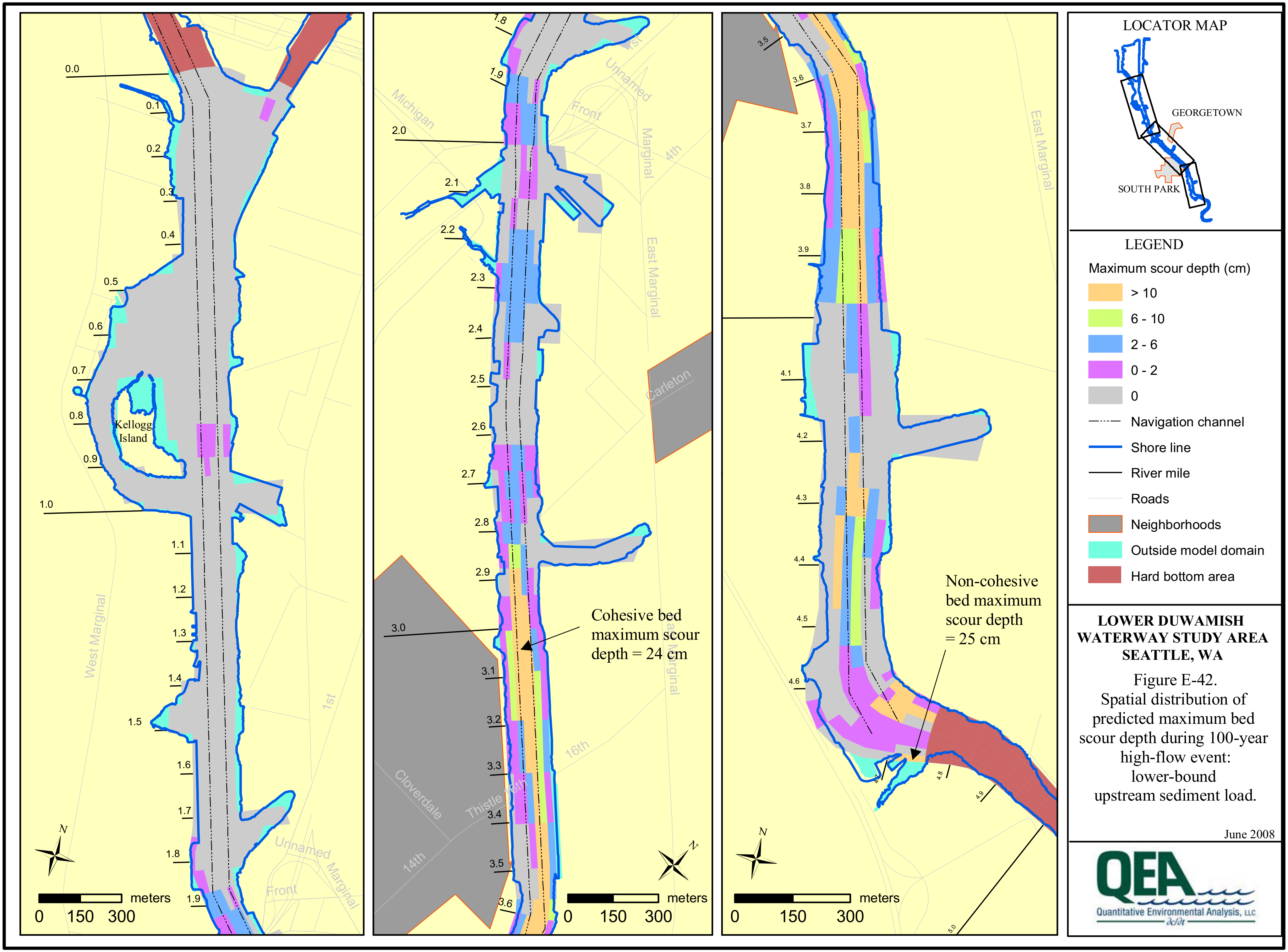

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-42.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: lower-bound upstream sediment load.

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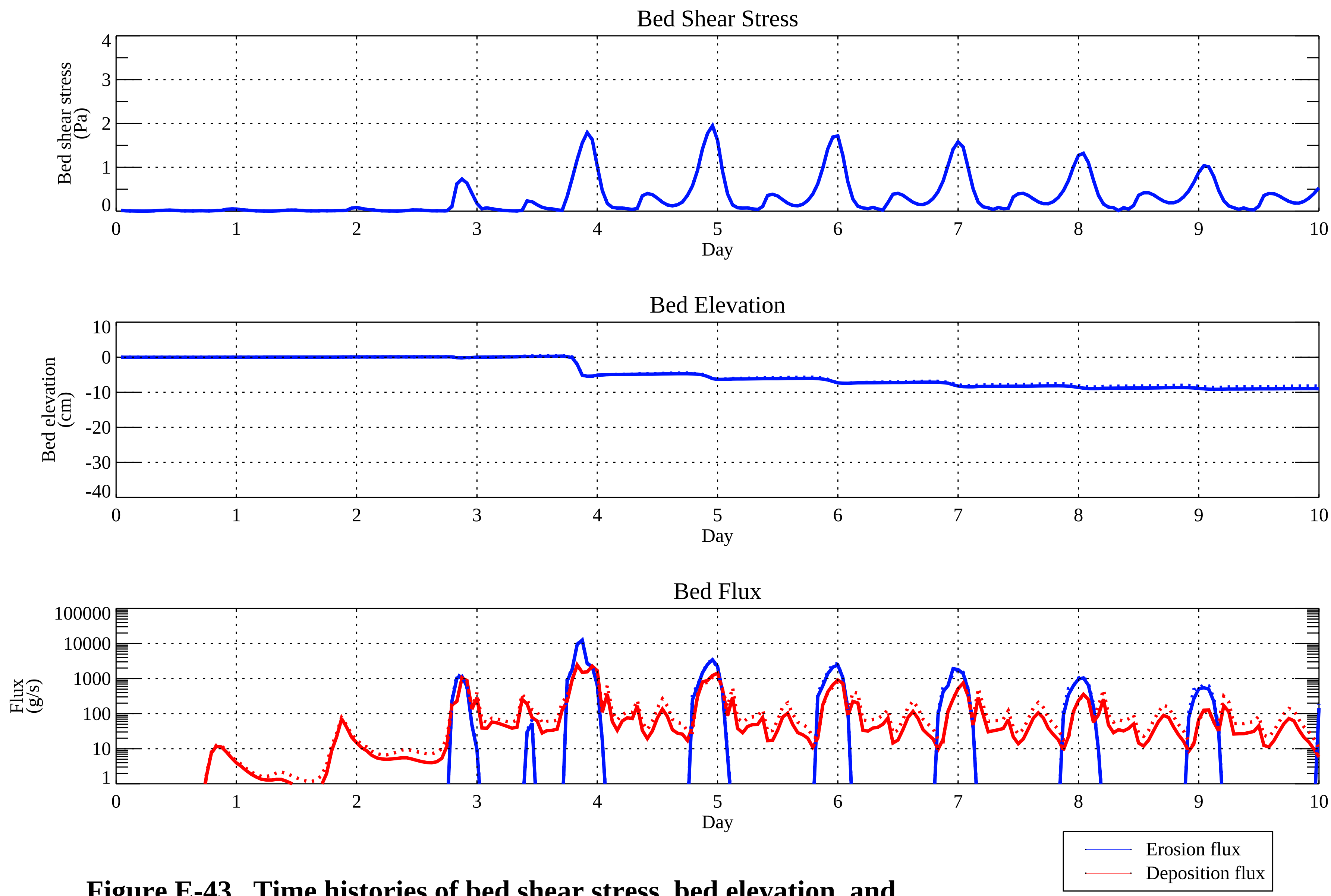

Figure E-43. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (lower-bound upstream sediment load). Dotted line represents the base case results.

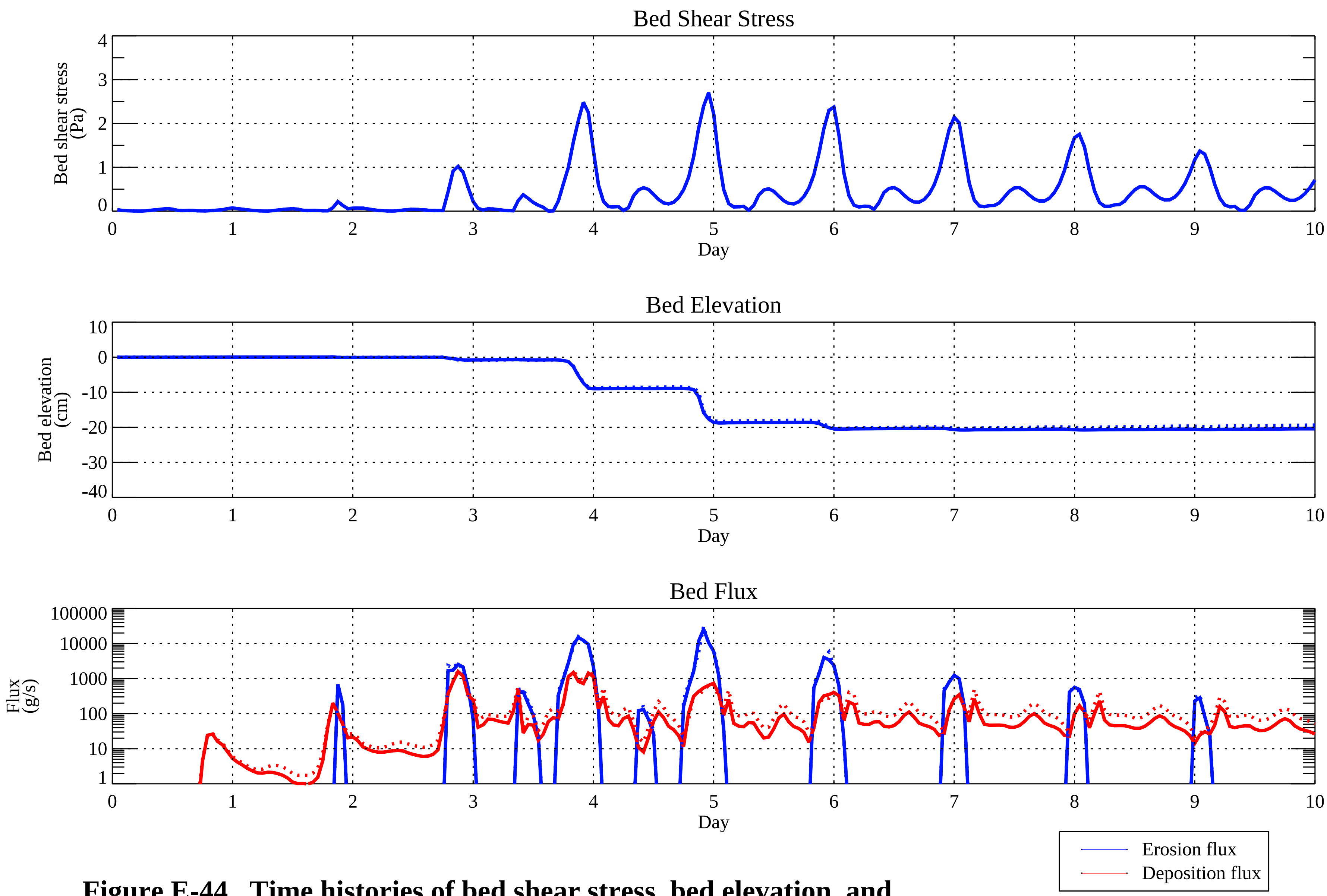

Figure E-44. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (lower-bound upstream sediment load). Dotted line represents the base case results.

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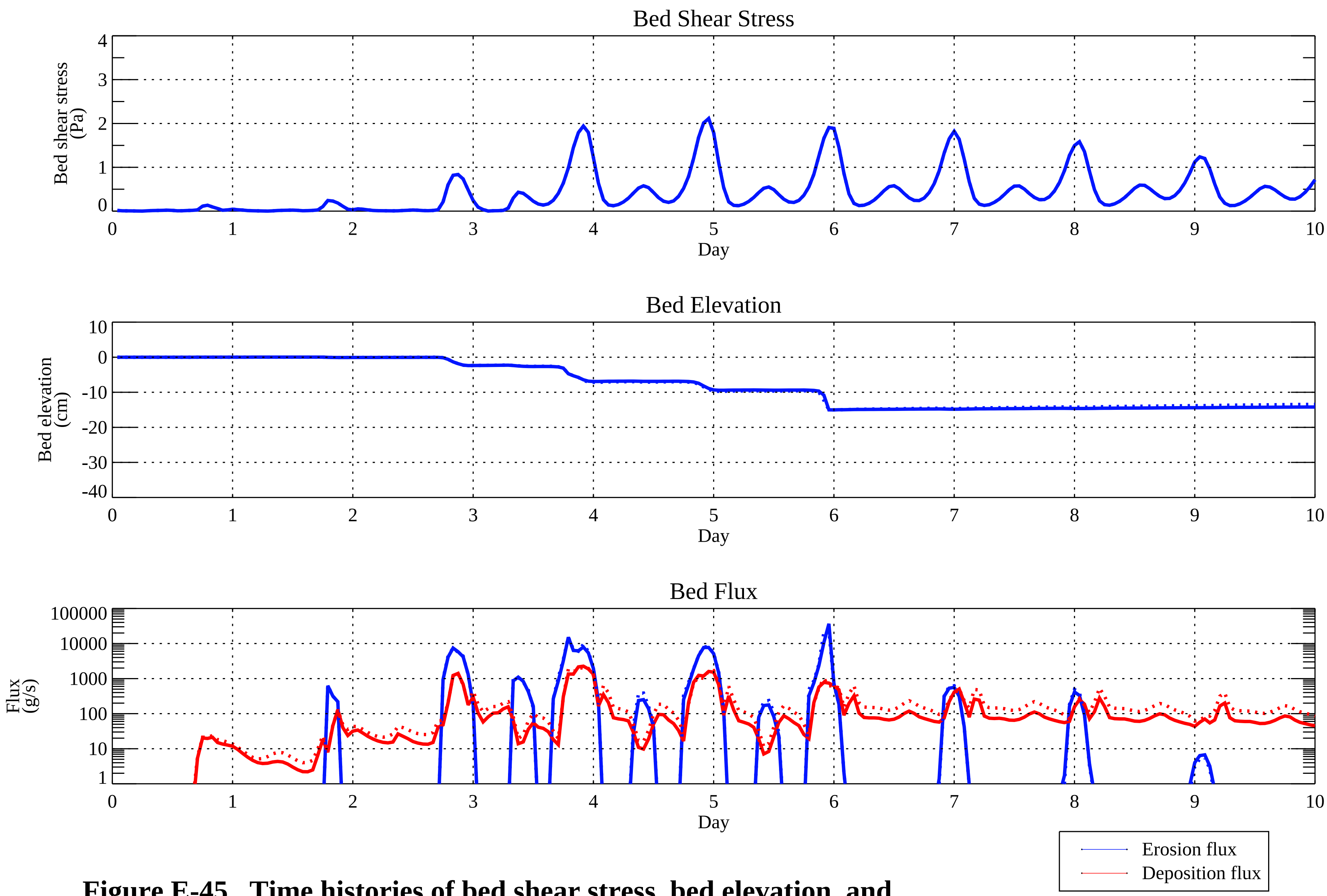

Figure E-45. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (lower-bound upstream sediment load). Dotted line represents the base case results.

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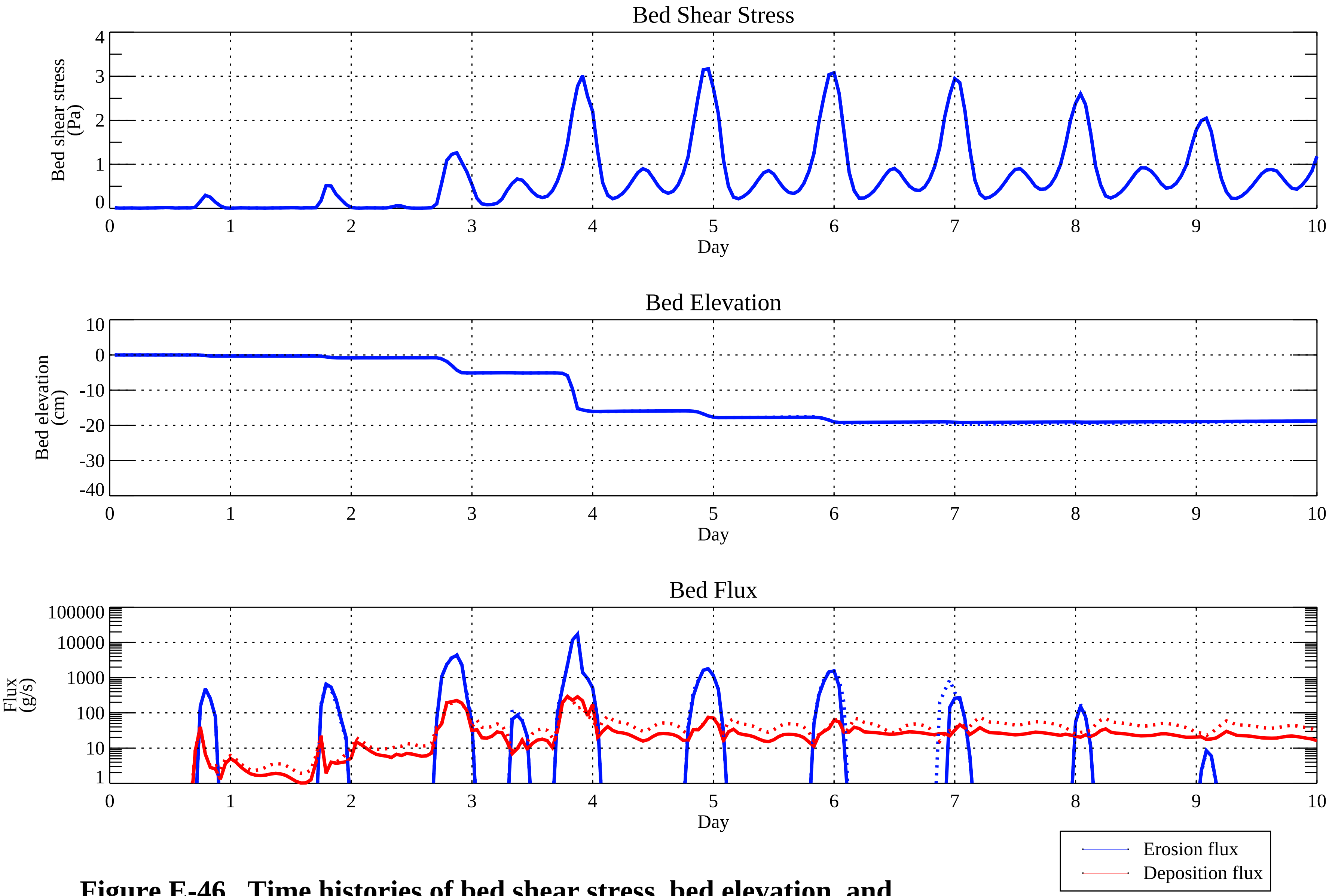

Figure E-46. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (lower-bound upstream sediment load). Dotted line represents the base case results.

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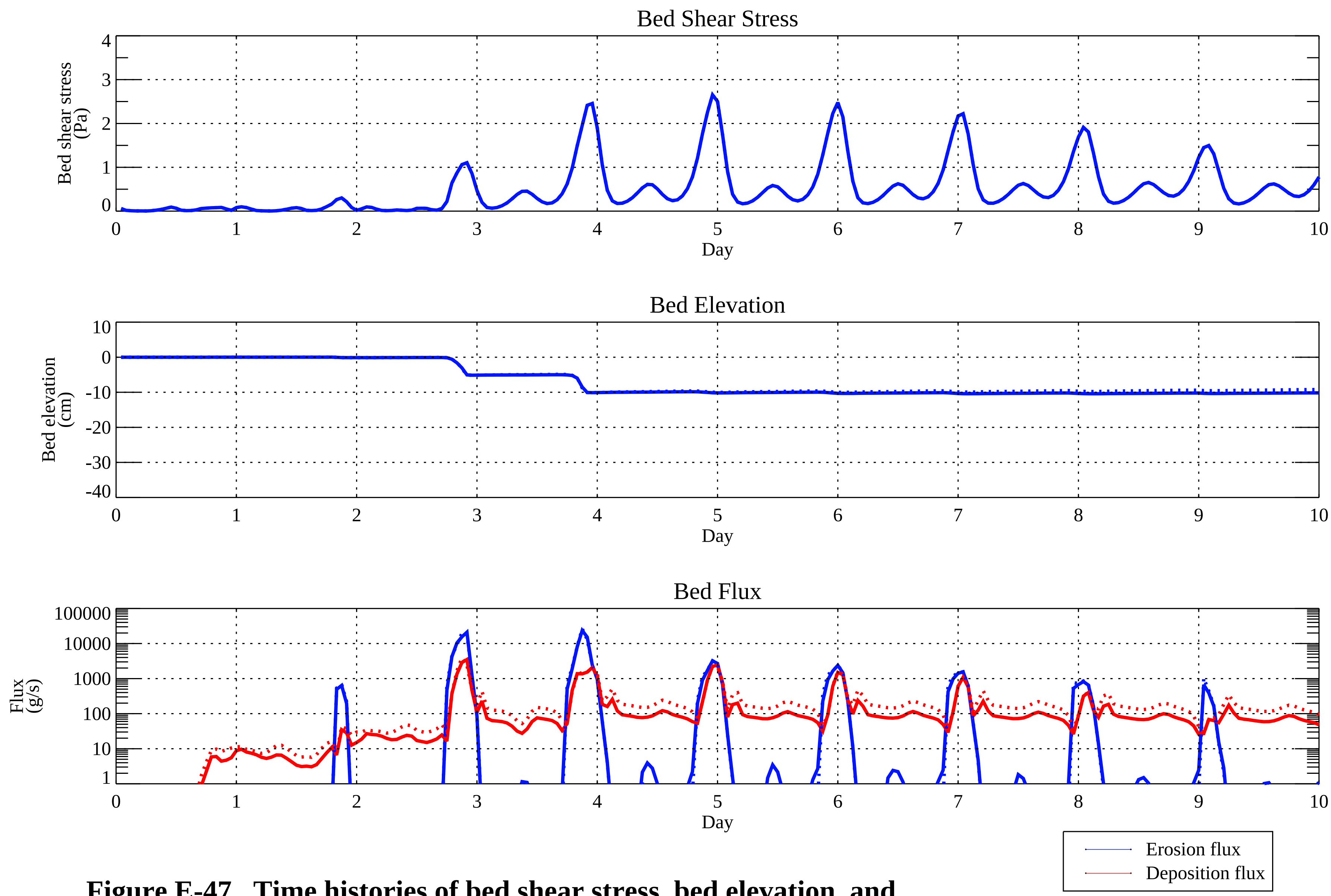

Figure E-47. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (lower-bound upstream sediment load). Dotted line represents the base case results.

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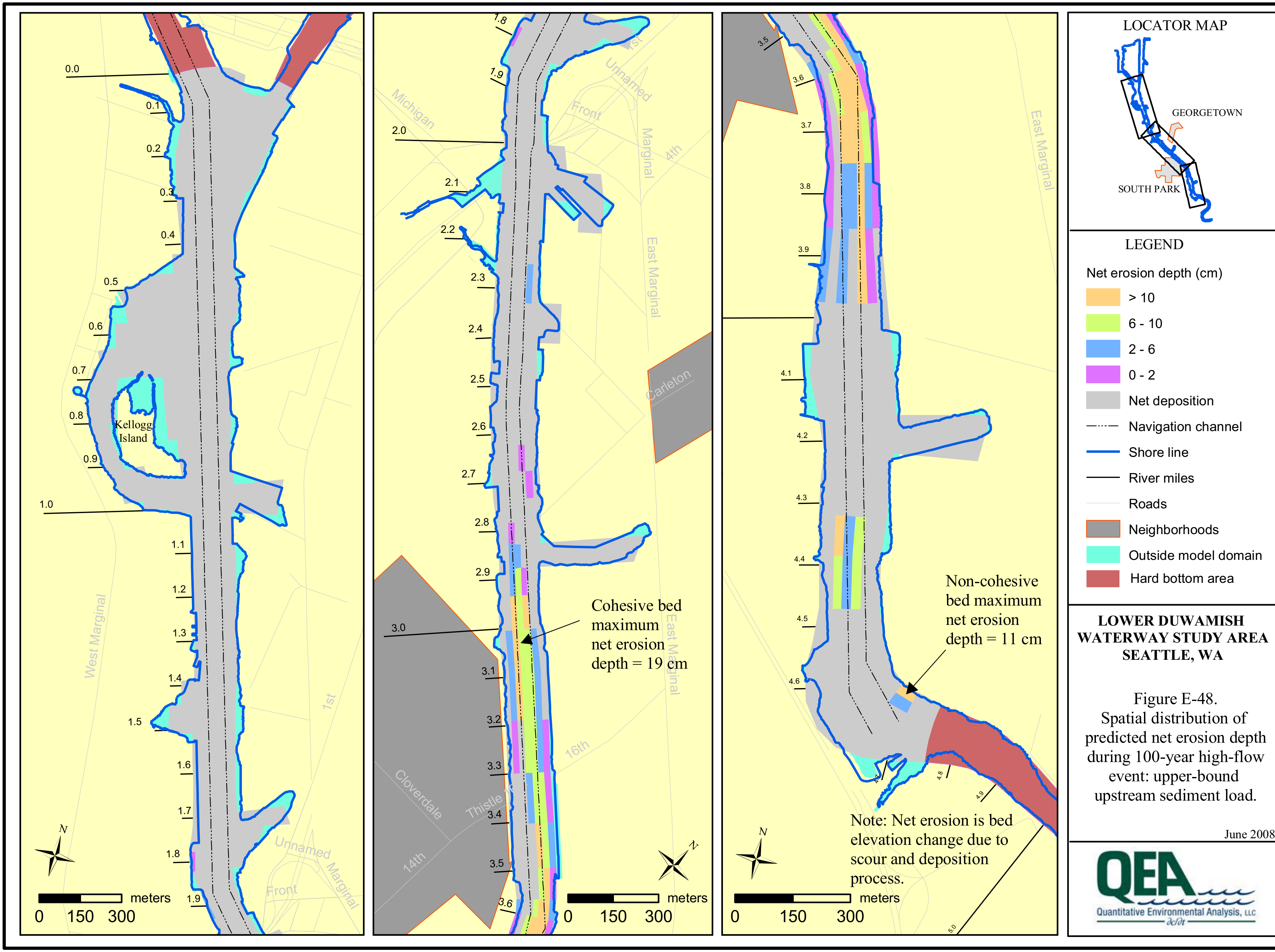

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-48.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: upper-bound upstream sediment load.

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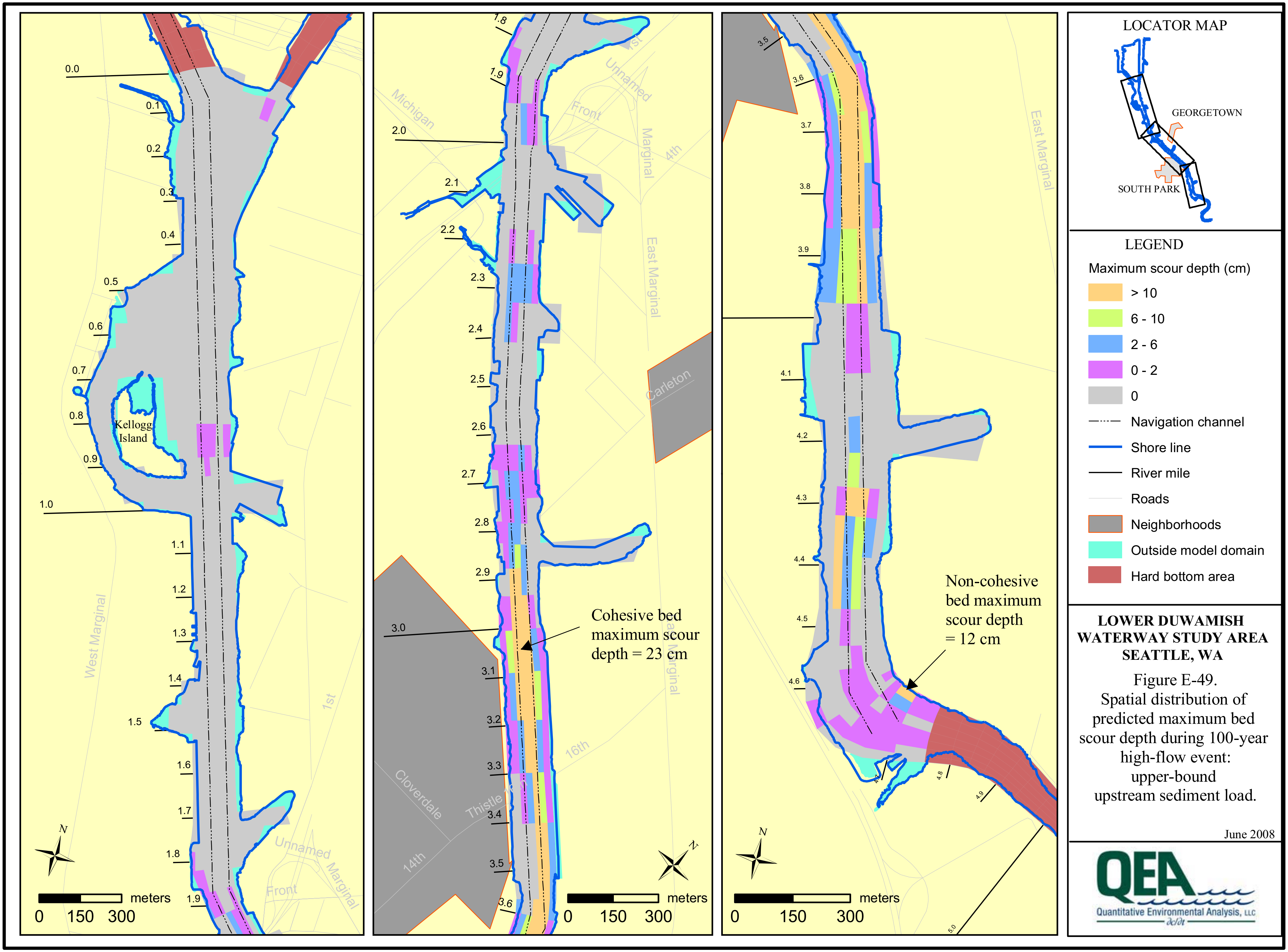

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-49.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: upper-bound upstream sediment load.

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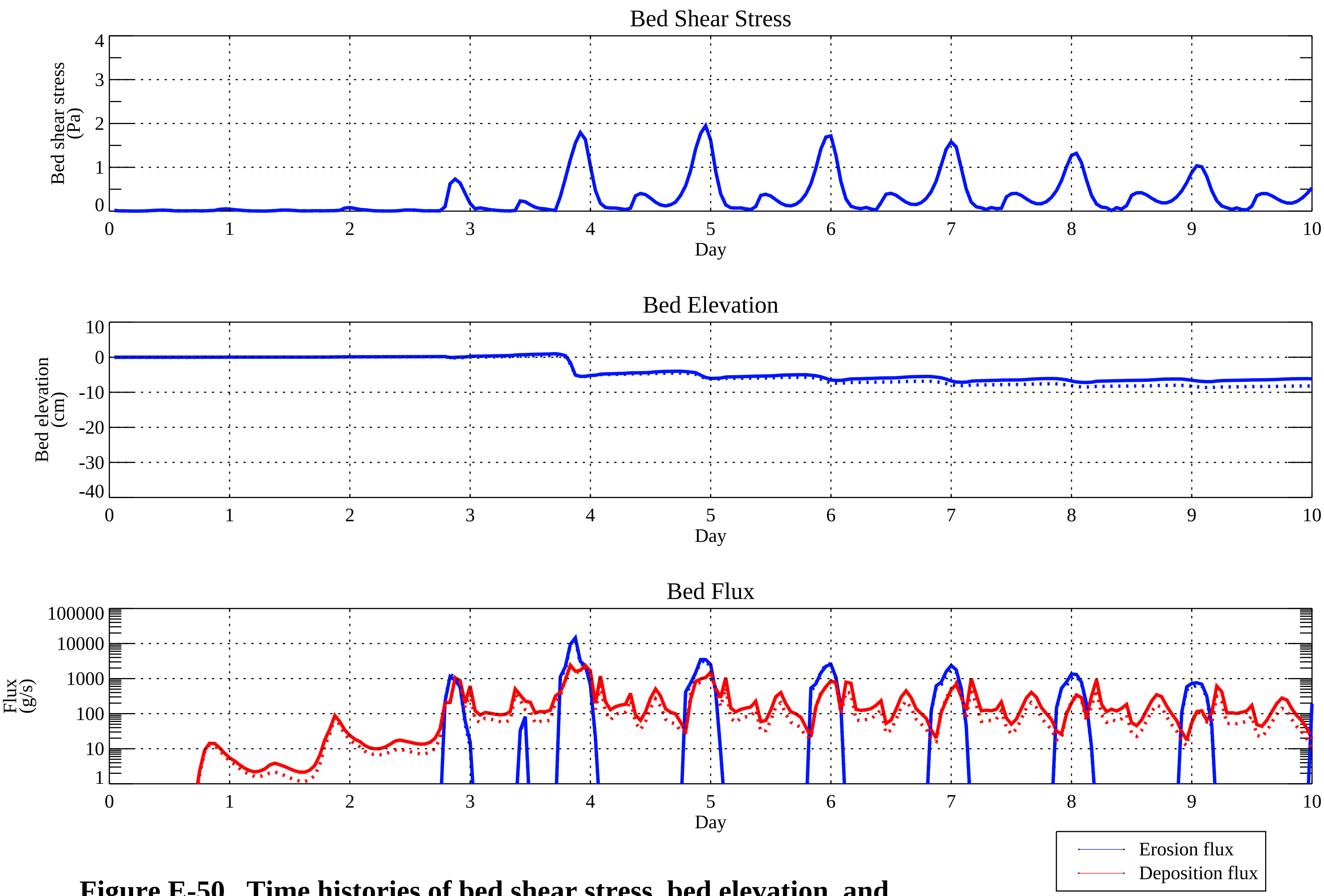

Figure E-50. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (upper-bound upstream sediment load). Dotted line represents the base case results.

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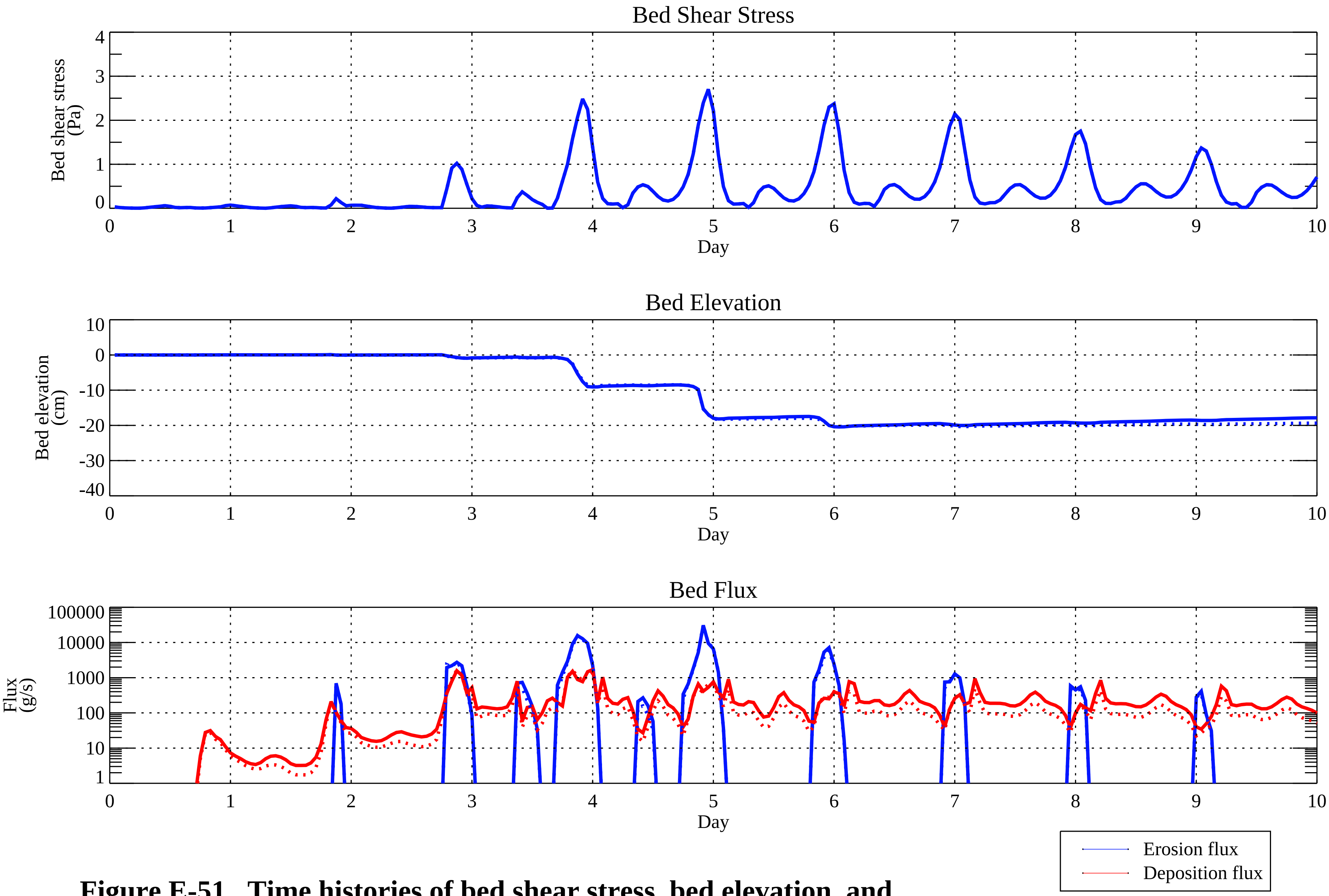

Figure E-51. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (upper-bound upstream sediment load). Dotted line represents the base case results.

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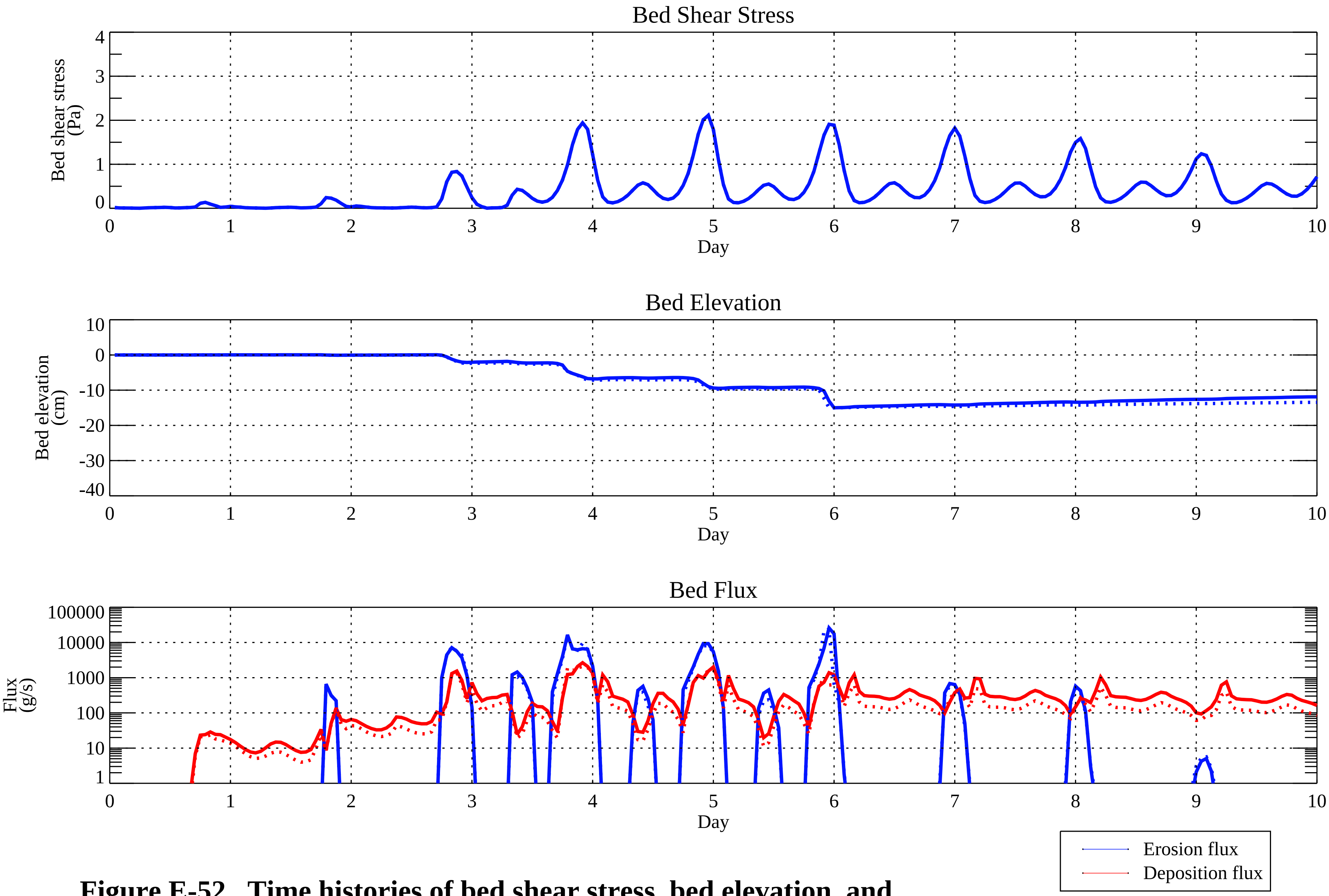

Figure E-52. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (upper-bound upstream sediment load). Dotted line represents the base case results.

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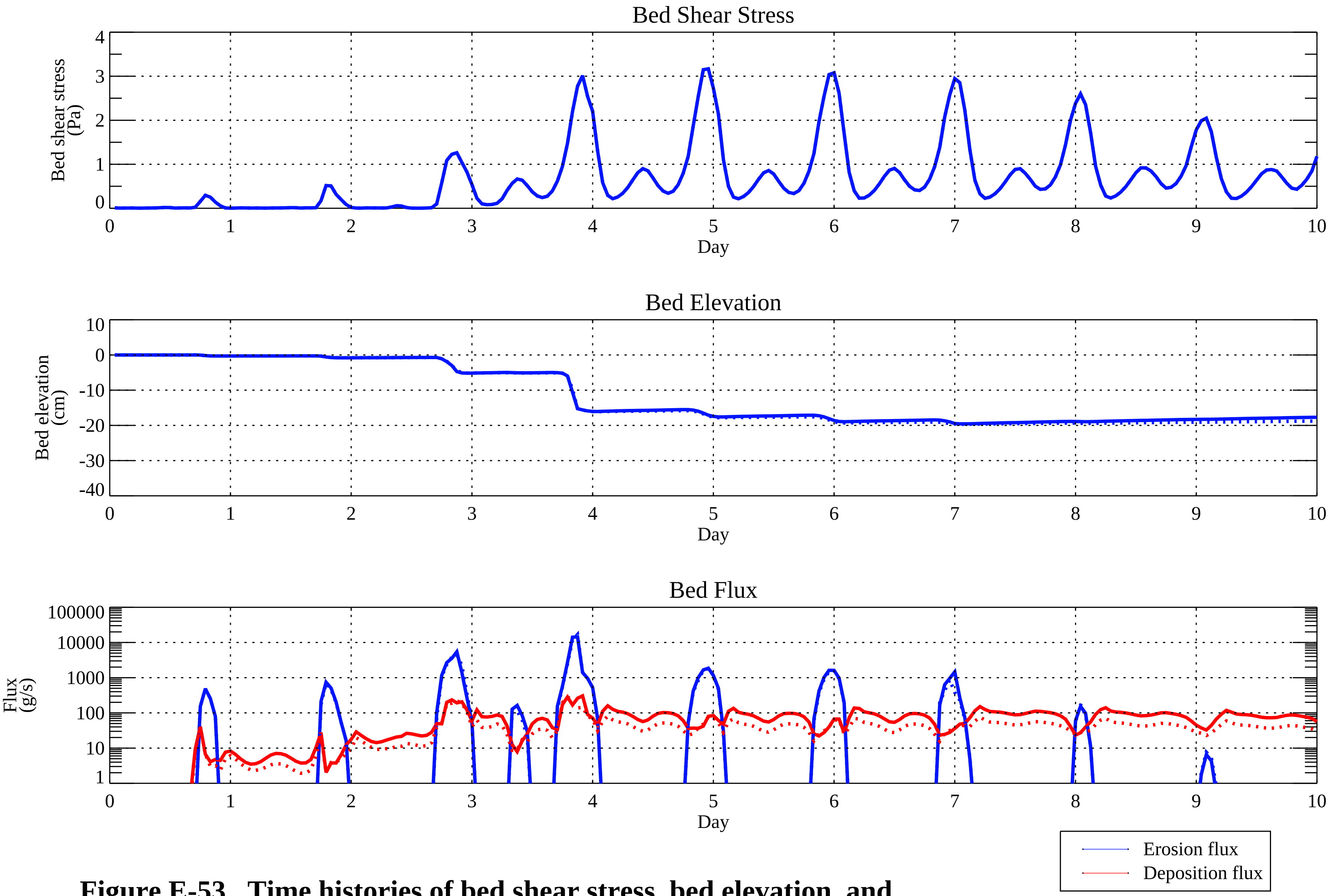

Figure E-53. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (upper-bound upstream sediment load). Dotted line represents the base case results.

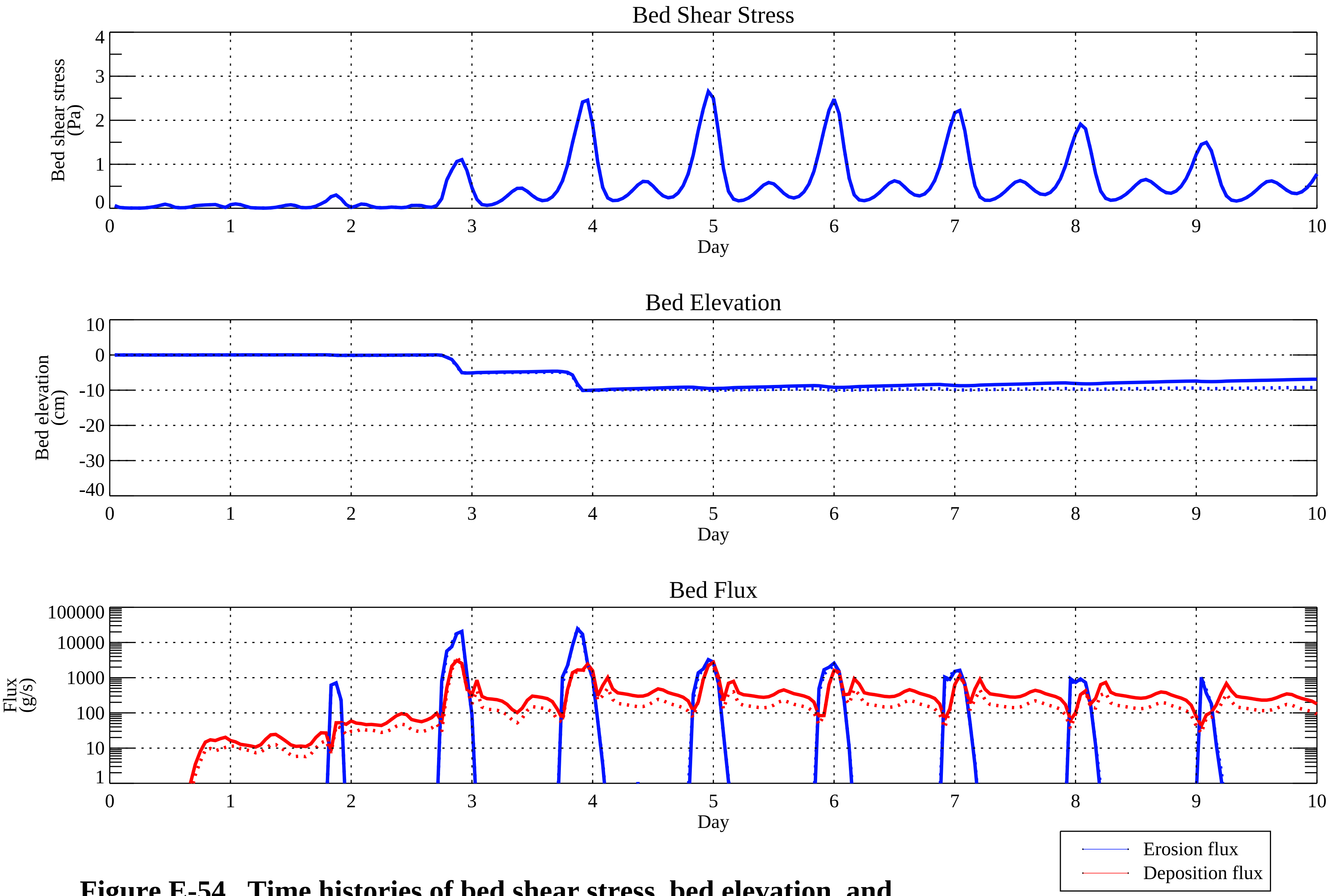

Figure E-54. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (upper-bound upstream sediment load). Dotted line represents the base case results.

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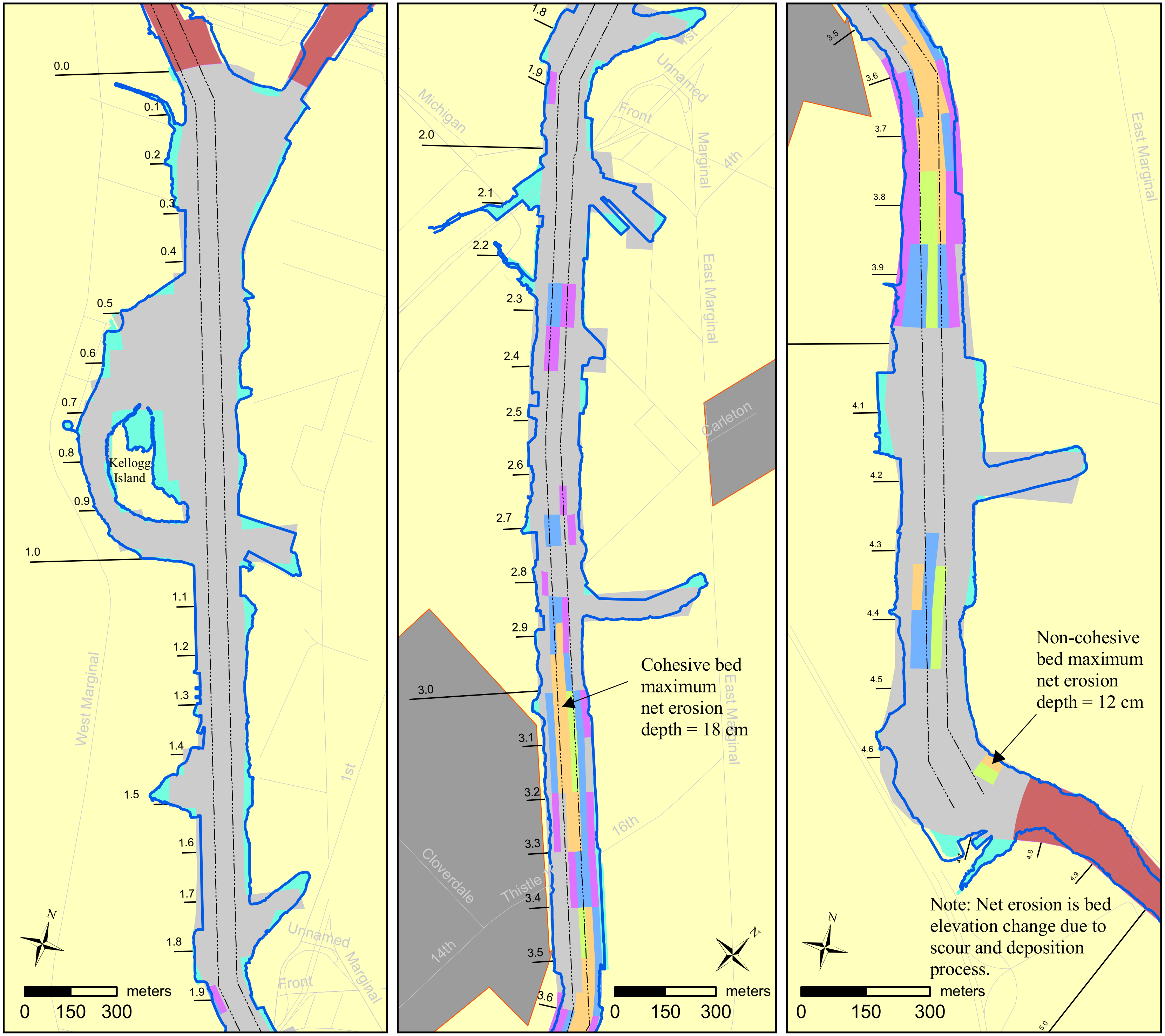

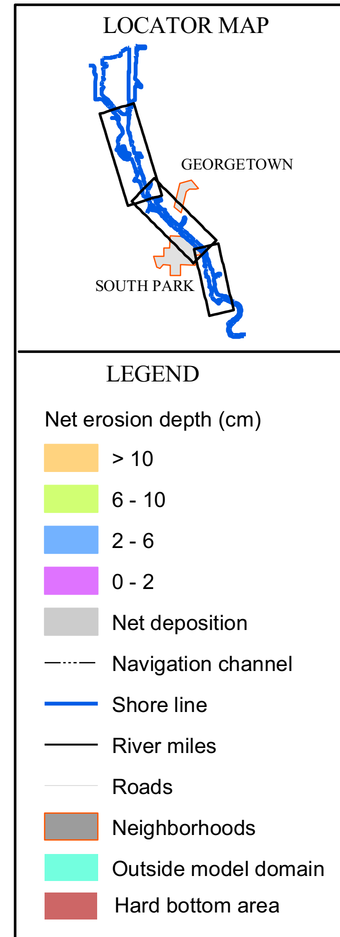

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-55.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: lower-bound effective bed roughness.

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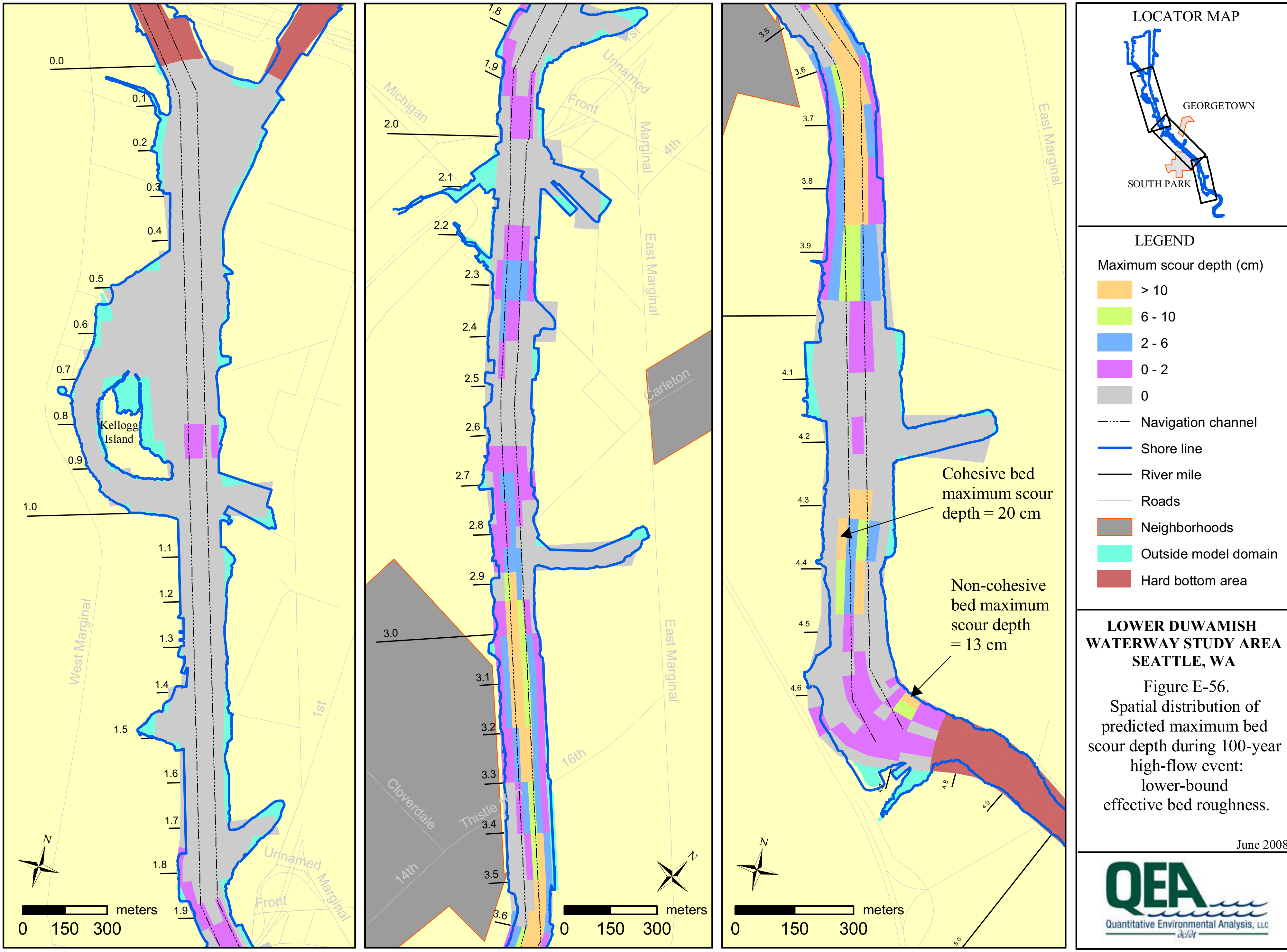

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-56.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: lower-bound effective bed roughness.

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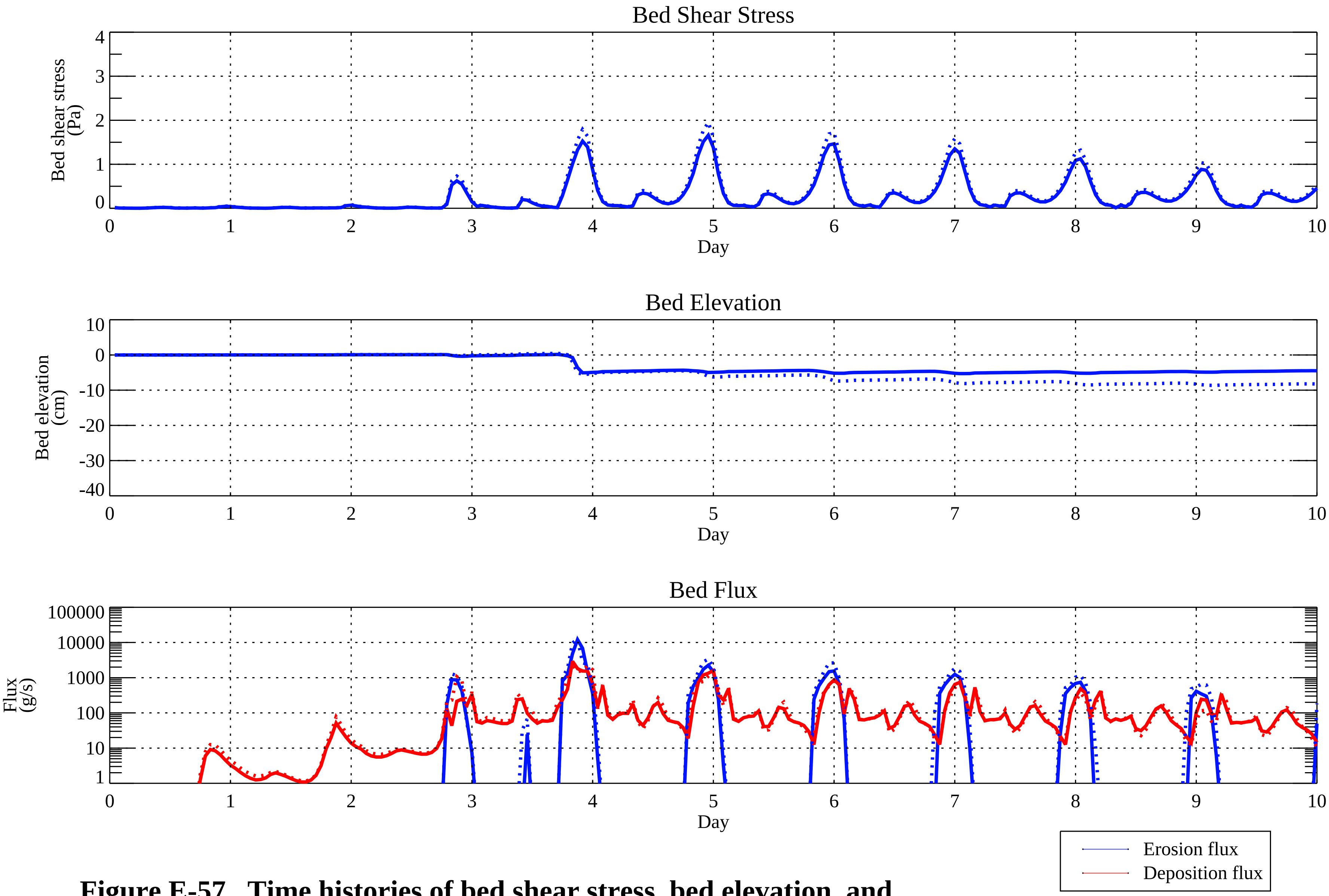

Figure E-57. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (lower-bound effective bed roughness). Dotted line represents the base case results.

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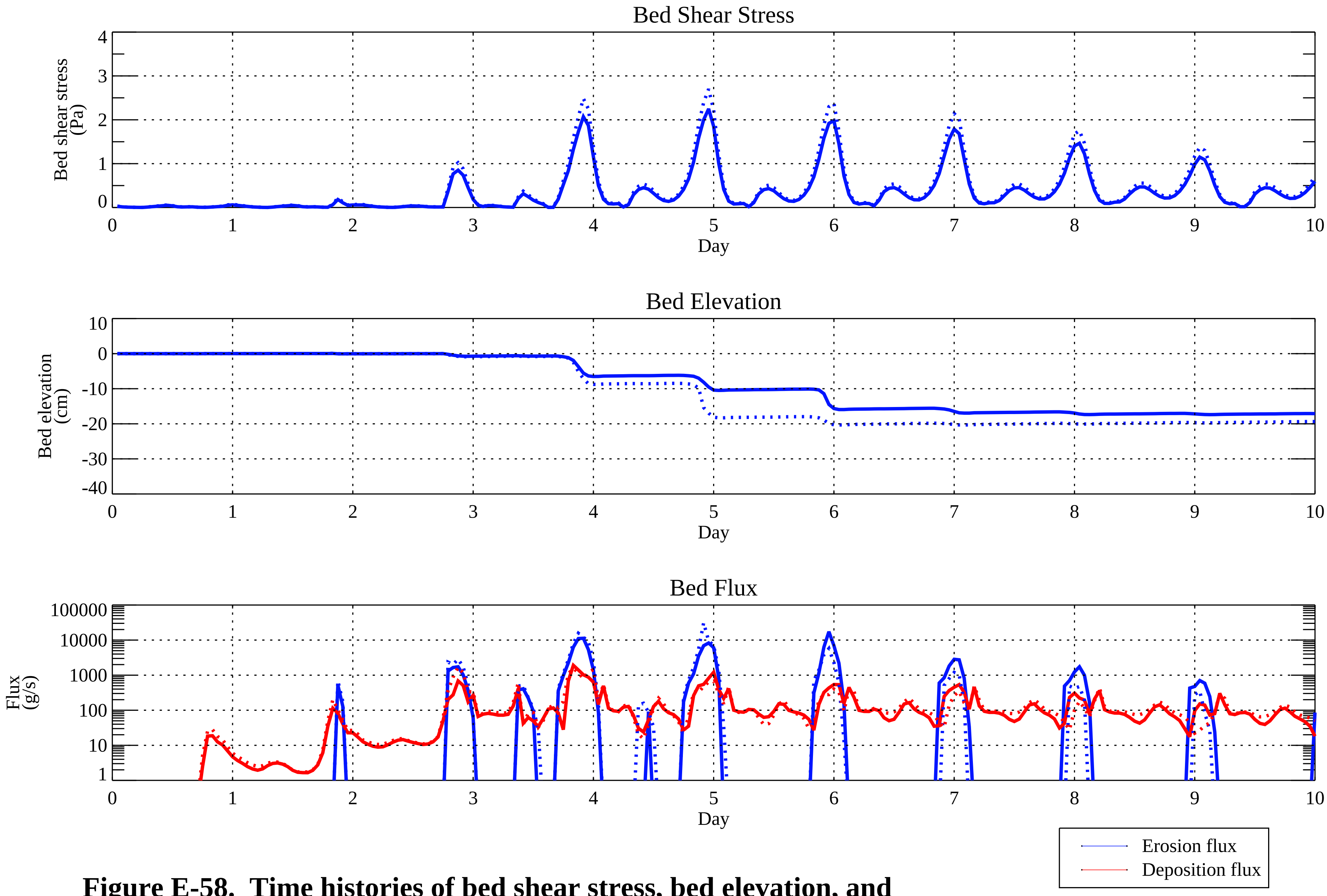

Figure E-58. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (lower-bound effective bed roughness). Dotted line represents the base case results.

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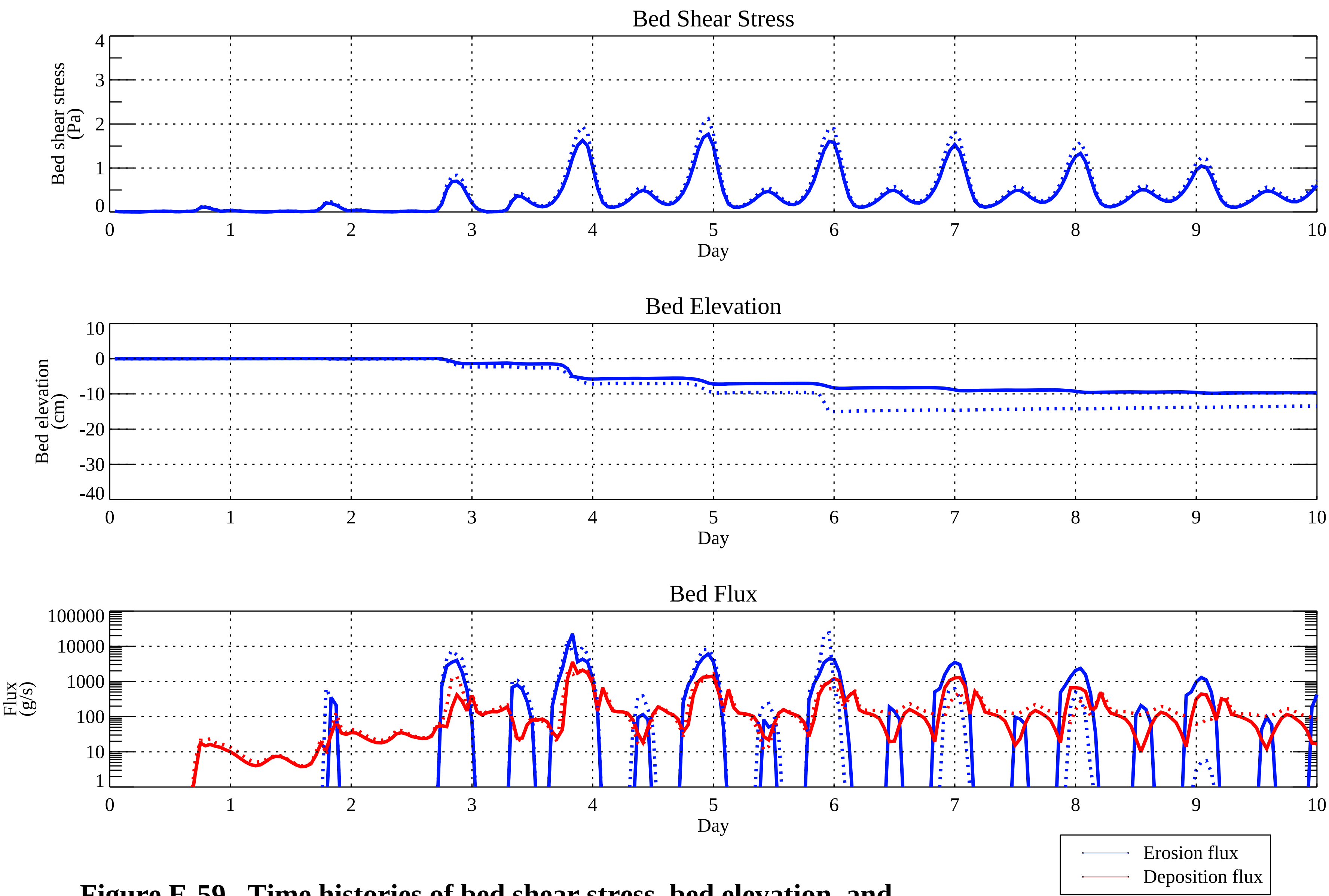

Figure E-59. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (lower-bound effective bed roughness). Dotted line represents the base case results.

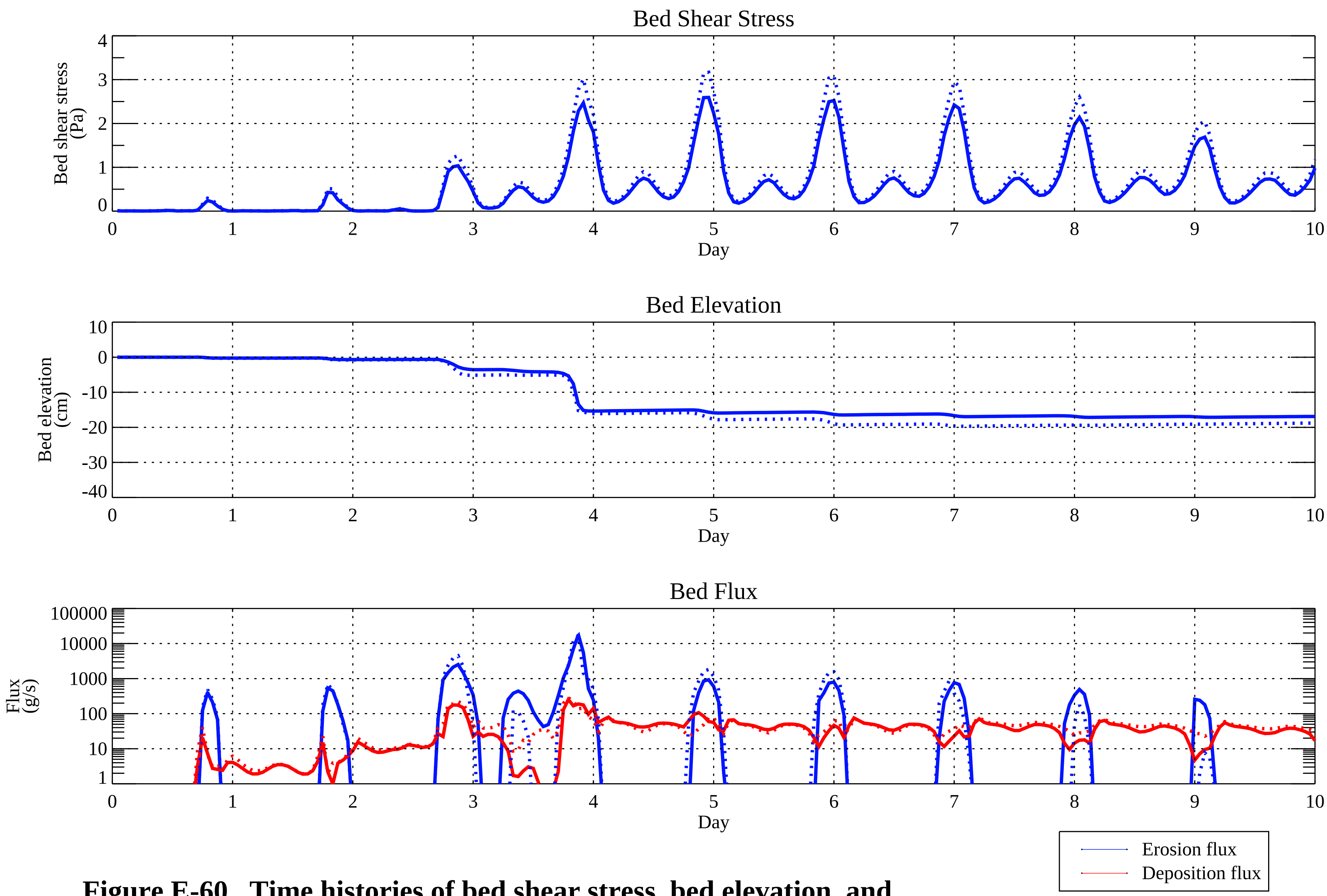

Figure E-60. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (lower-bound effective bed roughness). Dotted line represents the base case results.

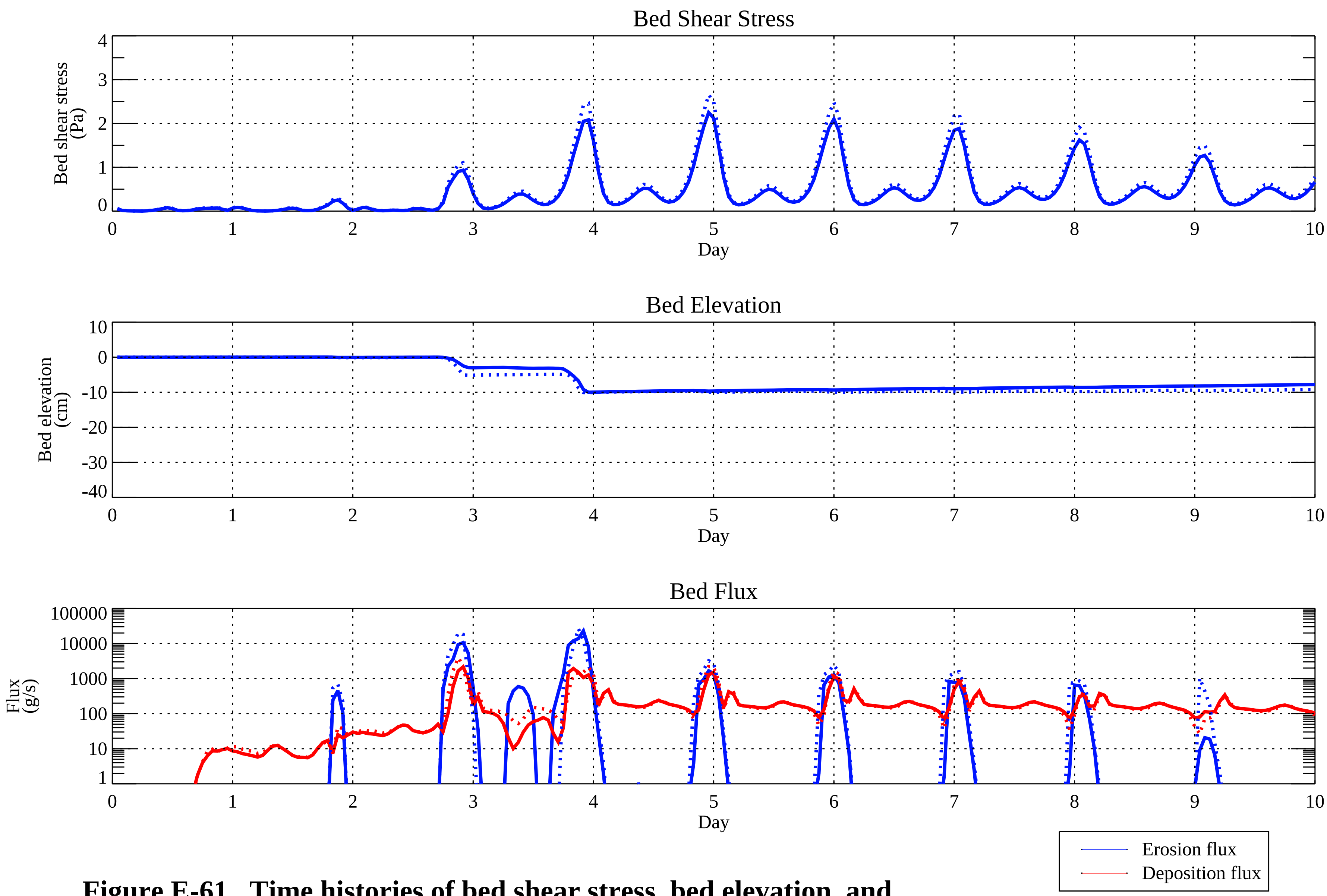

Figure E-61. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (lower-bound effective bed roughness). Dotted line represents the base case results.

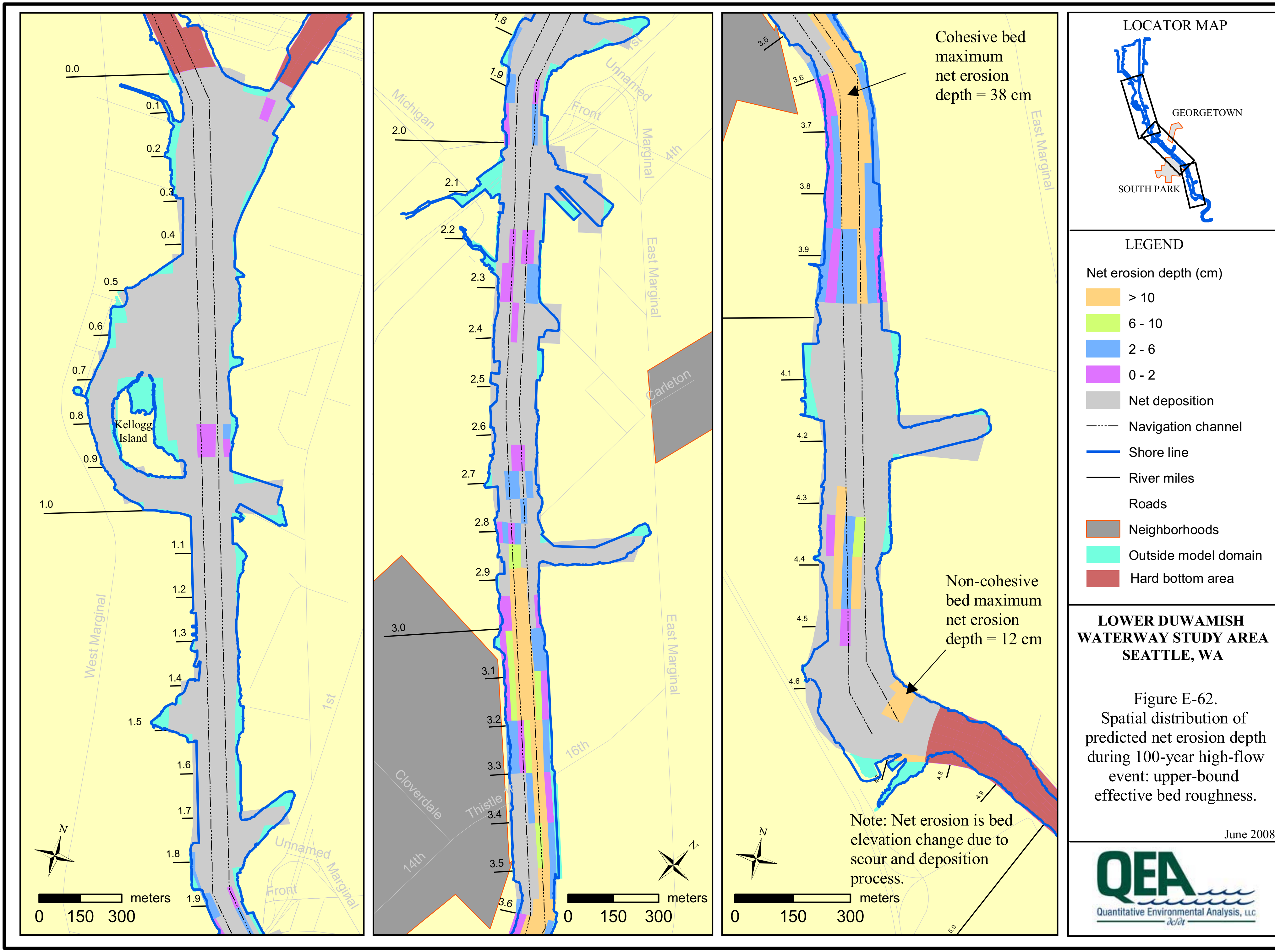

Figure E-62.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: upper-bound effective bed roughness.

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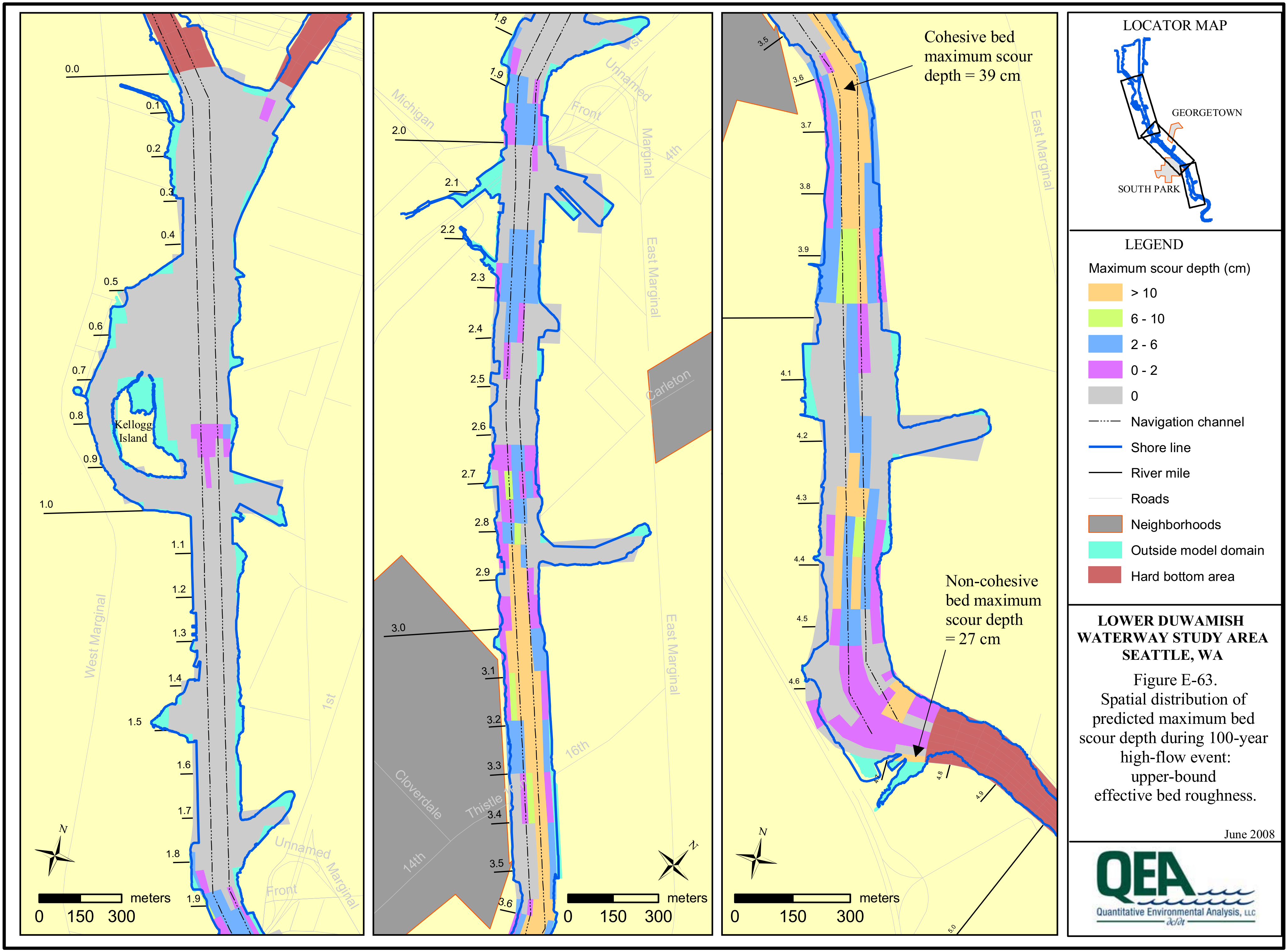

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-63.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: upper-bound effective bed roughness.

June 2008

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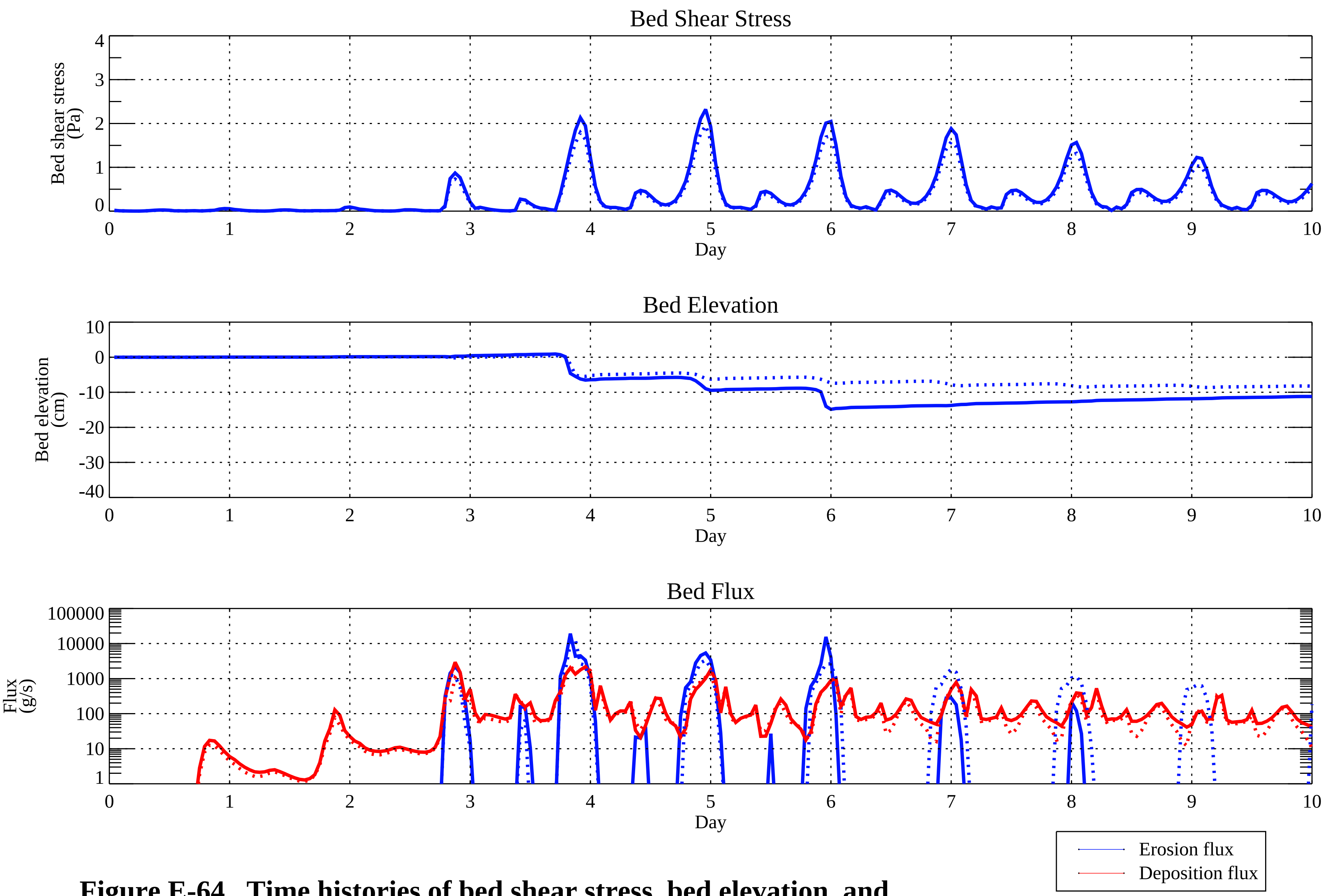

Figure E-64. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (upper-bound effective bed roughness). Dotted line represents the base case results.

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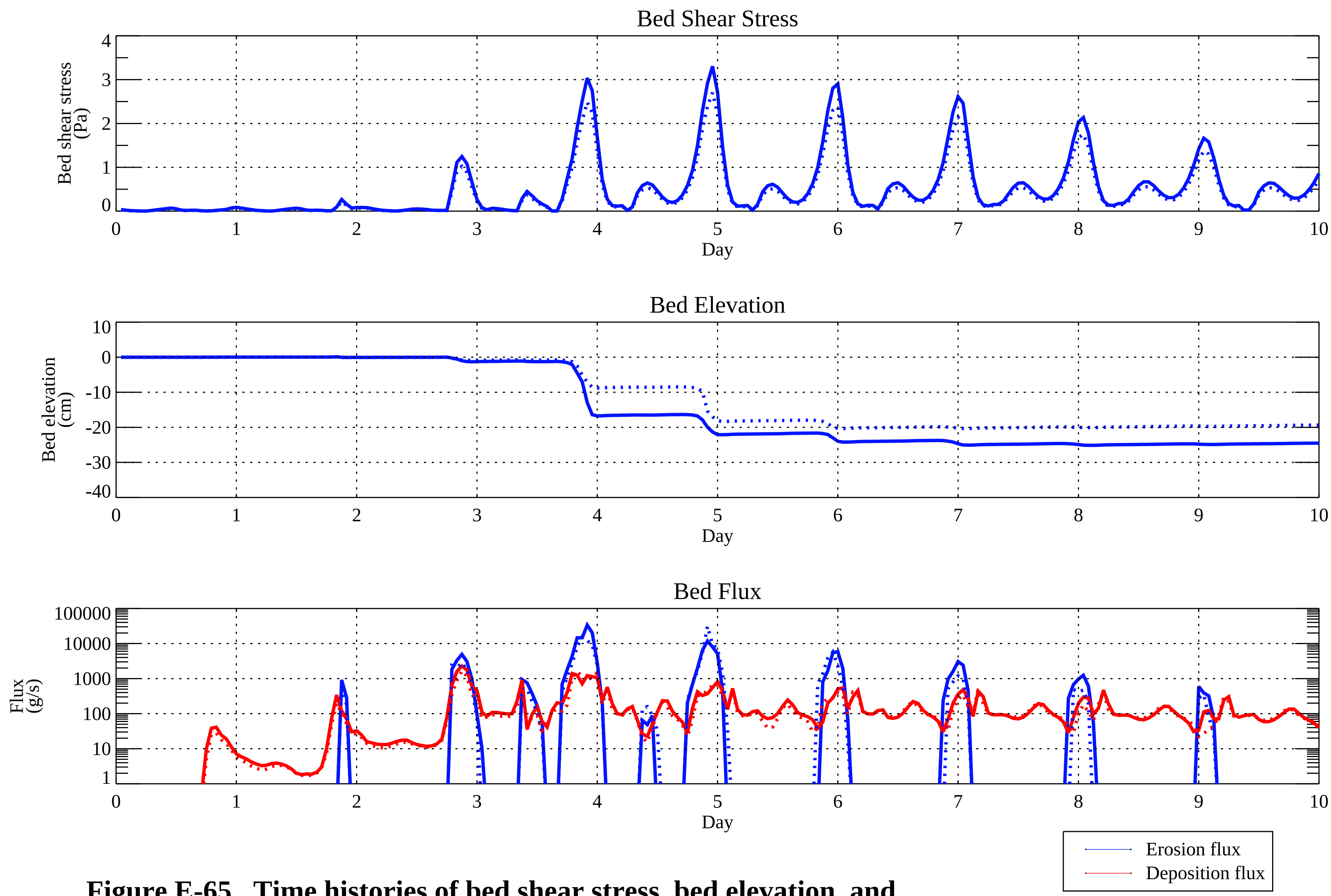

Figure E-65. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (upper-bound effective bed roughness). Dotted line represents the base case results.

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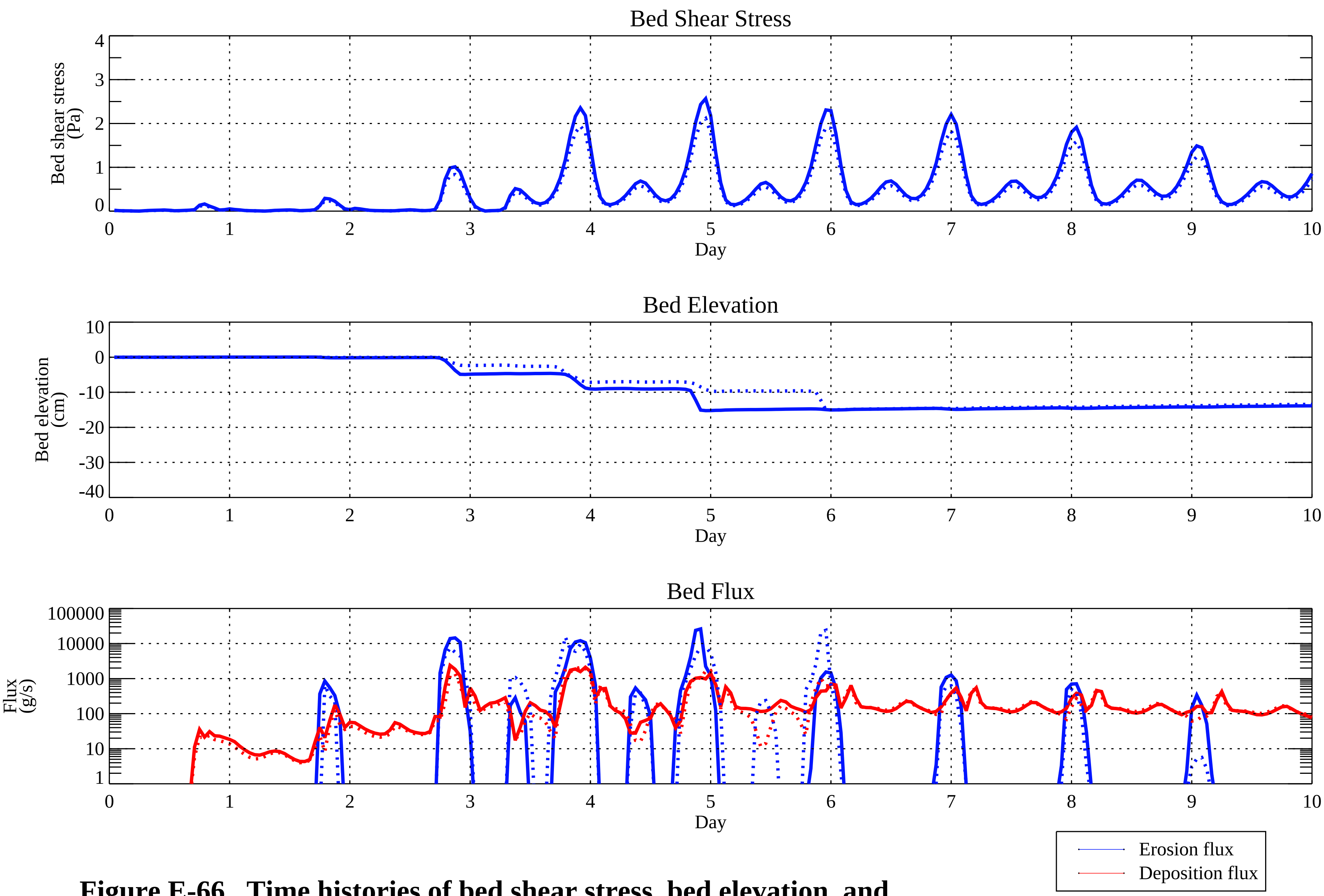

Figure E-66. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (upper-bound effective bed roughness). Dotted line represents the base case results.

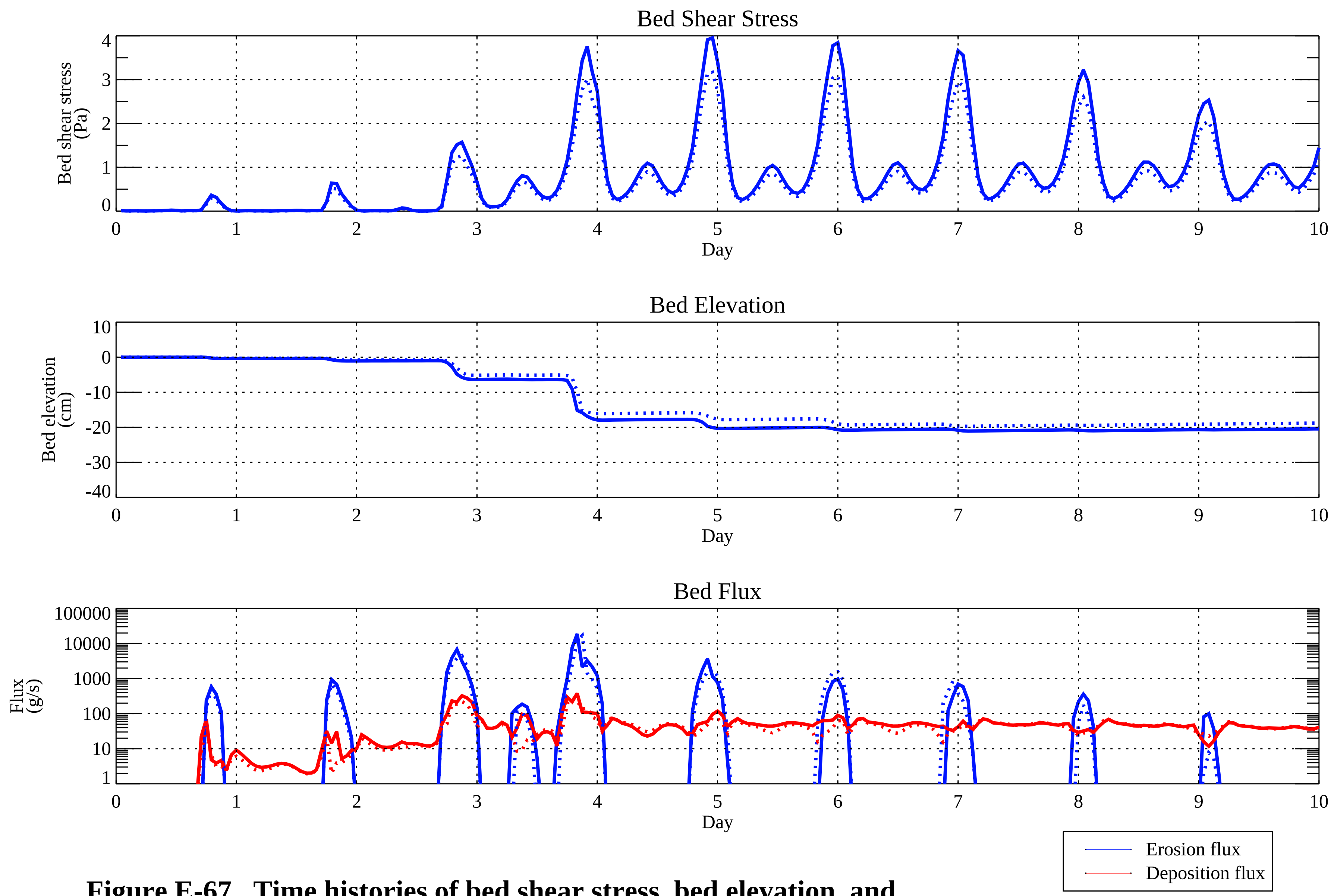

Figure E-67. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (upper-bound effective bed roughness). Dotted line represents the base case results.

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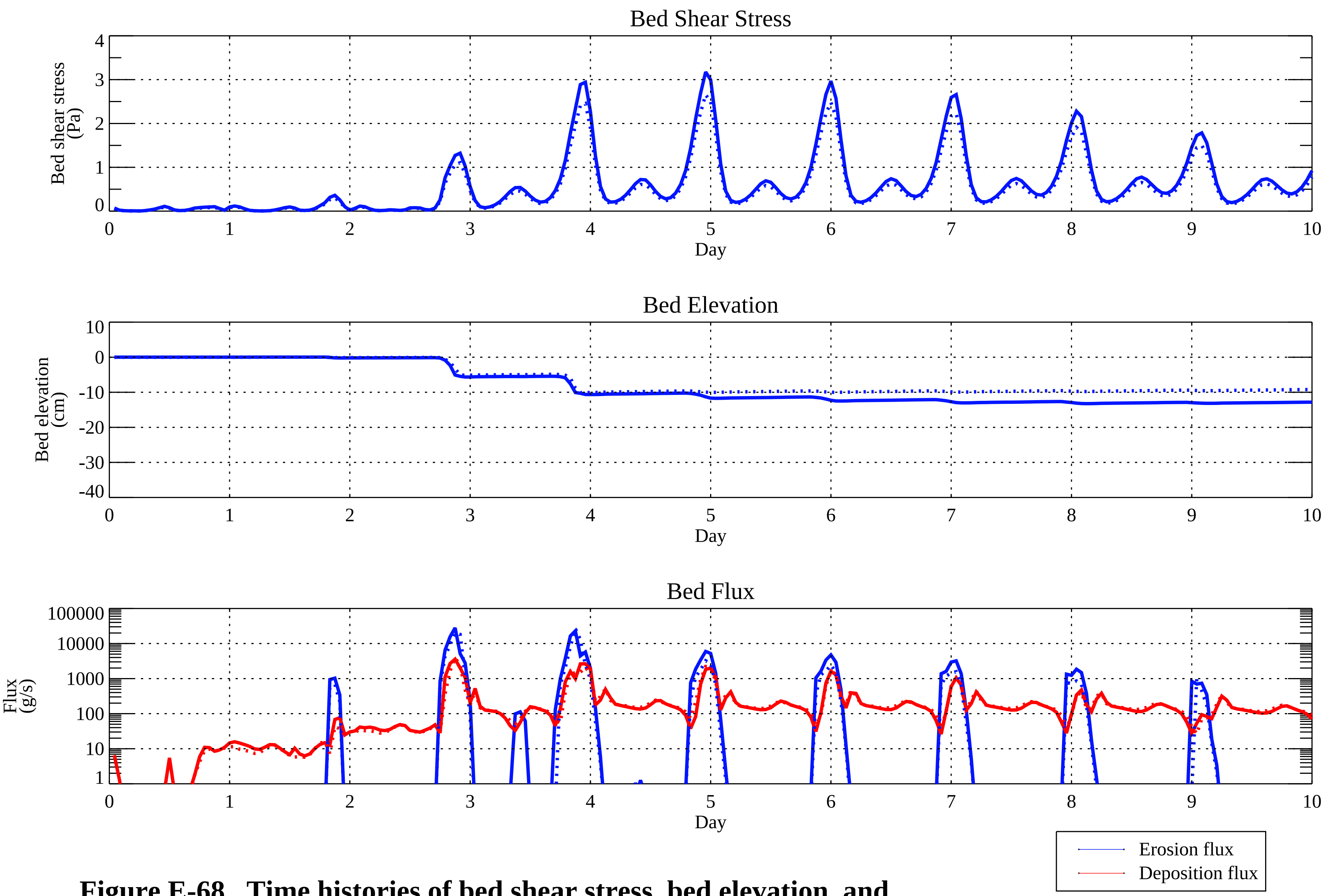

Figure E-68. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (upper-bound effective bed roughness). Dotted line represents the base case results.

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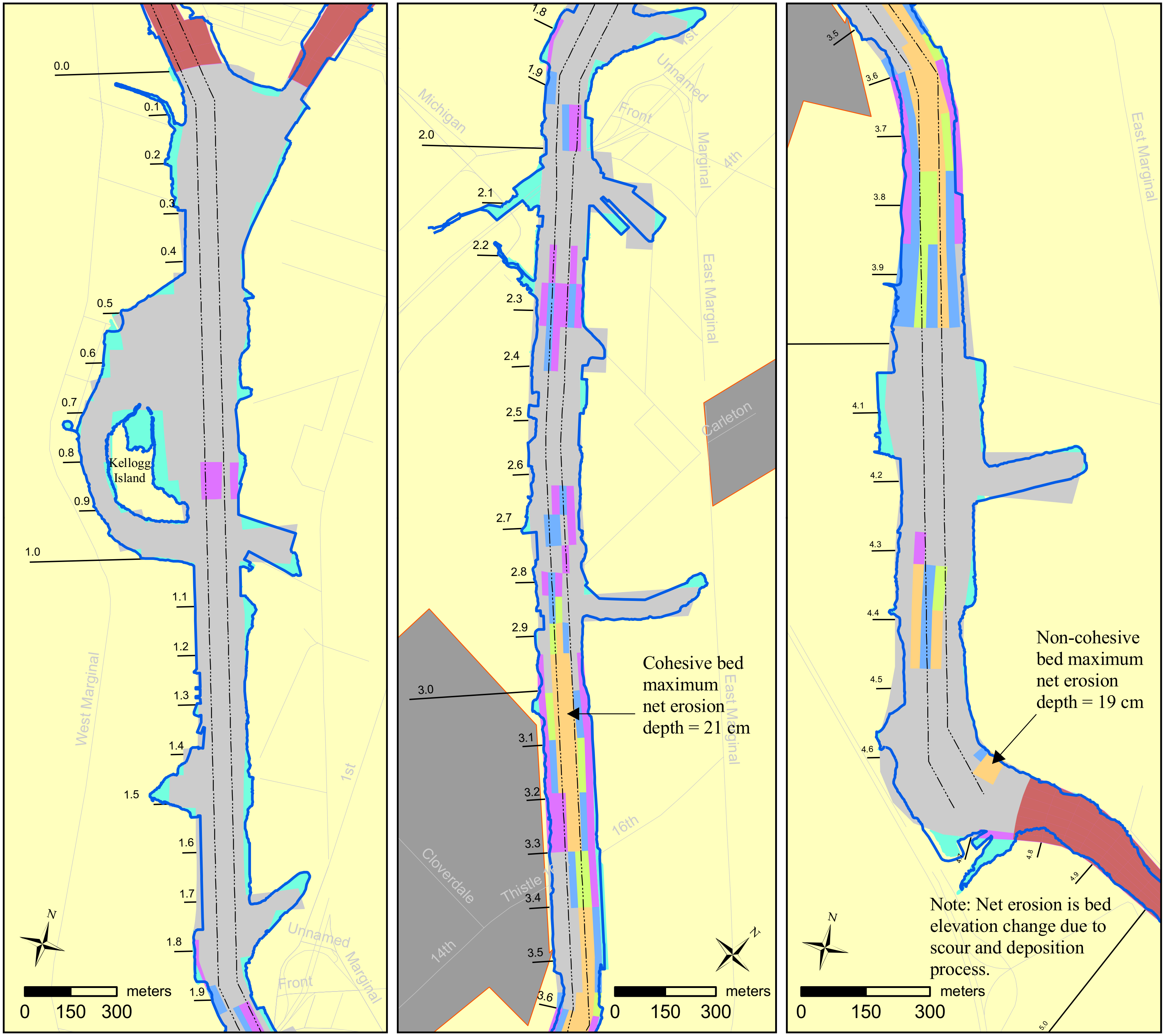

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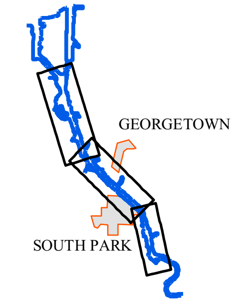

LEGEND

Net erosion depth (cm)

- > 10
- 6 - 10
- 2 - 6
- 0 - 2
- Net deposition
- Navigation channel
- Shore line
- River miles
- Roads
- Neighborhoods
- Outside model domain
- Hard bottom area

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-69. Spatial distribution of predicted net erosion depth during 100-year high-flow event: lower-bound settling speed.

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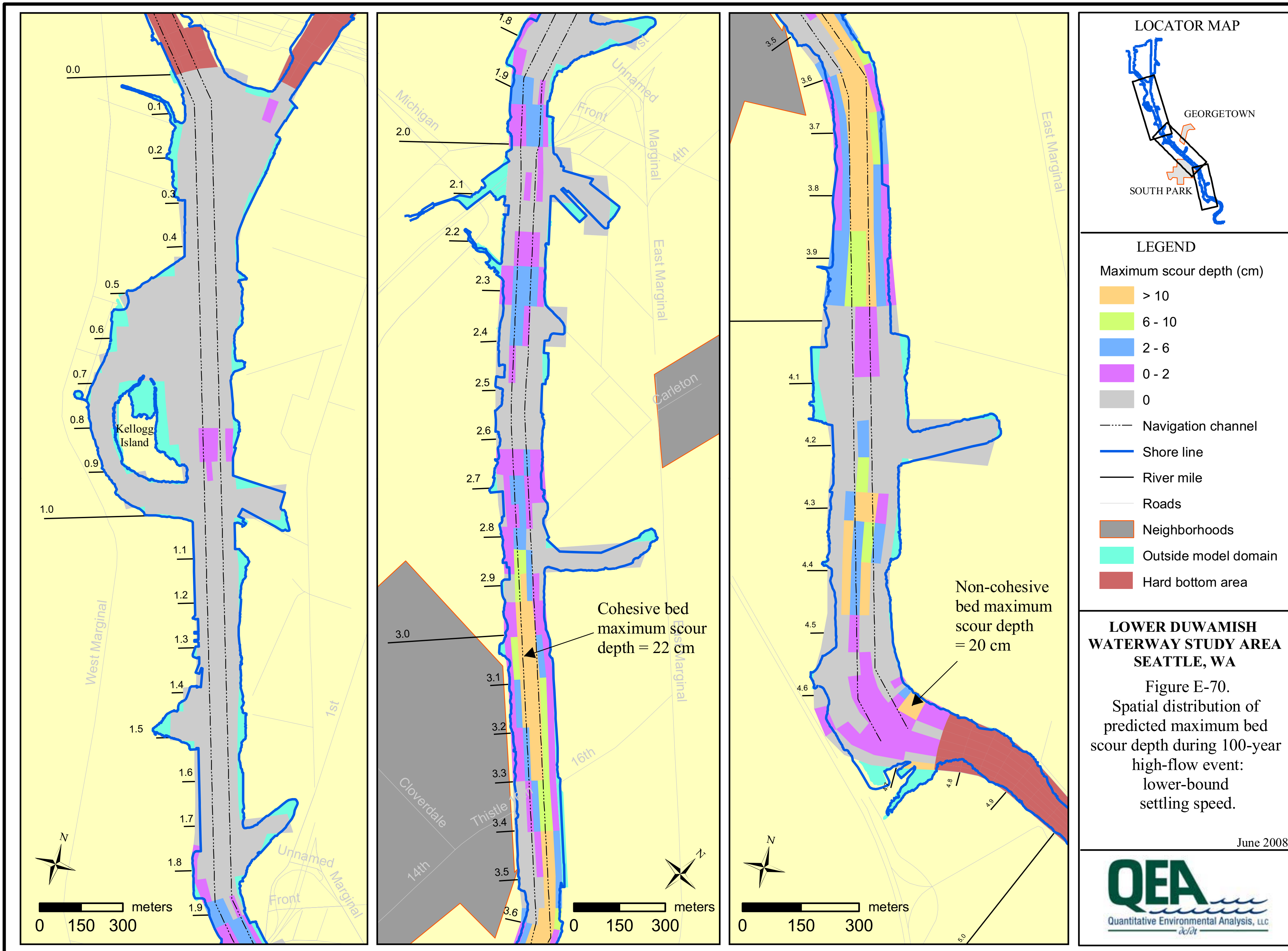

Figure E-70.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: lower-bound settling speed.

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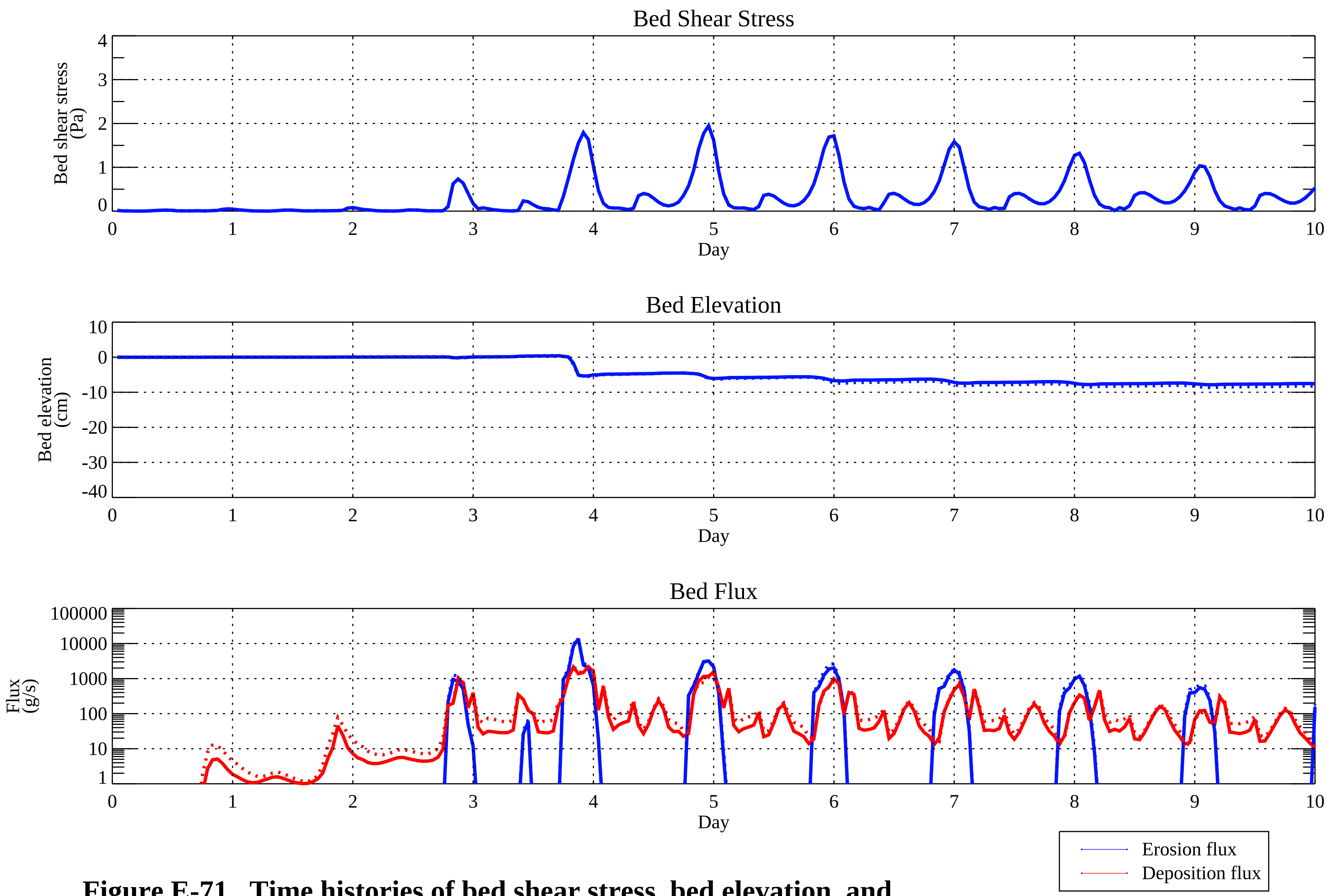

Figure E-71. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (lower-bound settling speed). Dotted line represents the base case results.

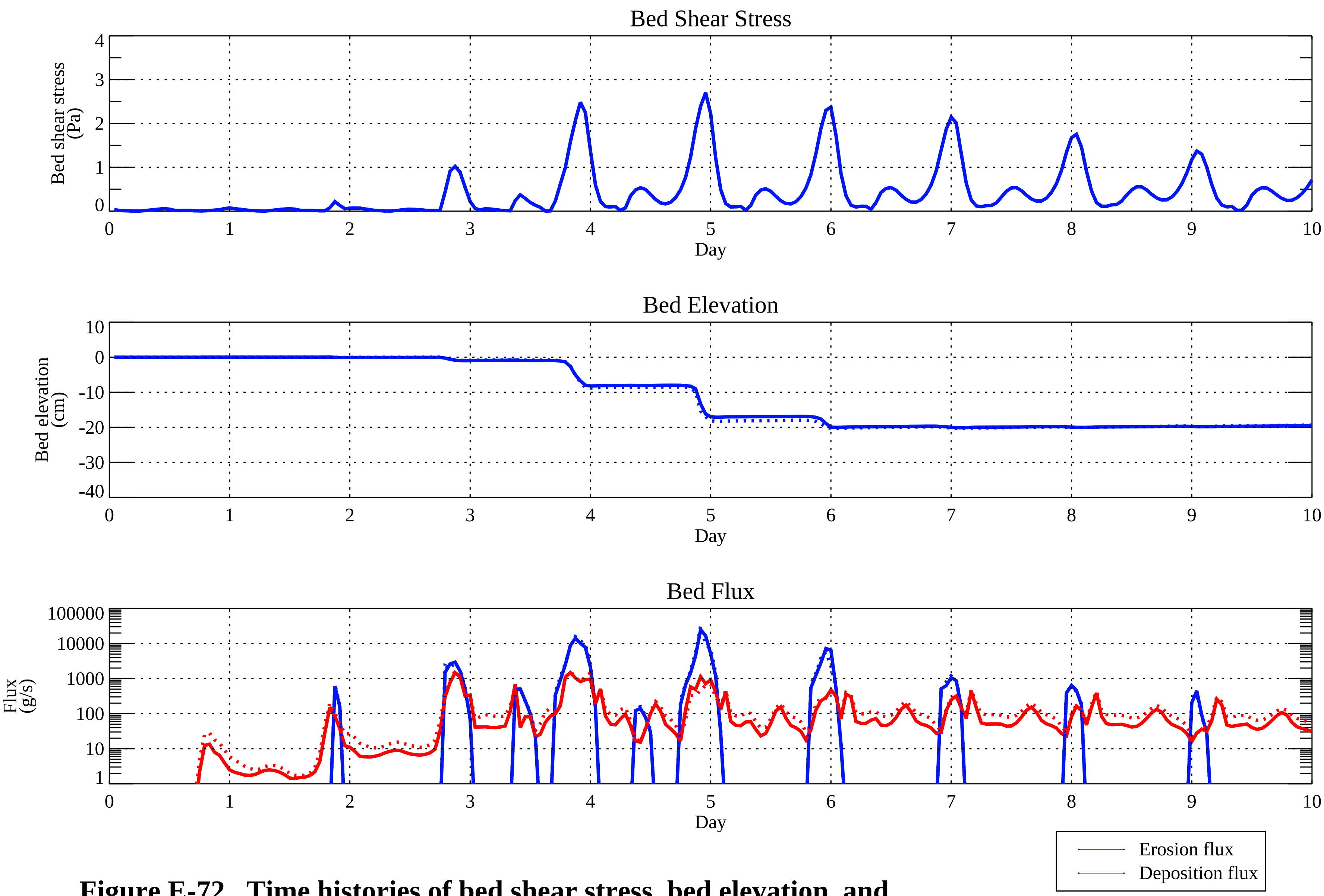

Figure E-72. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (lower-bound settling speed). Dotted line represents the base case results.

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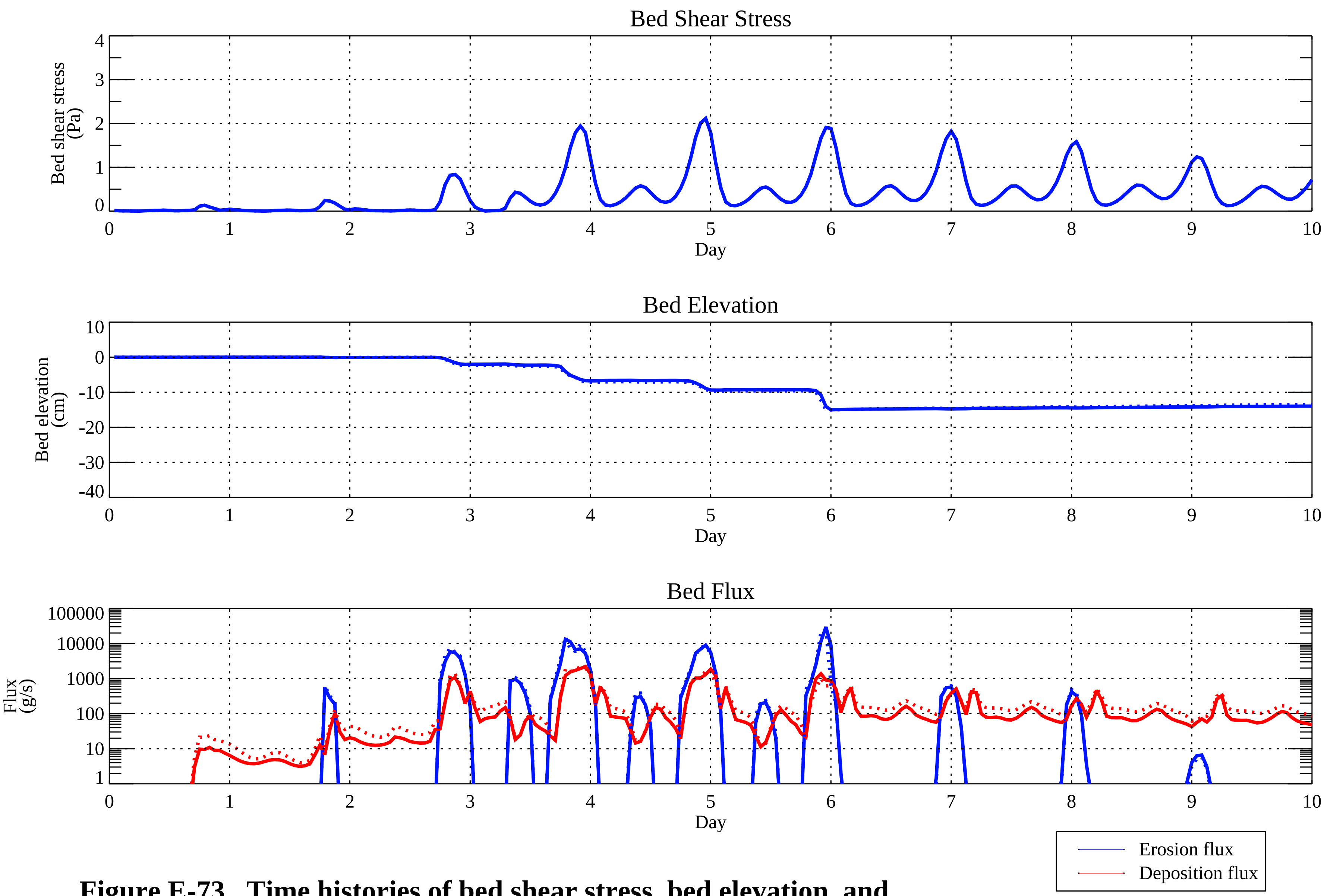

Figure E-73. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (lower-bound settling speed). Dotted line represents the base case results.

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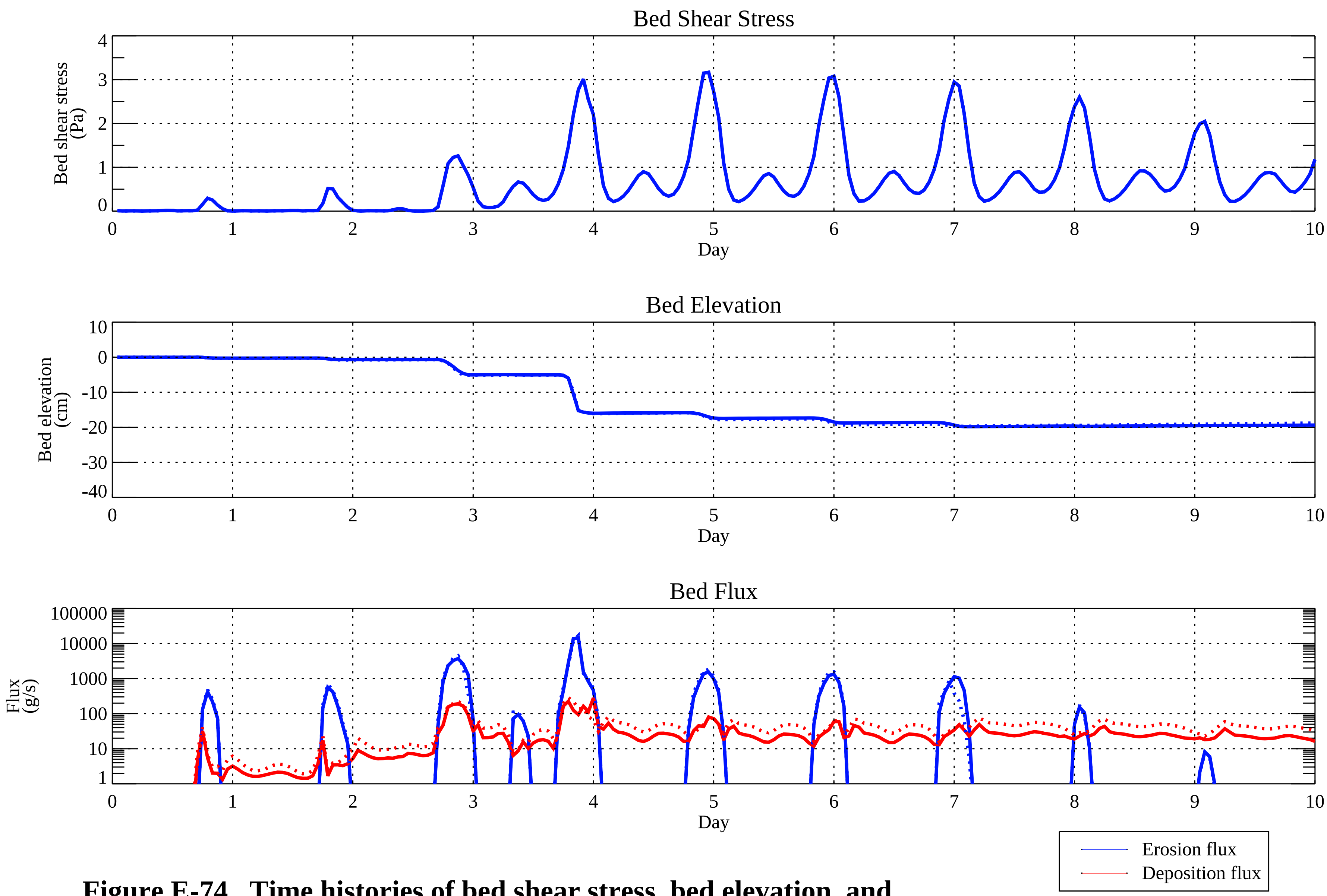

Figure E-74. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (lower-bound settling speed). Dotted line represents the base case results.

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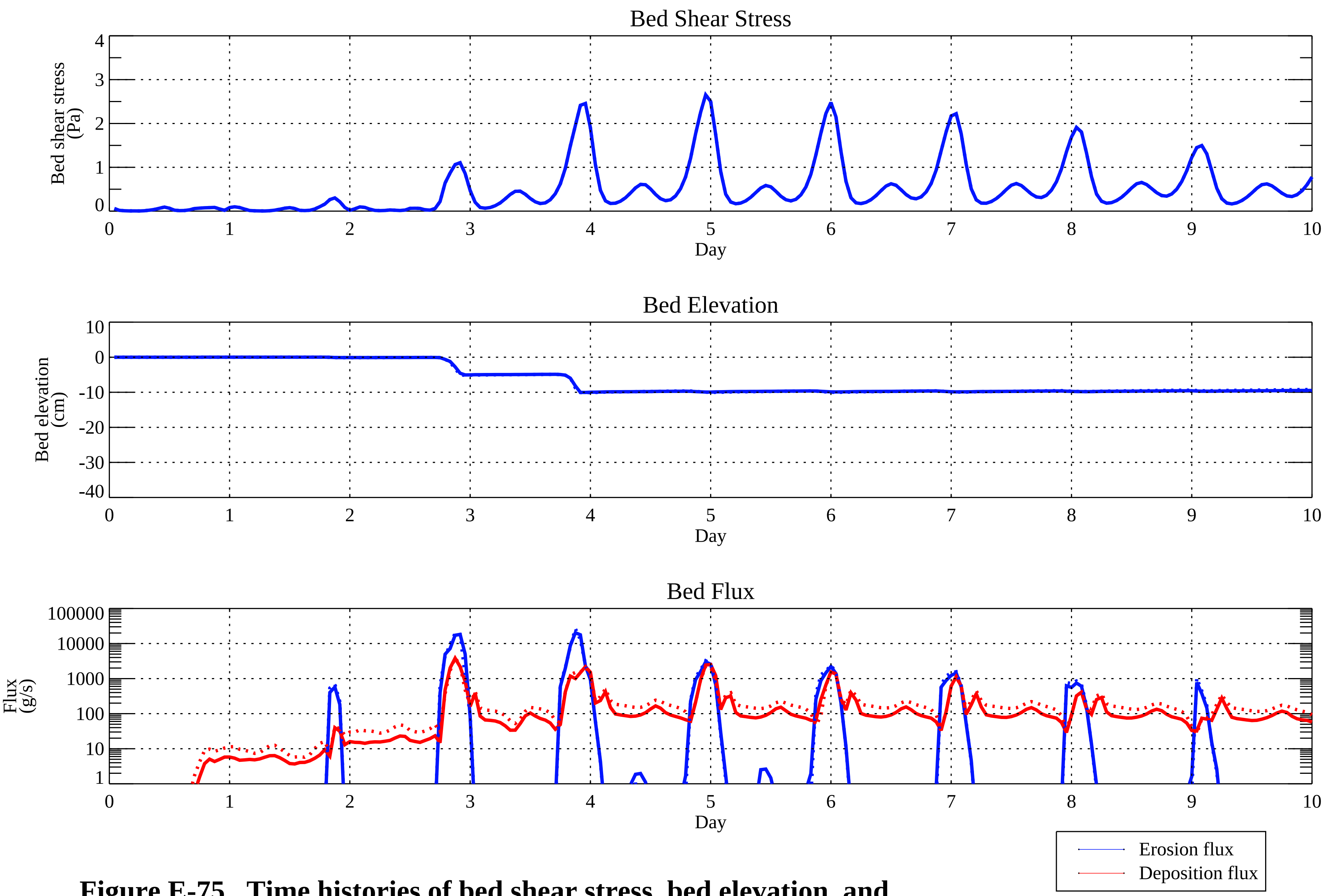

Figure E-75. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (lower-bound settling speed). Dotted line represents the base case results.

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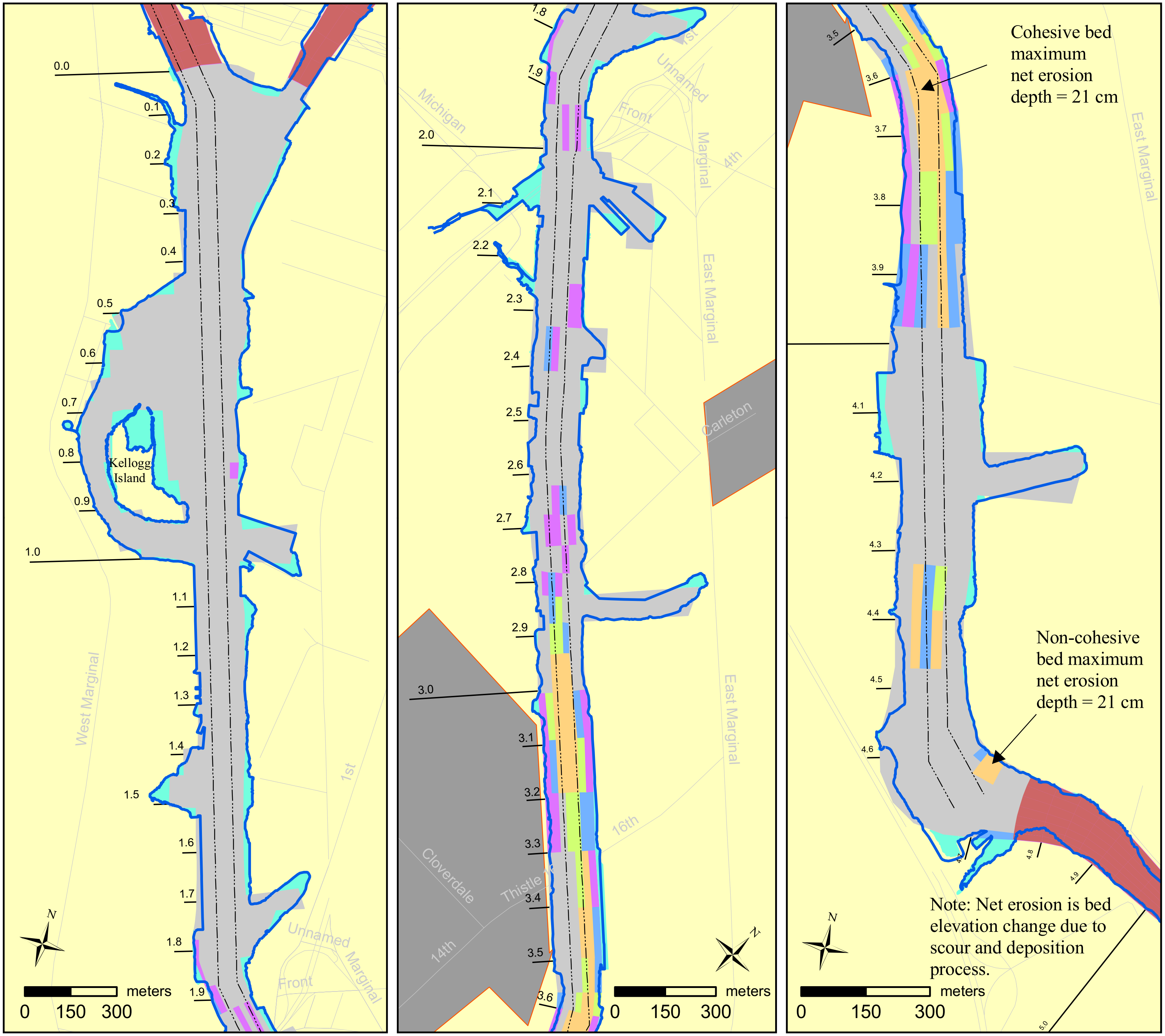
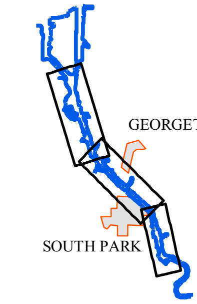


LOCATOR MAP



LEGEND

Net erosion depth (cm)

- > 10
- 6 - 10
- 2 - 6
- 0 - 2
- Net deposition
- Navigation channel
- Shore line
- River miles
- Roads
- Neighborhoods
- Outside model domain
- Hard bottom area

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-76.
Spatial distribution of predicted net erosion depth during 100-year high-flow event:upper-bound settling speed.

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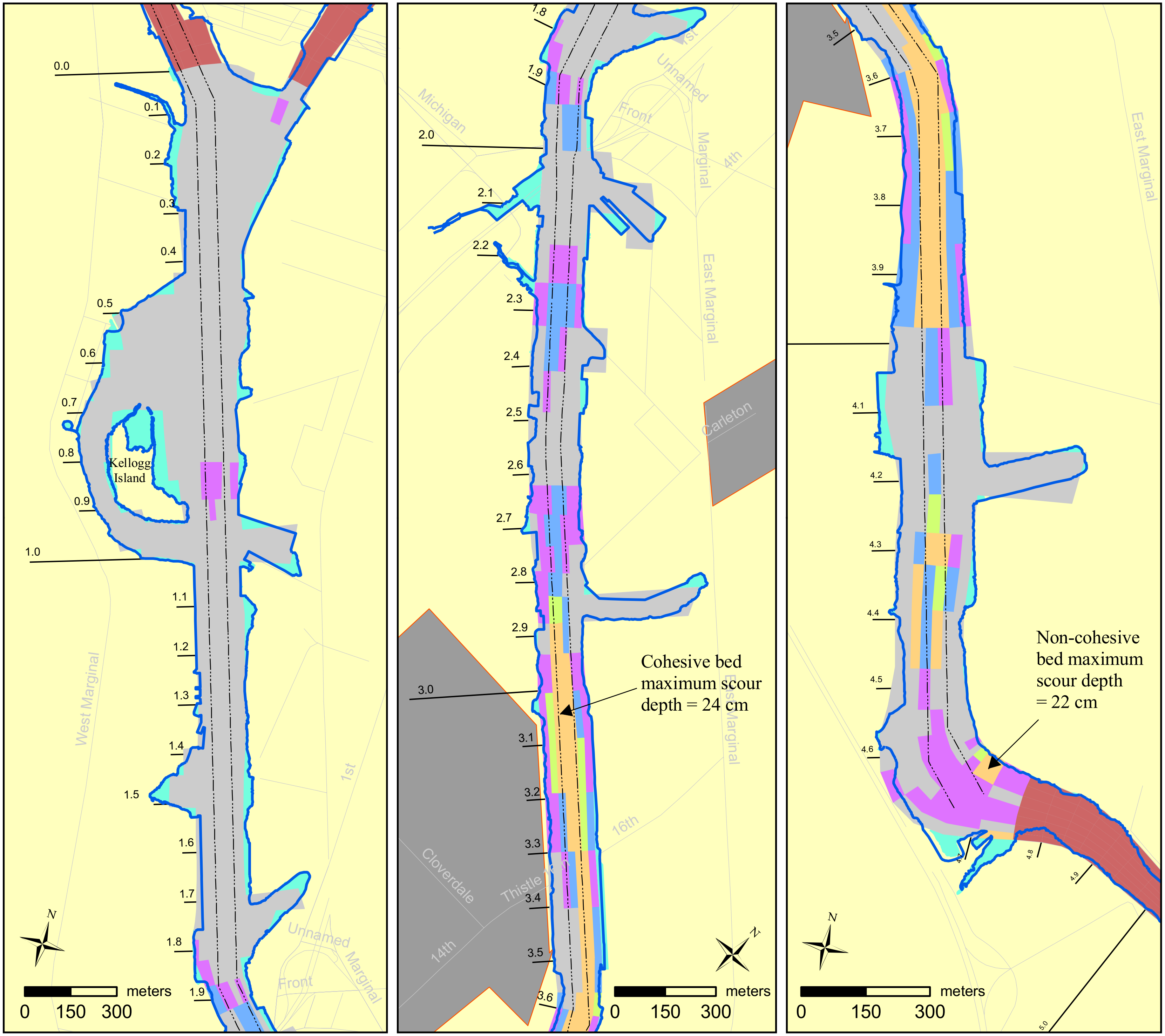

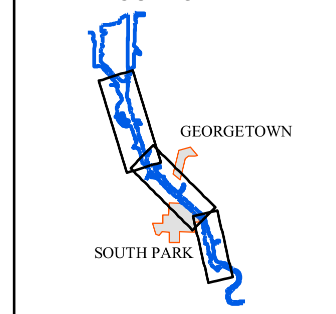

LEGEND

Maximum scour depth (cm)

- > 10
- 6 - 10
- 2 - 6
- 0 - 2
- 0
- Navigation channel
- Shore line
- River mile
- Roads
- Neighborhoods
- Outside model domain
- Hard bottom area

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-77.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: upper-bound settling speed.

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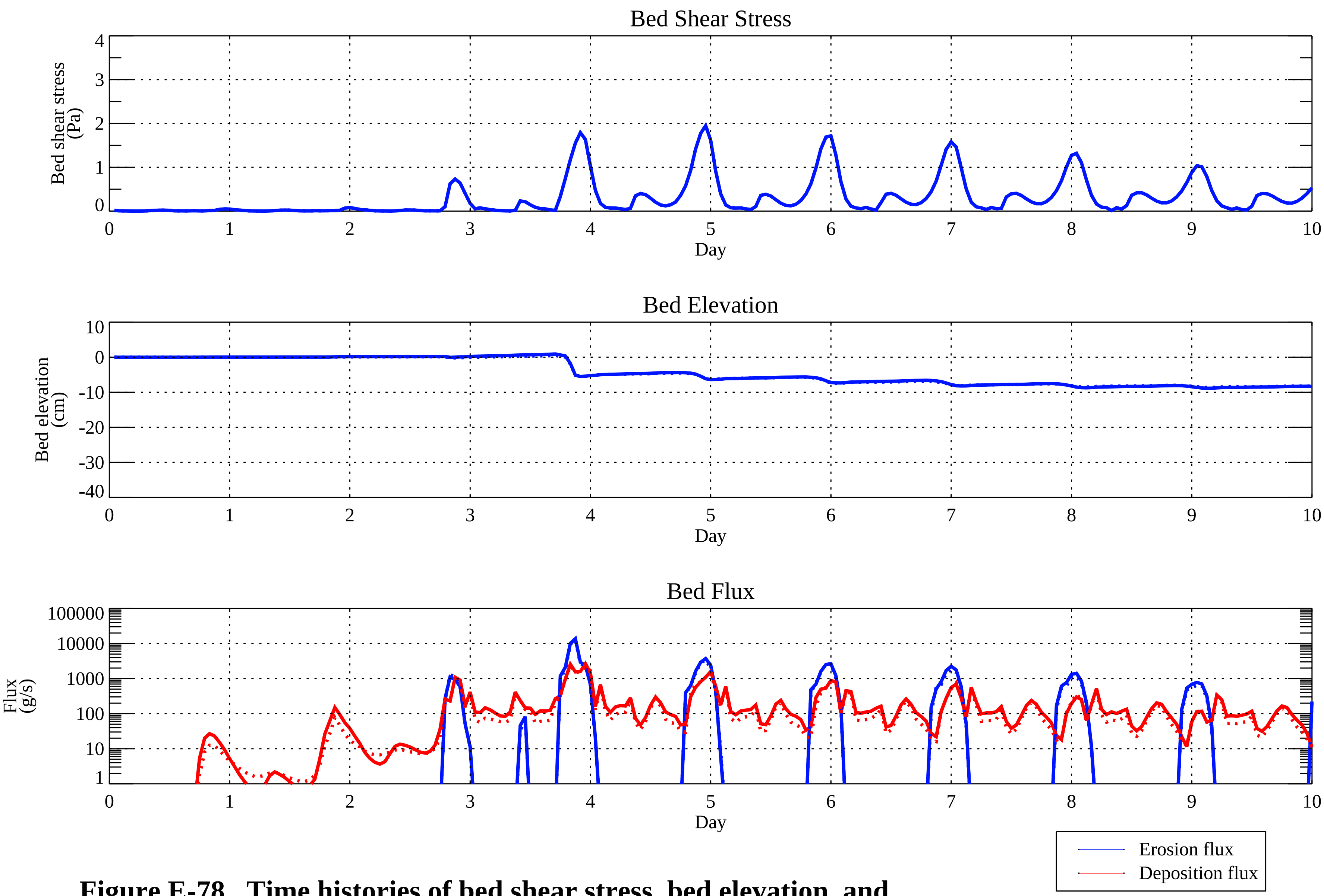

Figure E-78. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (upper-bound settling speed). Dotted line represents the base case results.

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Figure E-79. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (upper-bound settling speed). Dotted line represents the base case results.

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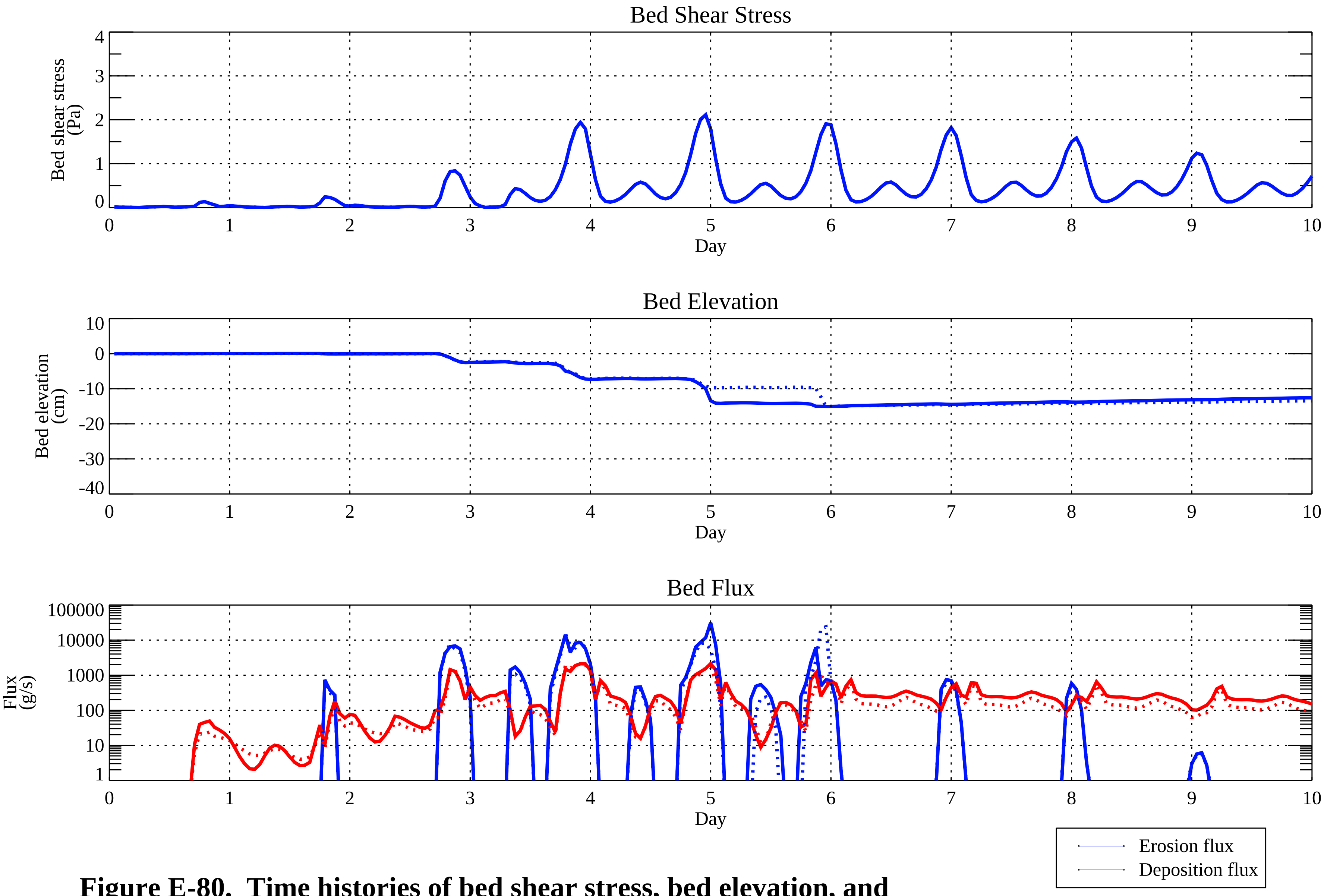

Figure E-80. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (upper-bound settling speed). Dotted line represents the base case results.

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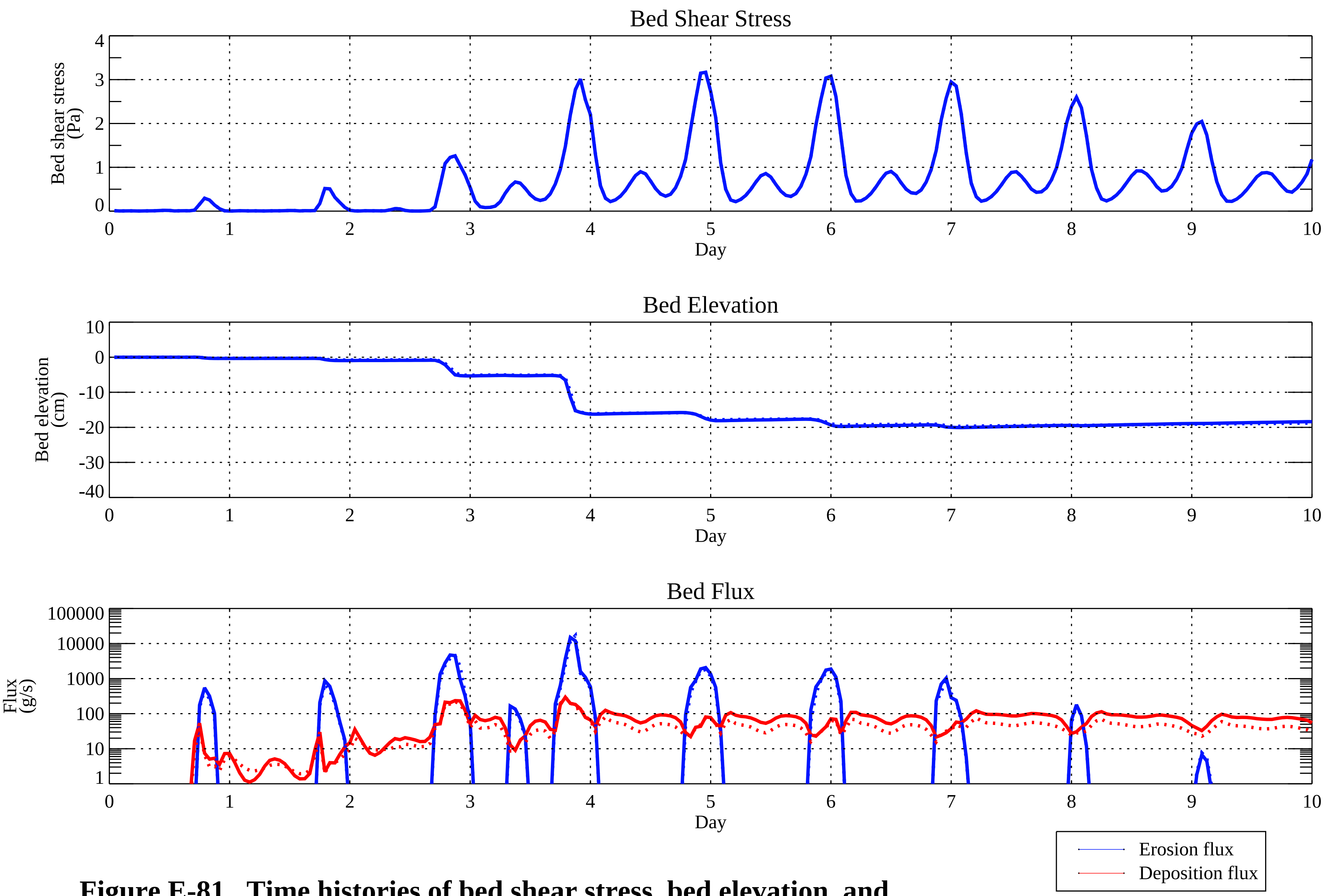

Figure E-81. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (upper-bound settling speed). Dotted line represents the base case results.

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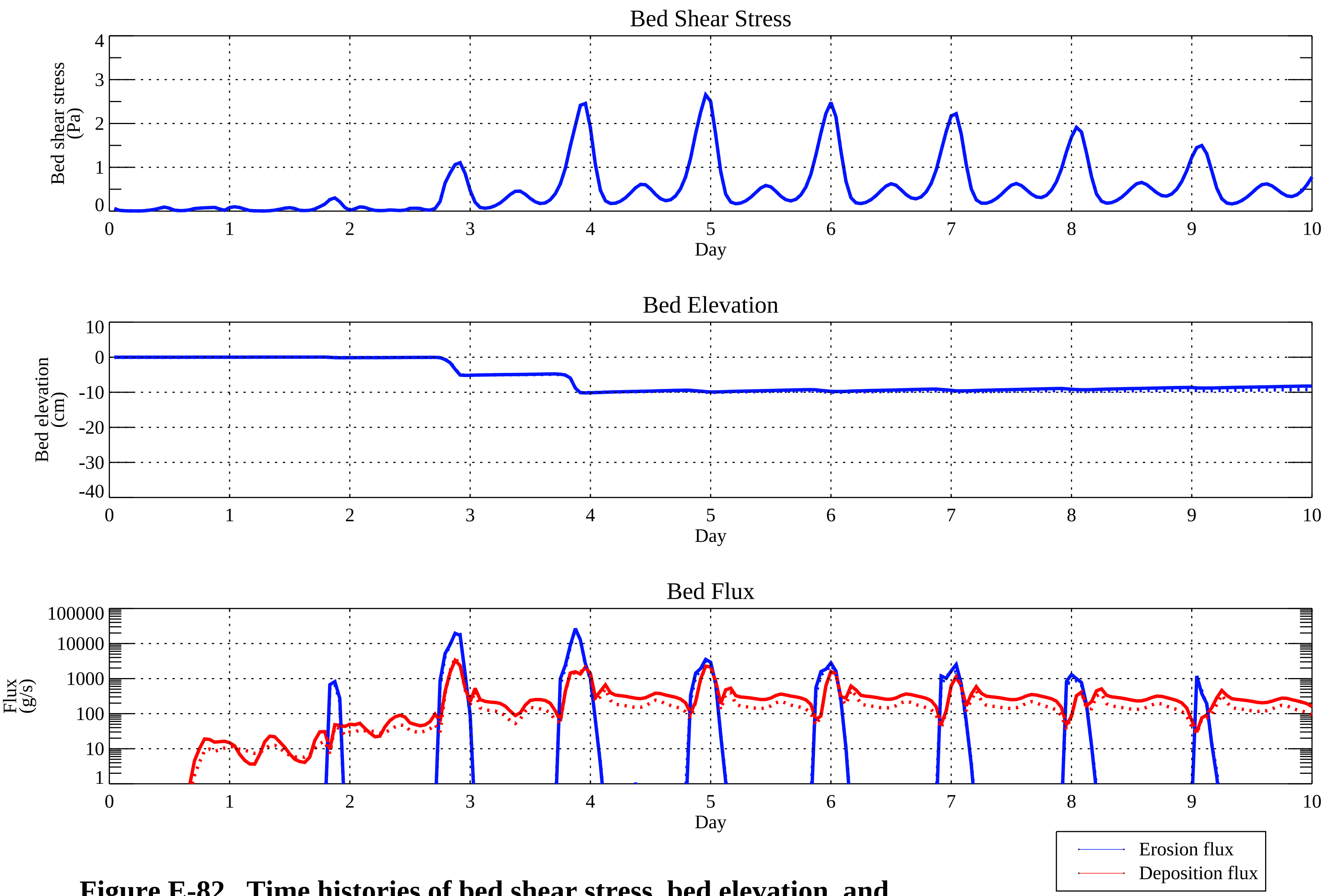

Figure E-82. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (upper-bound settling speed). Dotted line represents the base case results.

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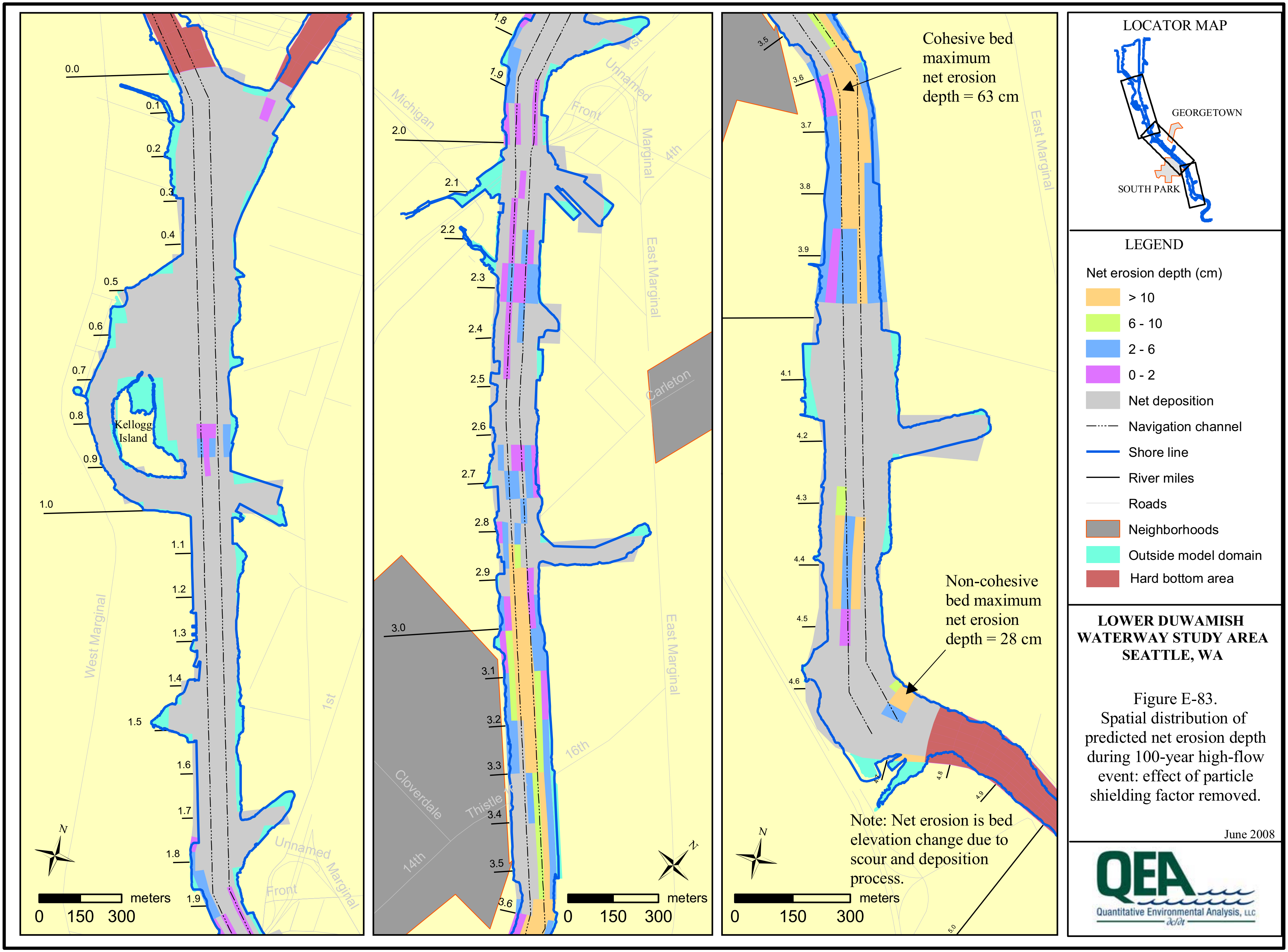
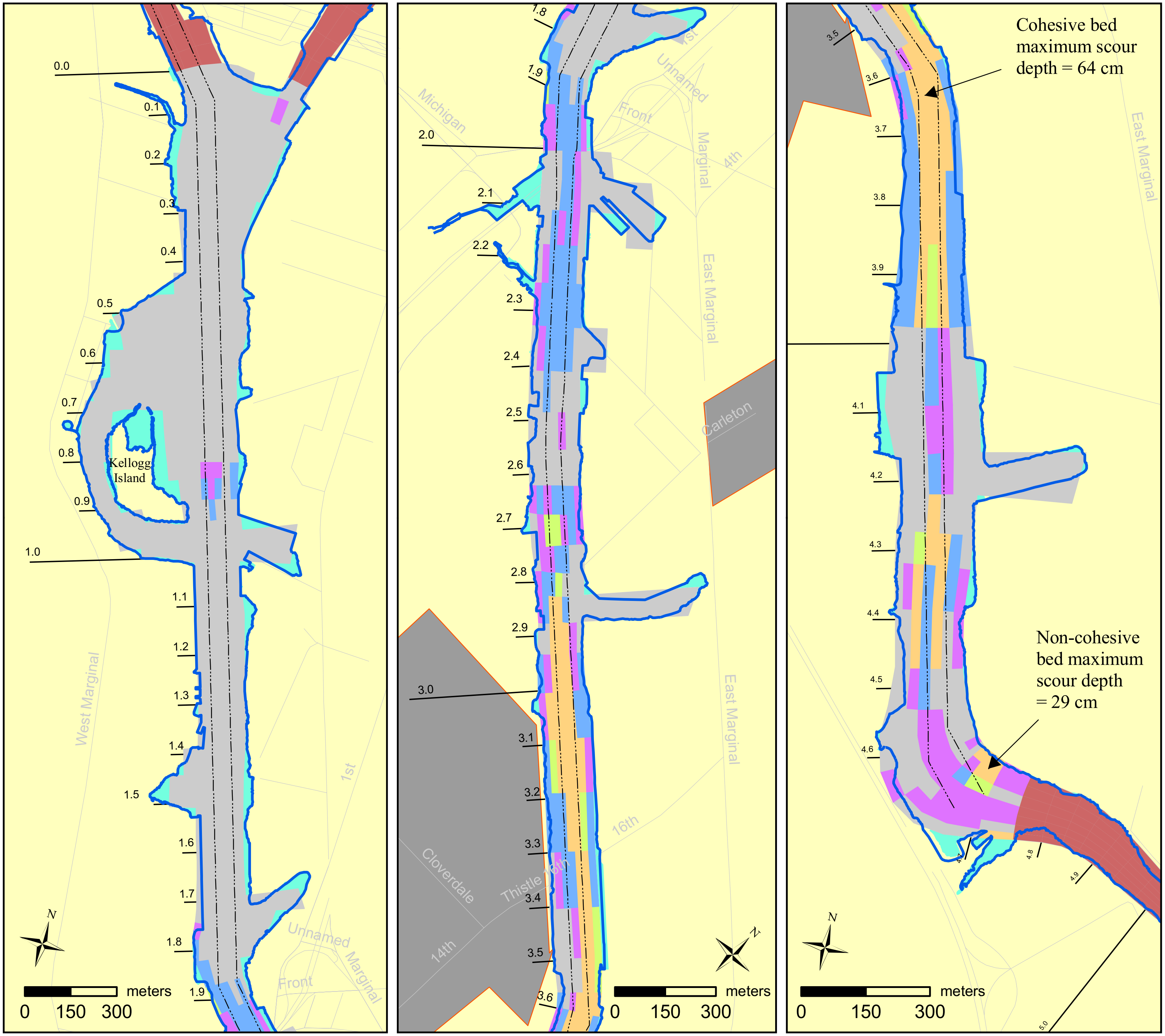
Mon Jun 16 10:46:59 2008



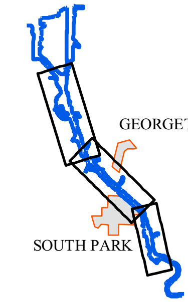
LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-83.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: effect of particle shielding factor removed.

FC/AC - \\gis_station\d_drive\Private\RETldw\GIS_plot\sensitivity_plot_04102008.mxd



LOCATOR MAP



LEGEND

Maximum scour depth (cm)

- > 10
- 6 - 10
- 2 - 6
- 0 - 2
- 0
- Navigation channel
- Shore line
- River mile
- Roads
- Neighborhoods
- Outside model domain
- Hard bottom area

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-84.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: effect of particle shielding factor removed.

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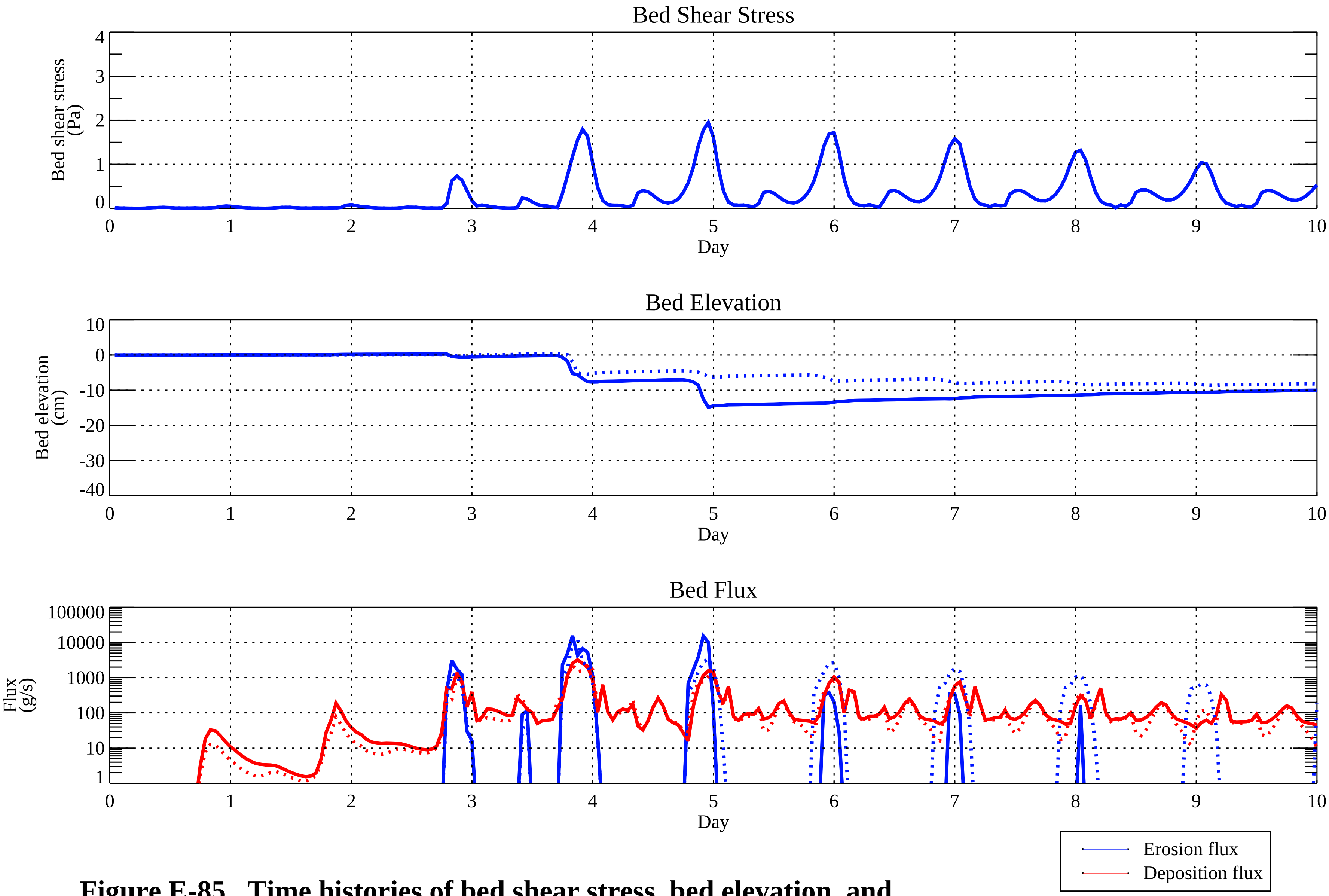

Figure E-85. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (particle shielding factor removed). Dotted line represents the base case results.

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Mon Jun 16 10:49:27 2008

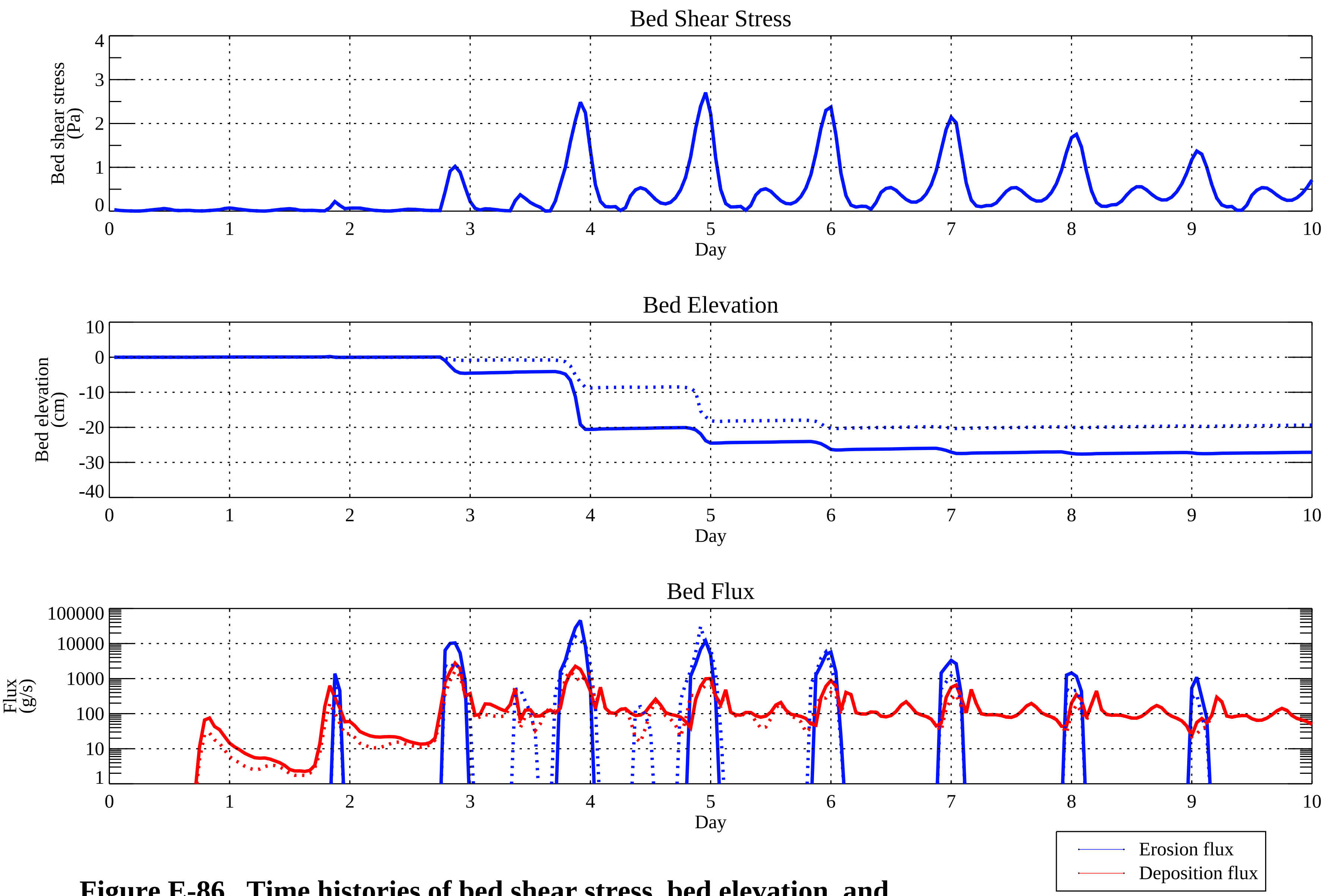

Figure E-86. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (particle shielding factor removed). Dotted line represents the base case results.

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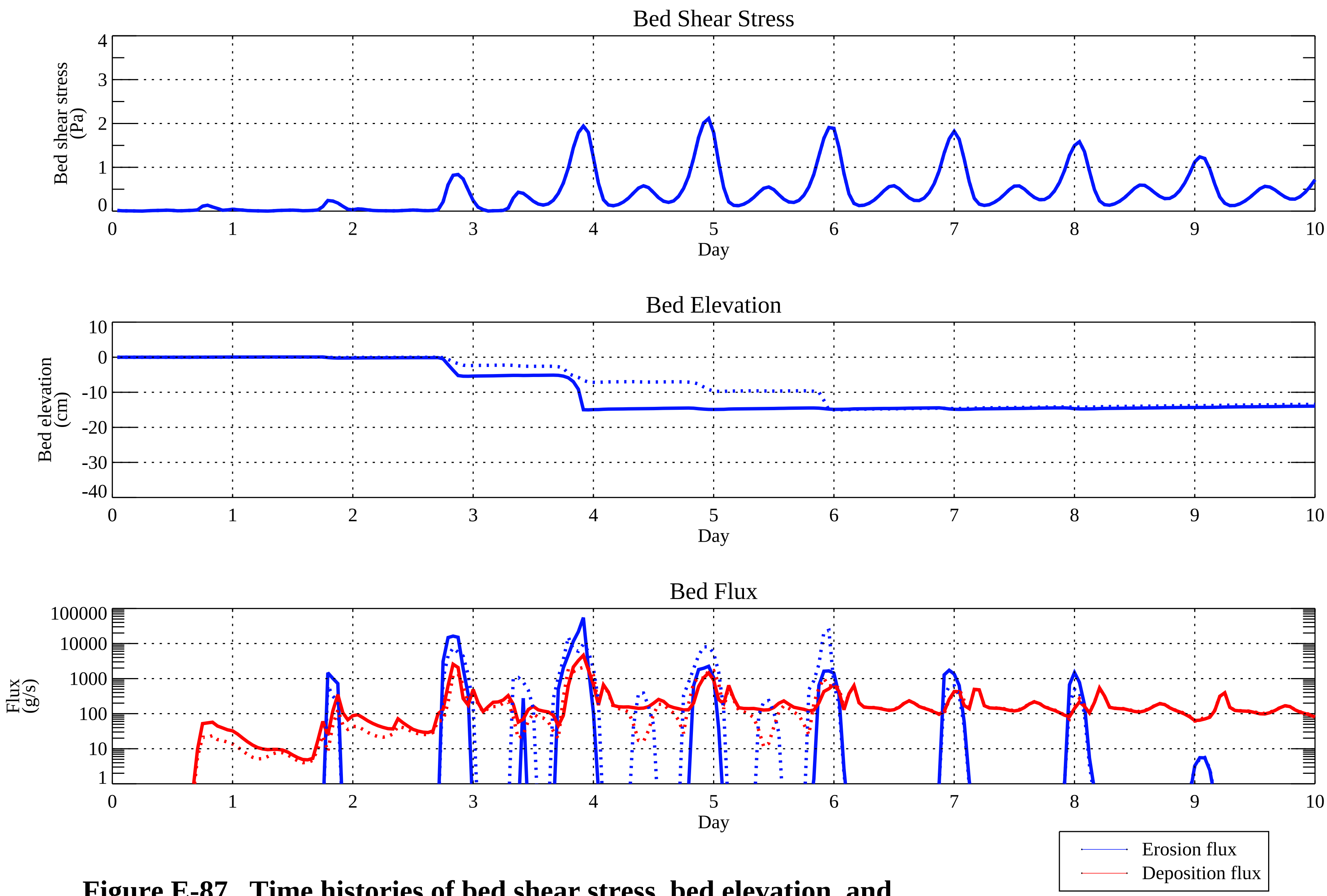

Figure E-87. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (particle shielding factor removed). Dotted line represents the base case results.

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Mon Jun 16 10:49:27 2008

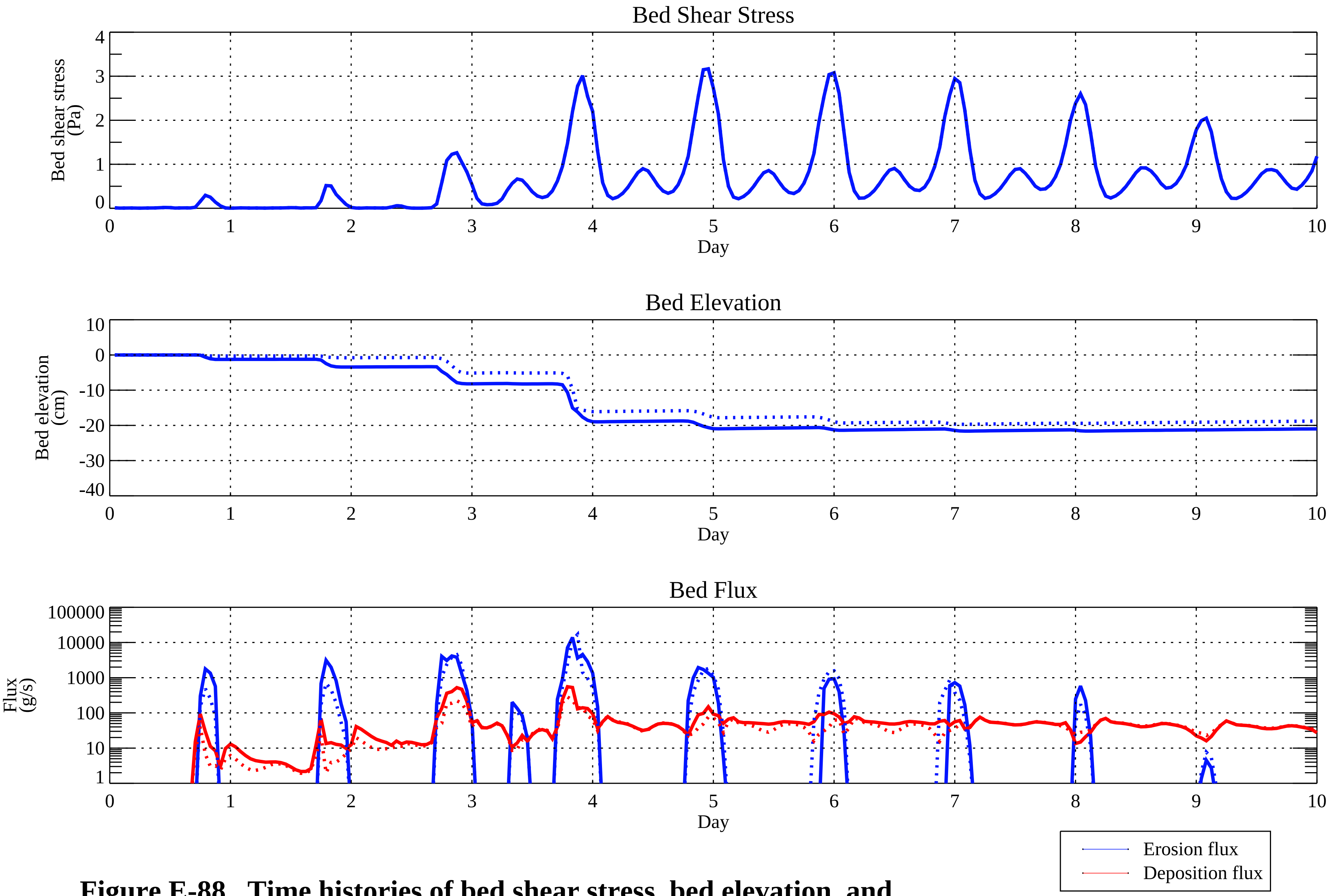

Figure E-88. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (particle shielding factor removed). Dotted line represents the base case results.

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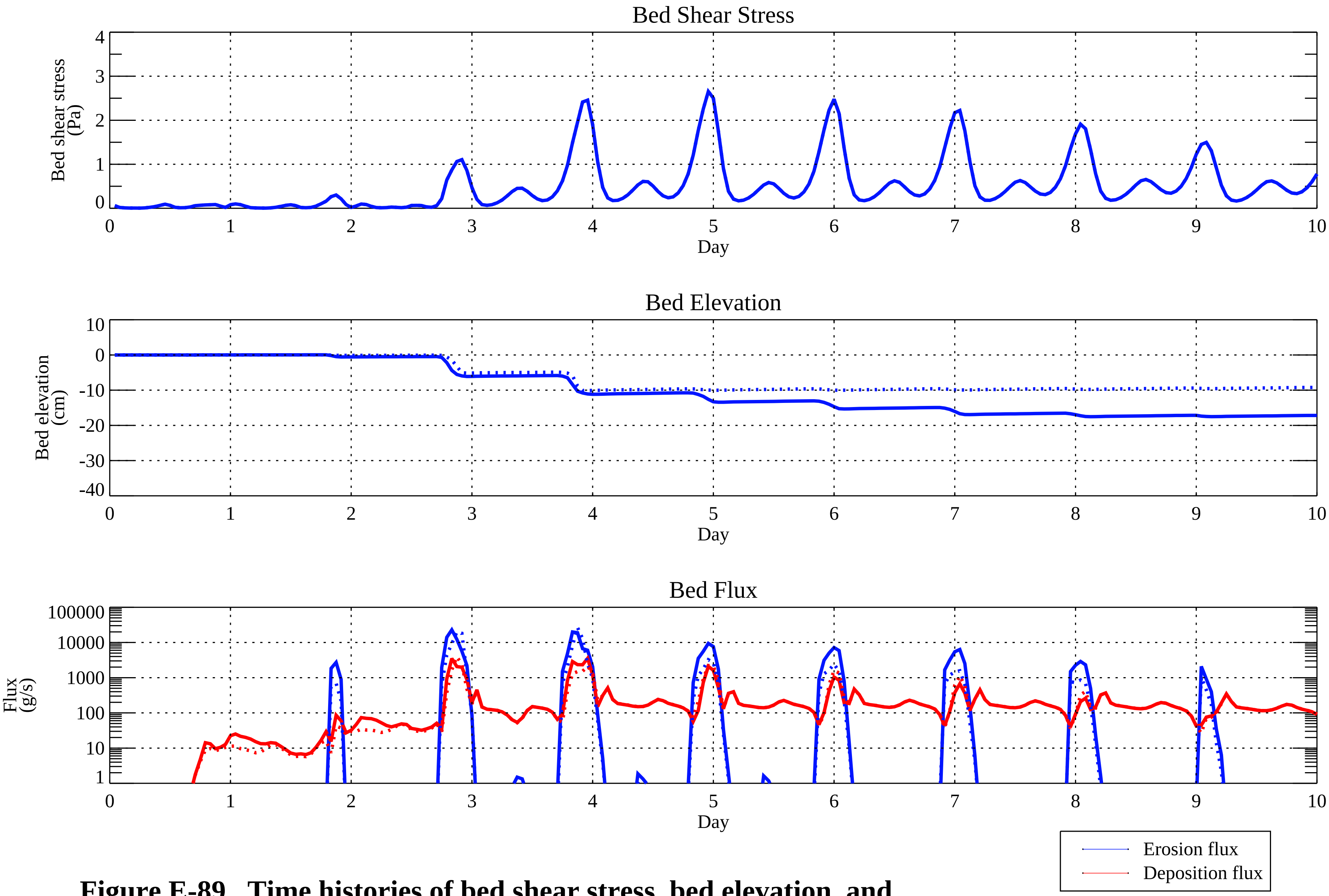

Figure E-89. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (particle shielding factor removed). Dotted line represents the base case results.

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Mon Jun 16 10:49:27 2008

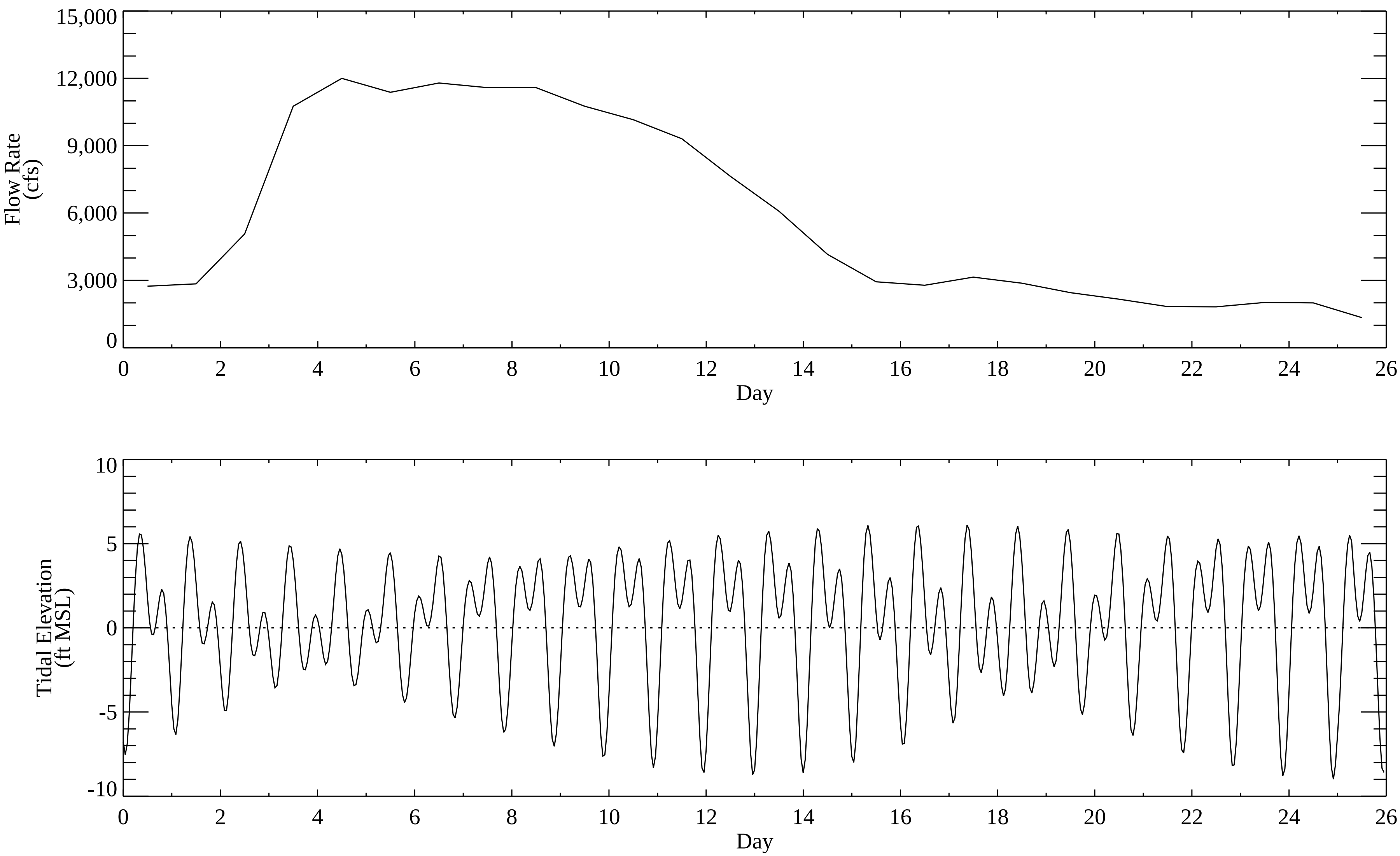

Figure E-90. Time variable river flow rate and tidal elevation used as boundary conditions for 100-year high-flow event (neap tide).

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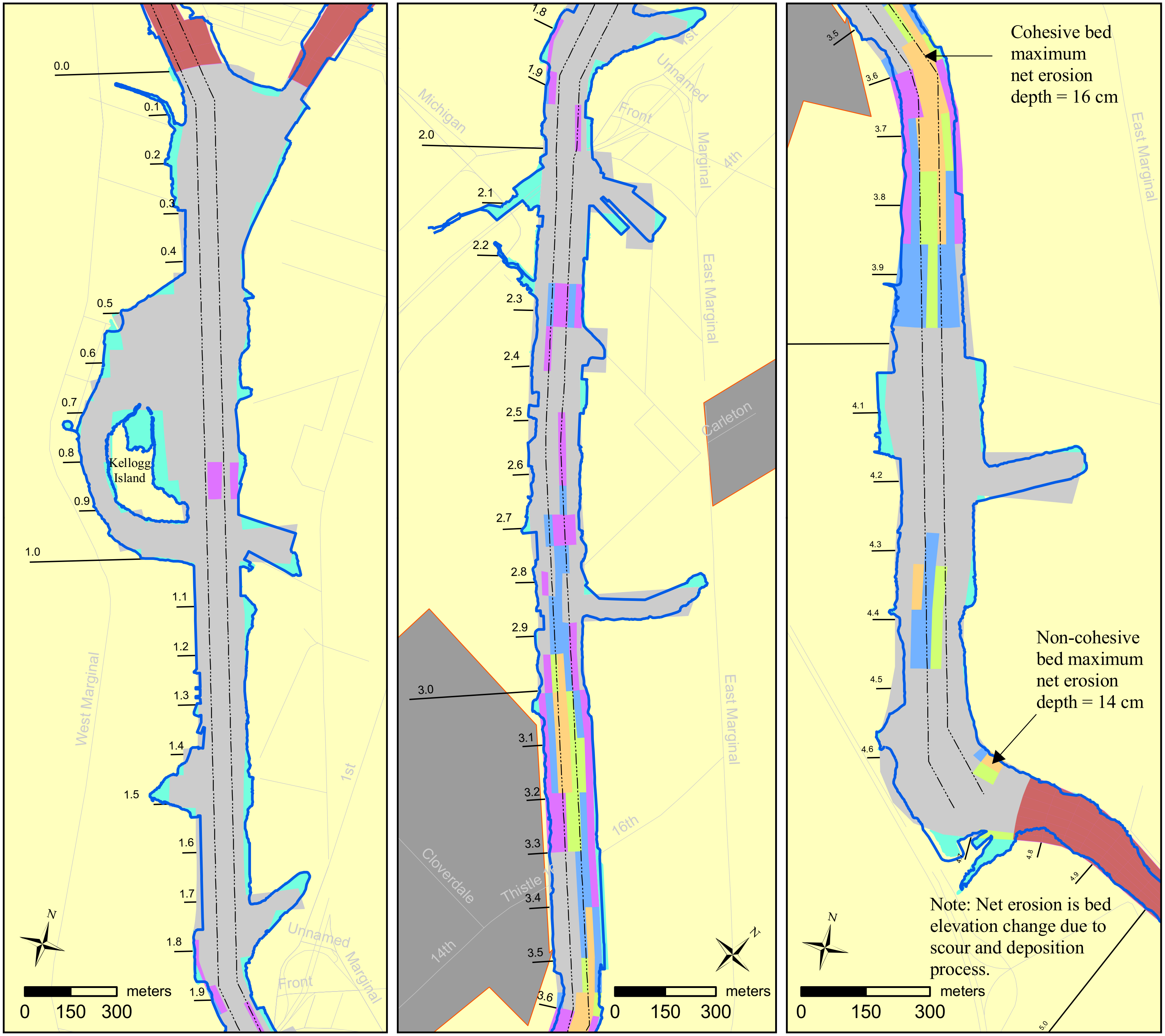

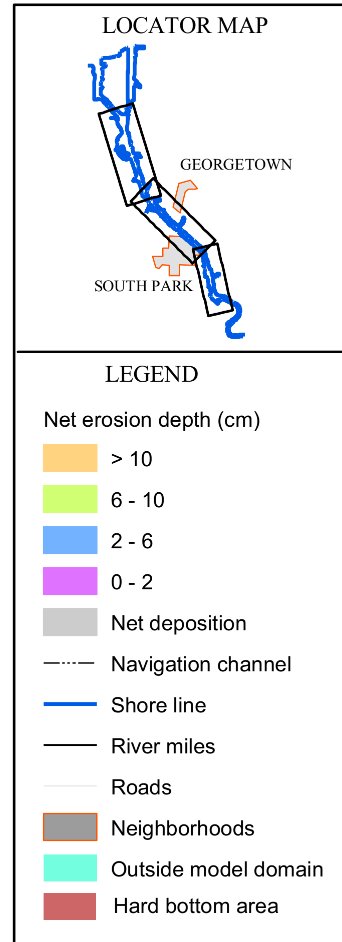

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-91.
Spatial distribution of predicted net erosion depth during 100-year high-flow event: neap tide.

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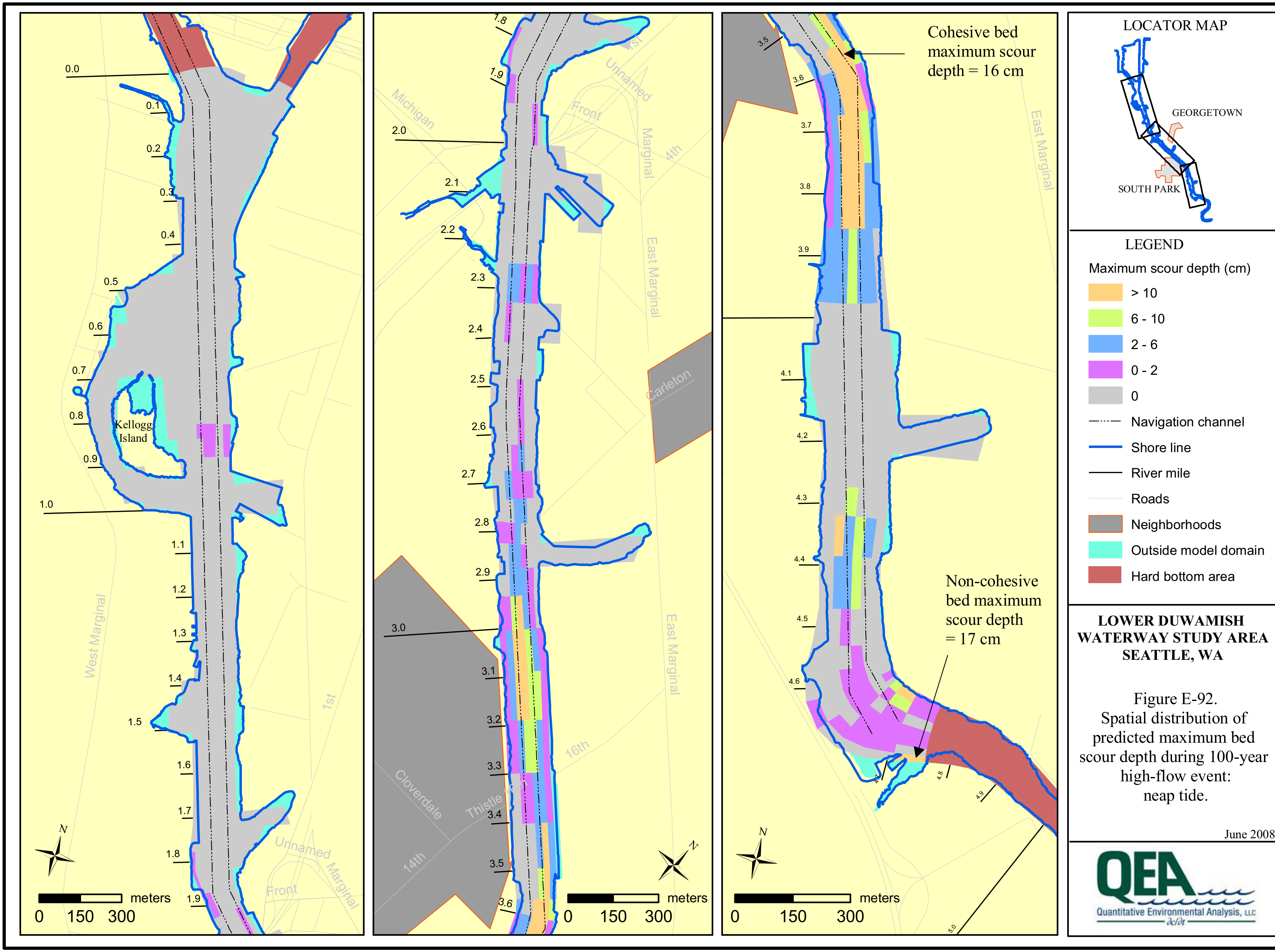

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-92.
Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: neap tide.

June 2008

FC/AC - \\gis_station\d_drive\Private\RETldw\GIS_plot\sensitivity_plot_max_sco_04102008.mxd

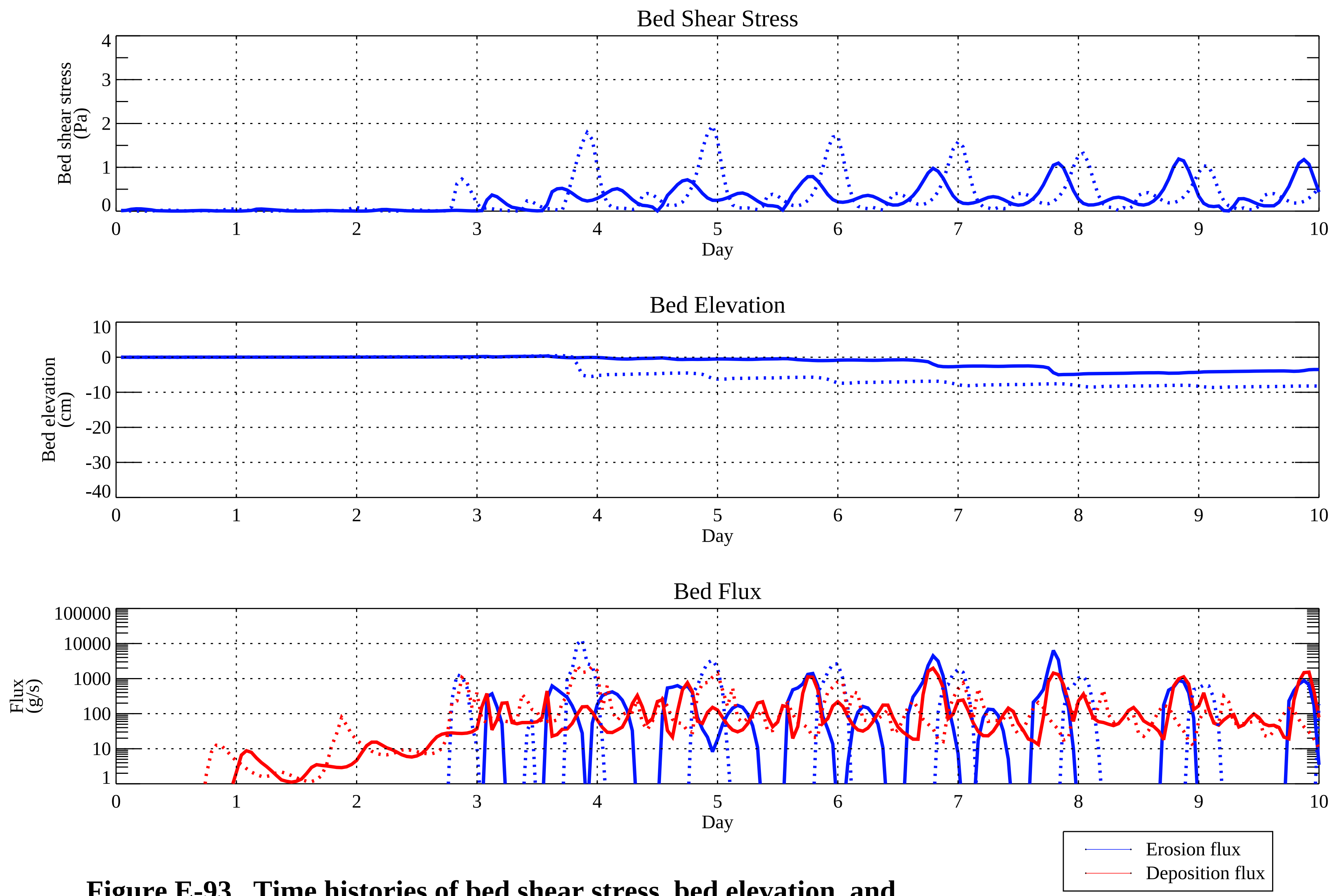

Figure E-93. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (particle shielding factor removed). Dotted line represents the base case results.

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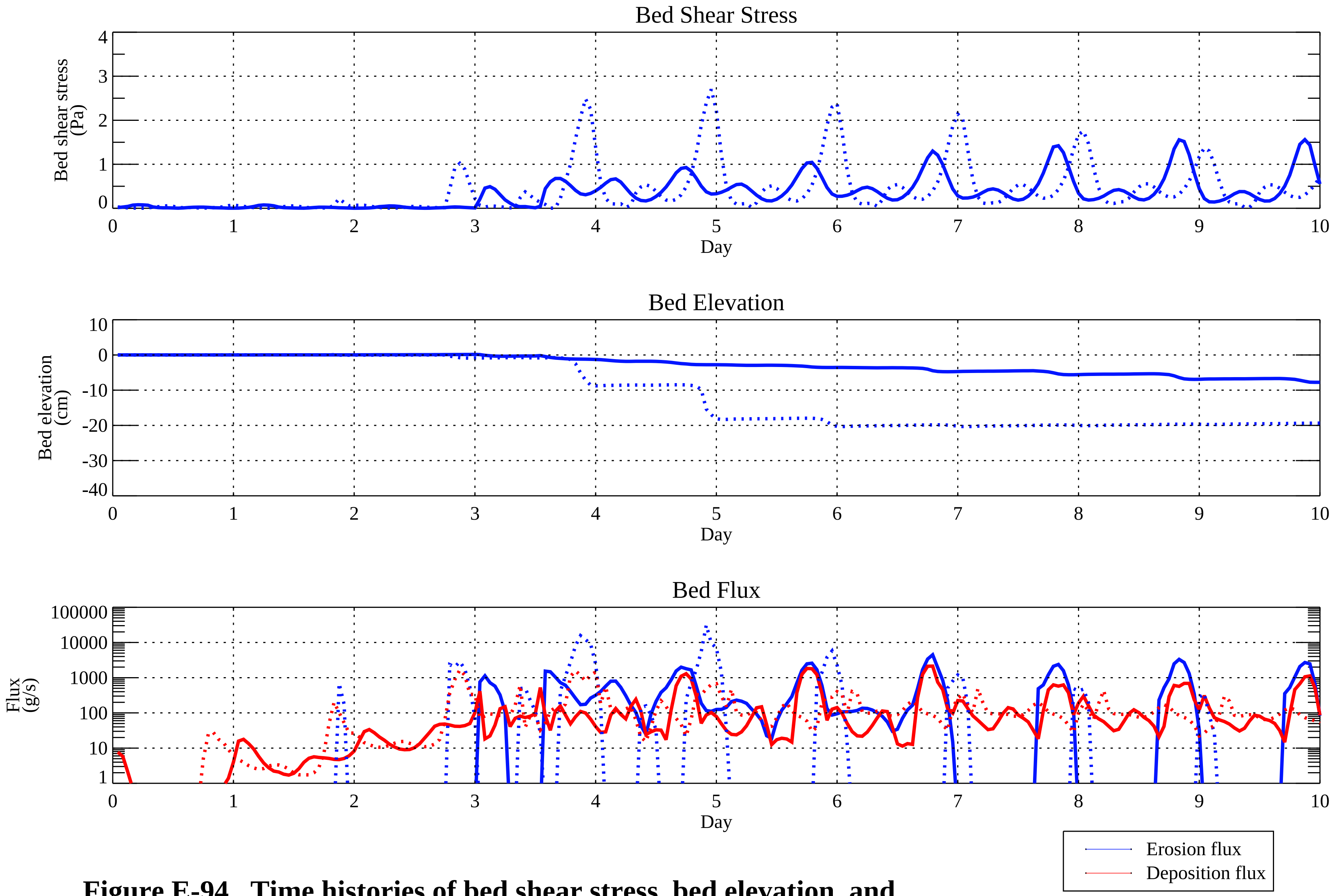

Figure E-94. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (particle shielding factor removed). Dotted line represents the base case results.

FC - D:\RETldw\Analysis\Model_output\6p_plot_sensitivity\plot_sensitivity_6p_080512_diag.pro
Mon Jun 16 10:52:22 2008

Figure E-95. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (particle shielding factor removed). Dotted line represents the base case results.

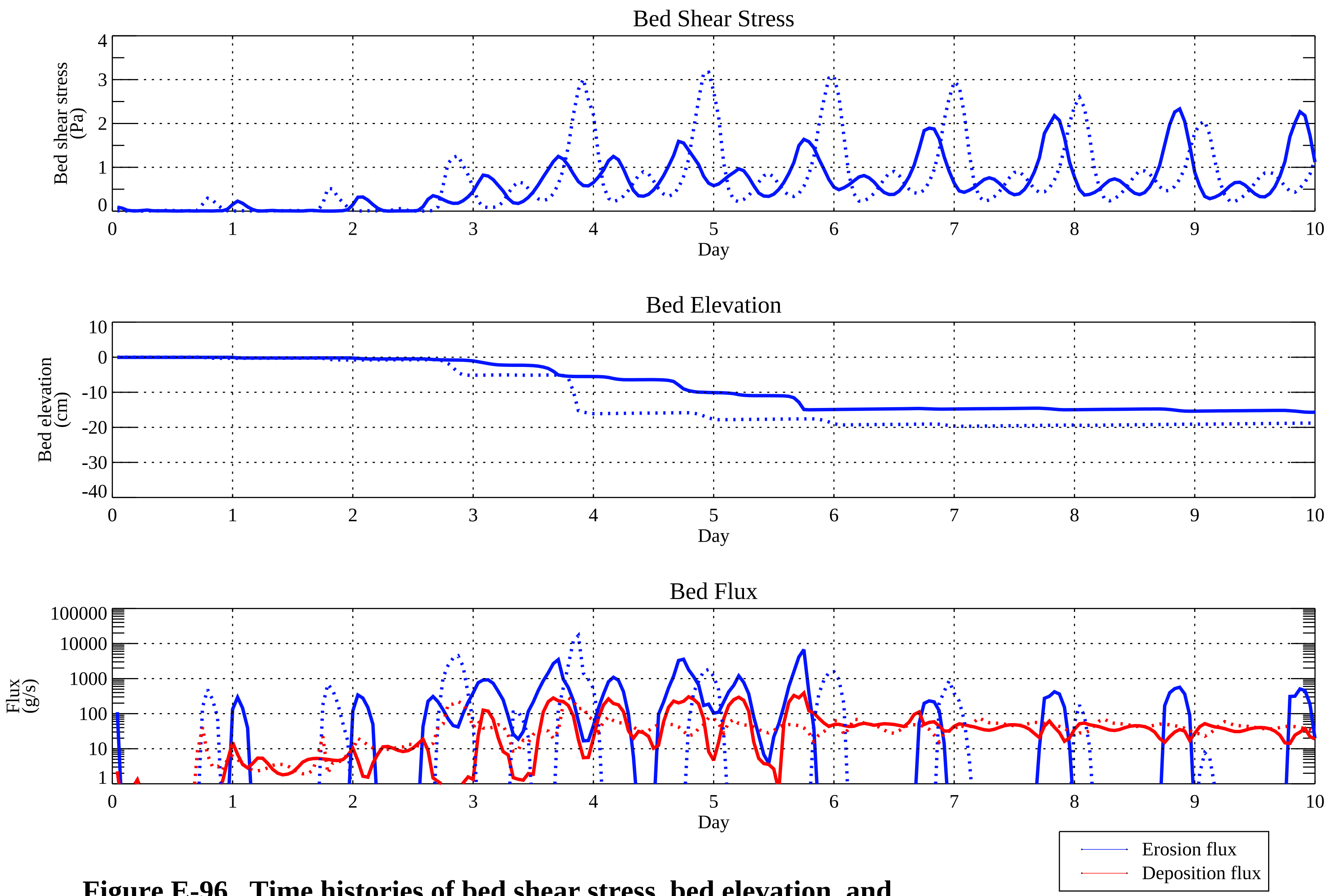

Figure E-96. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (particle shielding factor removed). Dotted line represents the base case results.

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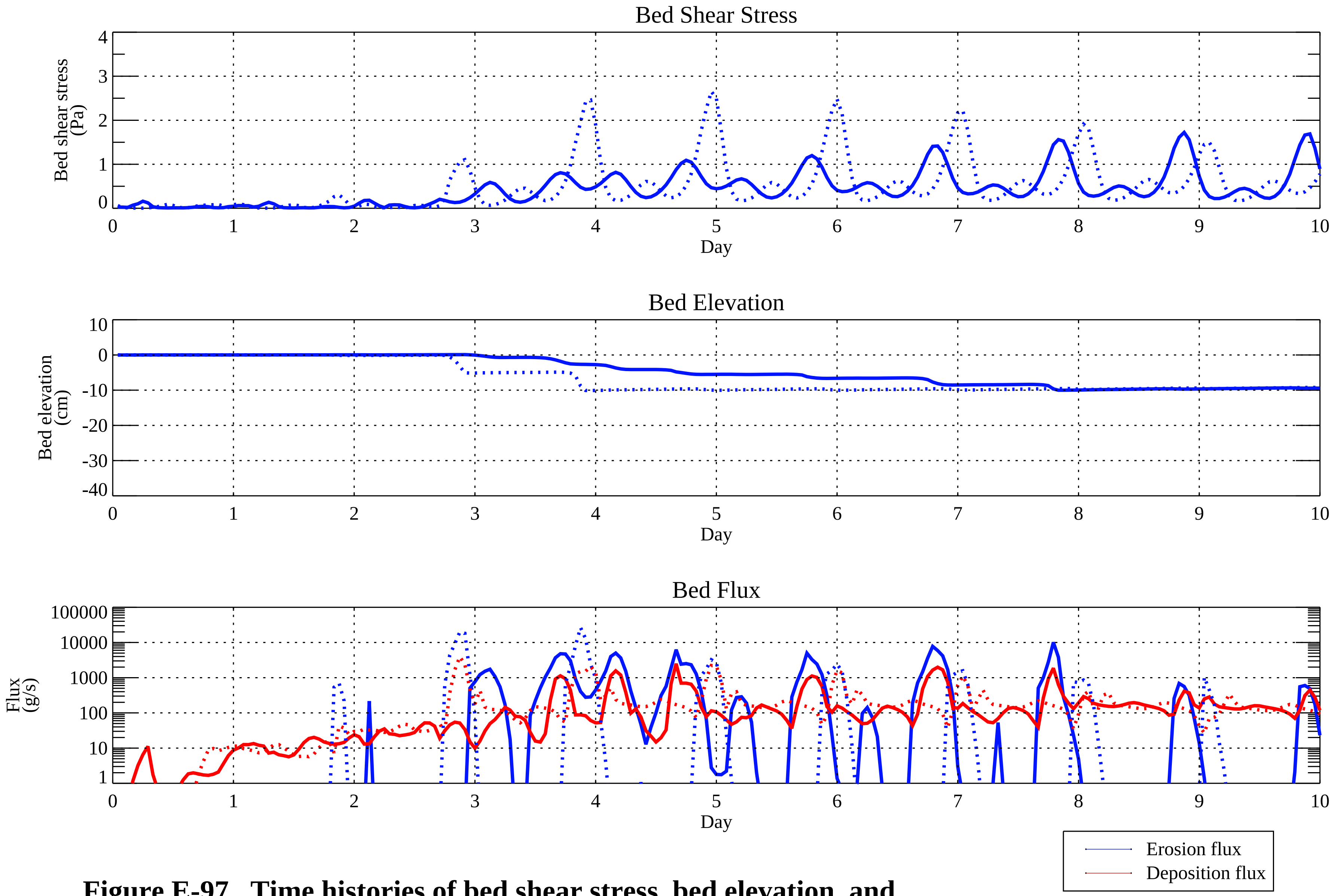

Figure E-97. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (particle shielding factor removed). Dotted line represents the base case results.

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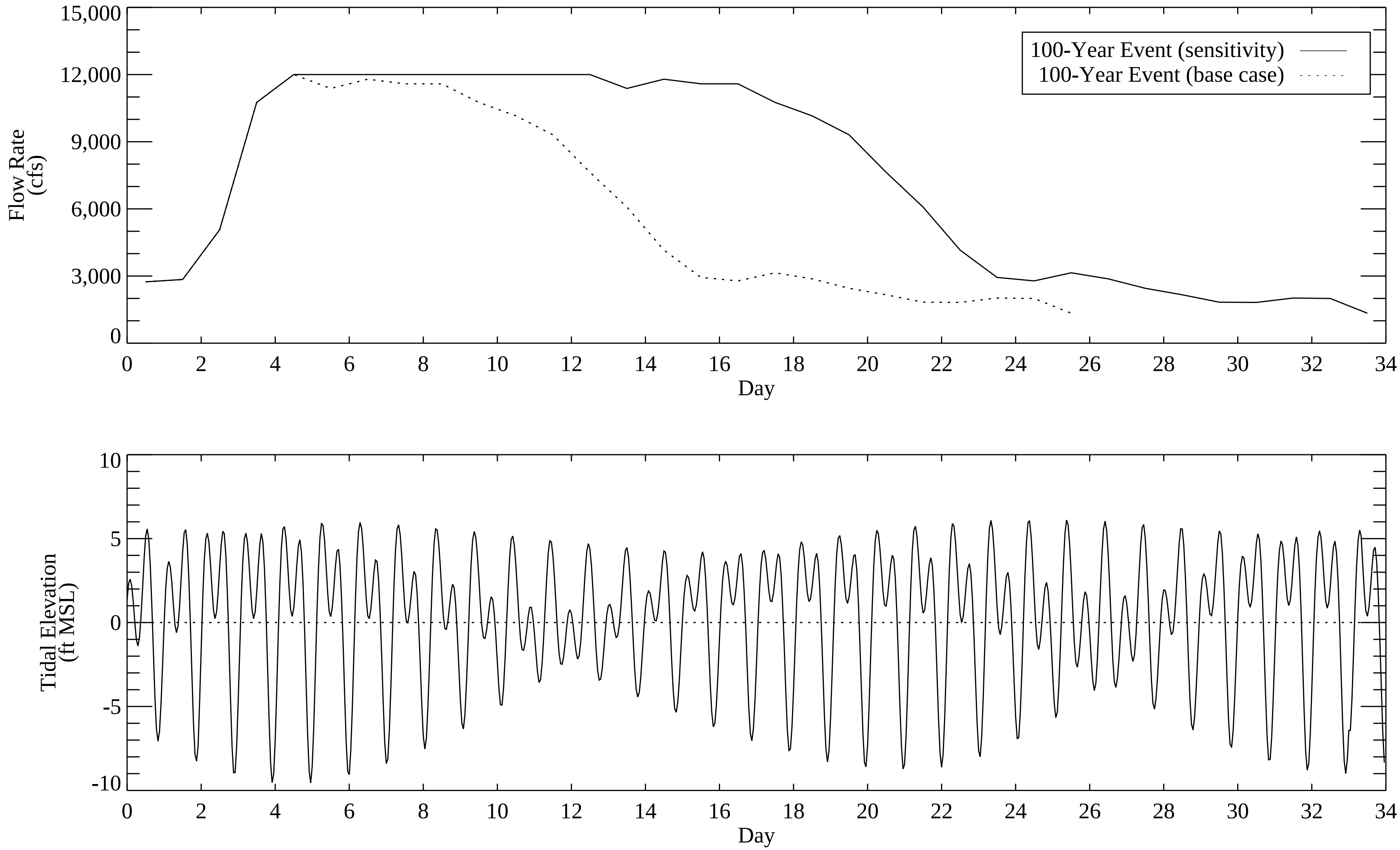

Figure E-98. Time variable river flow rate and tidal elevation used as boundary conditions for peak-flow-duration sensitivity simulation.

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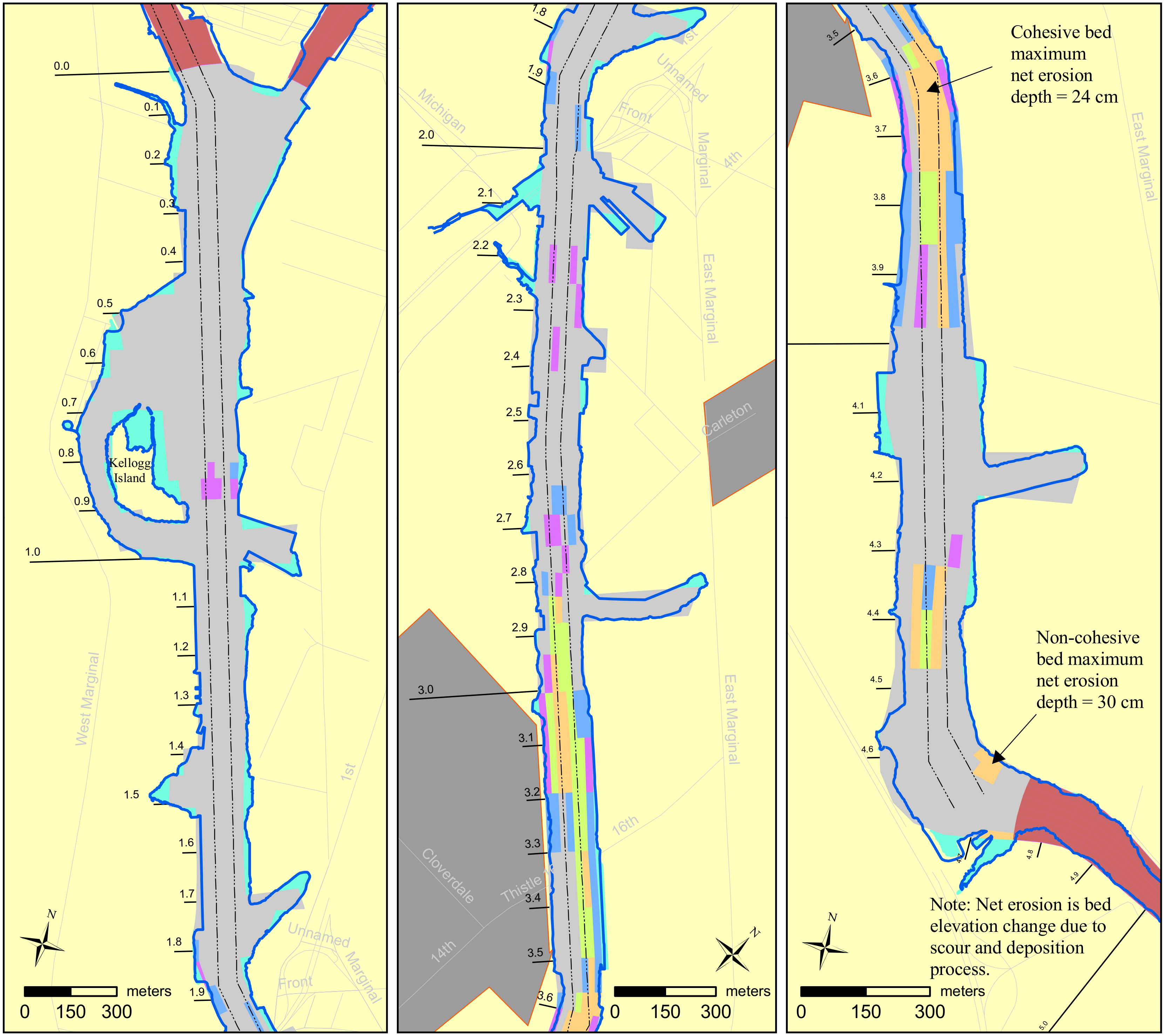
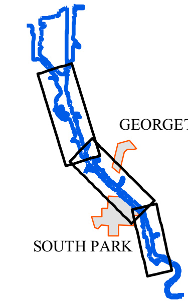


LOCATOR MAP



LEGEND

Net erosion depth (cm)

- > 10
- 6 - 10
- 2 - 6
- 0 - 2
- Net deposition
- Navigation channel
- Shore line
- River miles
- Roads
- Neighborhoods
- Outside model domain
- Hard bottom area

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Figure E-99. Spatial distribution of predicted net erosion depth during 100-year high-flow event: peak flow rate lasts 8 days.

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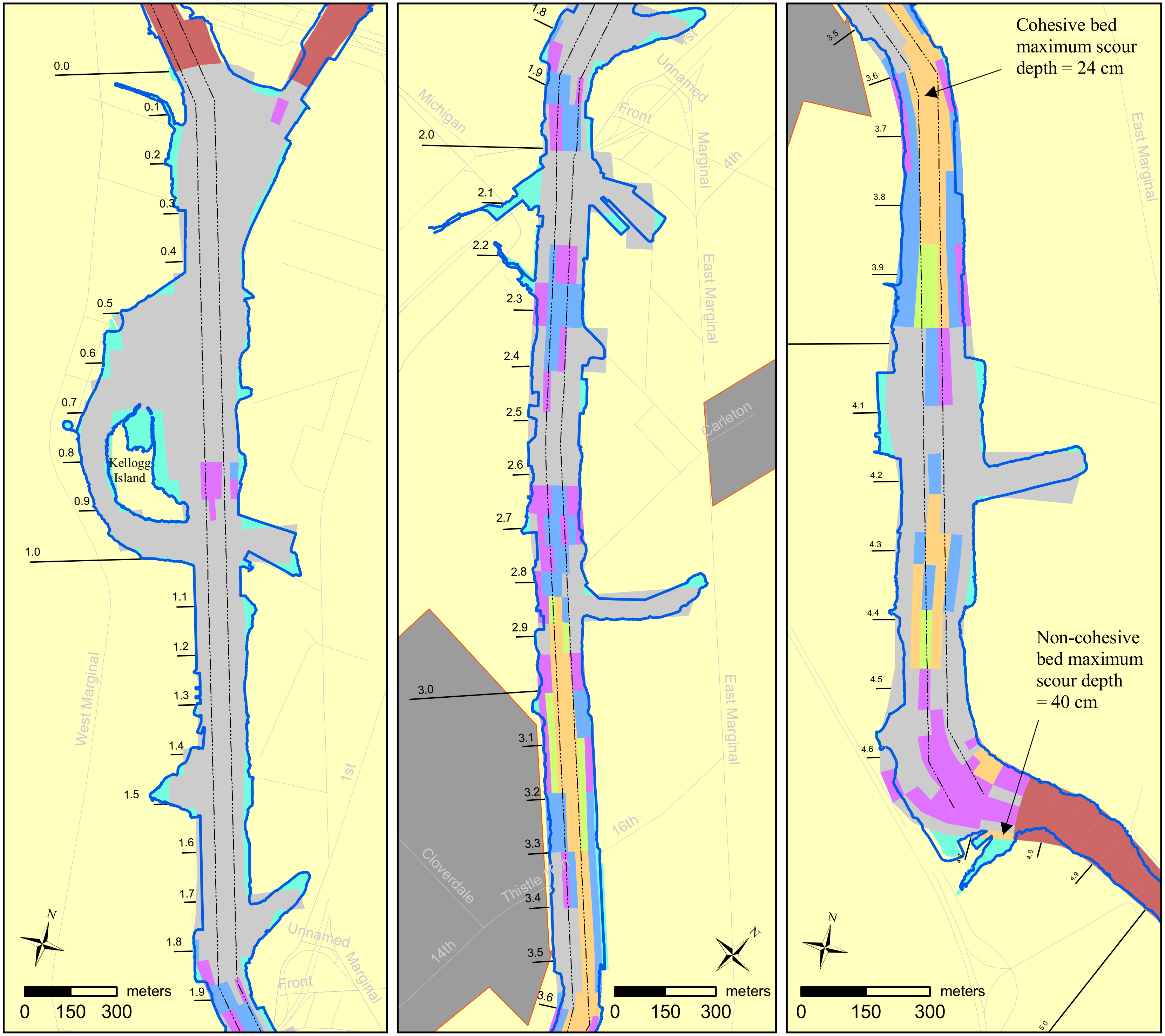

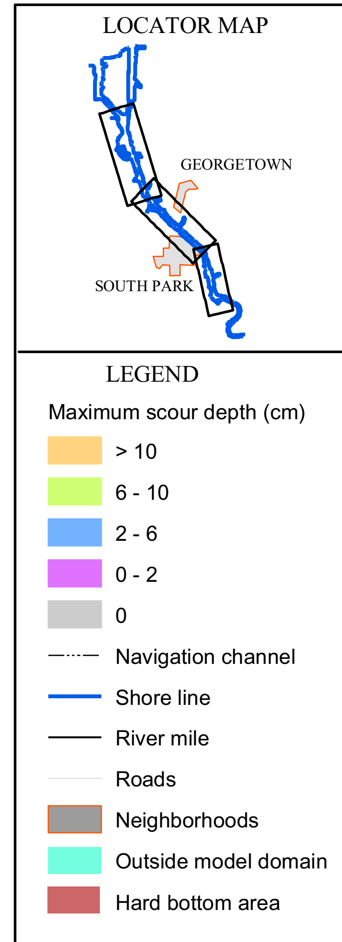

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure E-100. Spatial distribution of predicted maximum bed scour depth during 100-year high-flow event: peak flow rate lasts 8 days.

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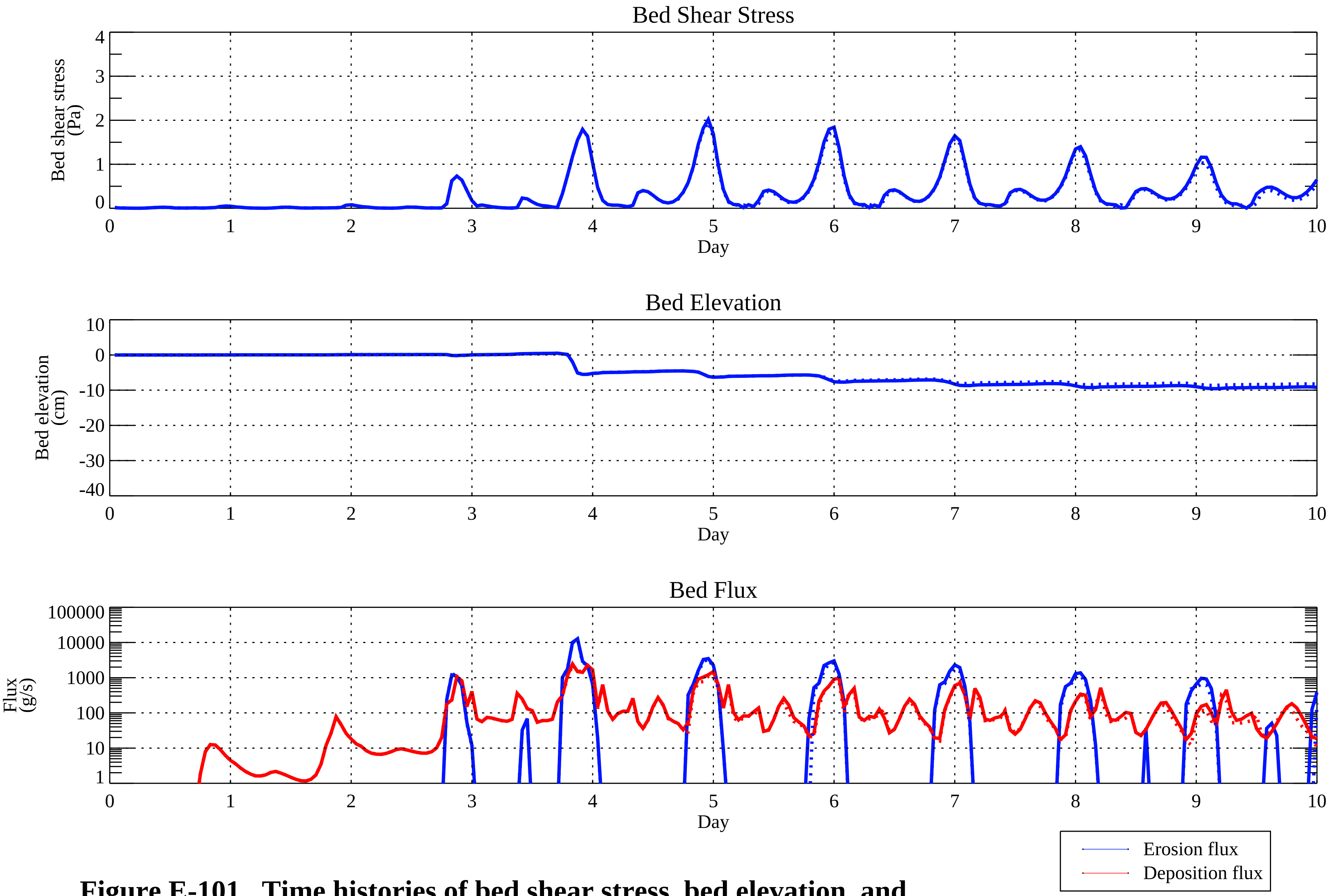

Figure E-101. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.85 (peak flow duration). Dotted line represents the base case results.

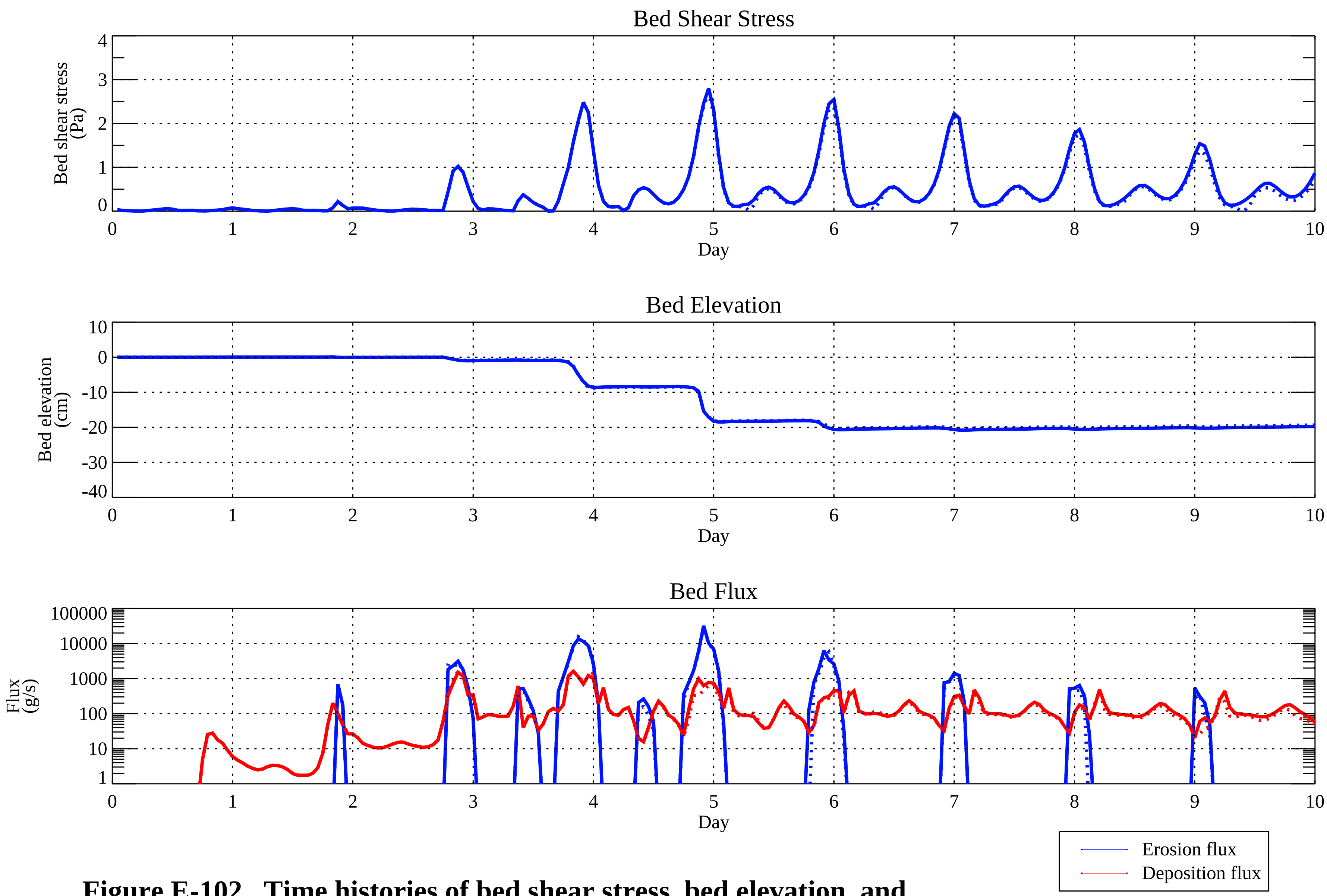

Figure E-102. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 2.96 (peak flow duration). Dotted line represents the base case results.

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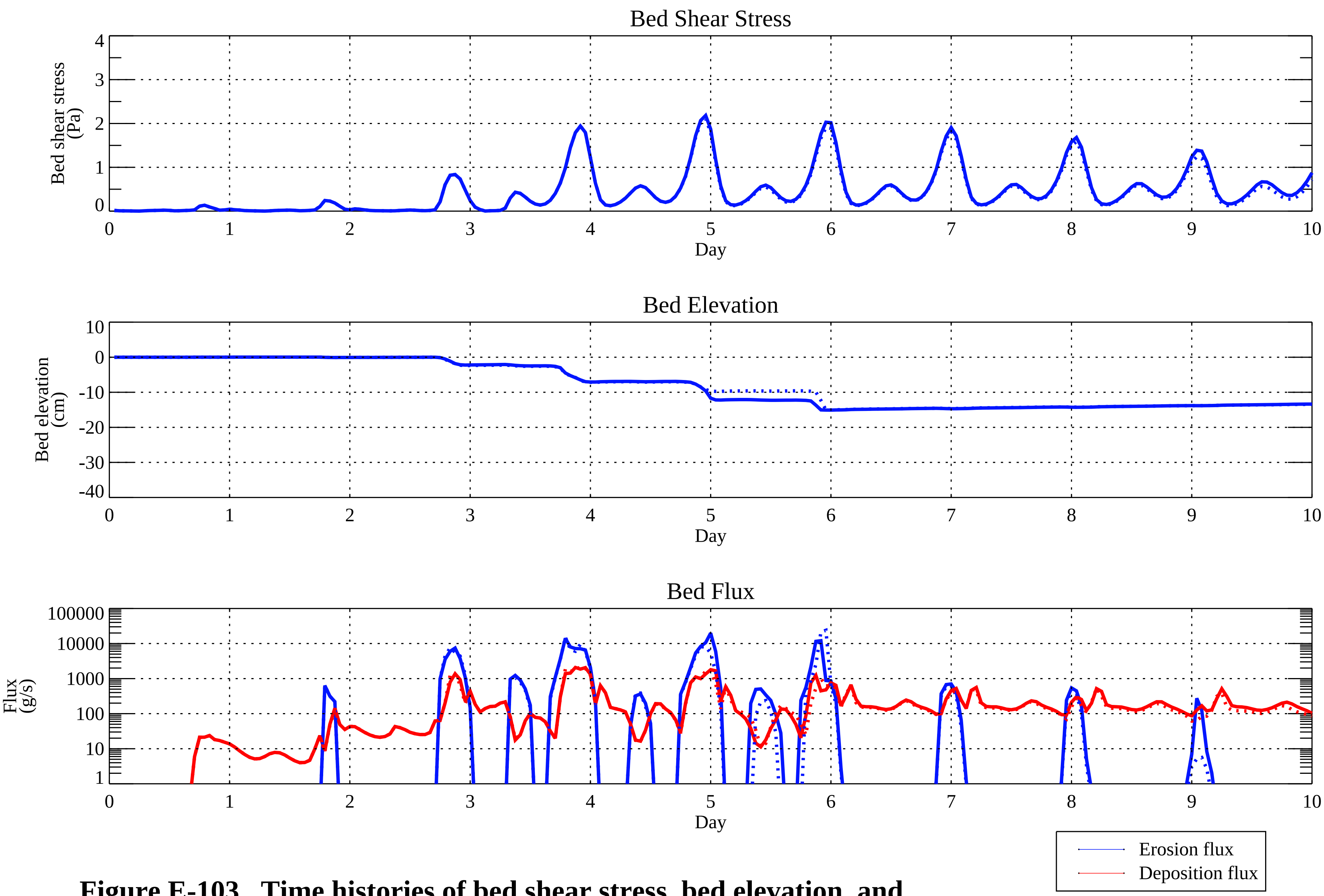

Figure E-103. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.10 (peak flow duration). Dotted line represents the base case results.

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Mon Jun 16 10:26:57 2008

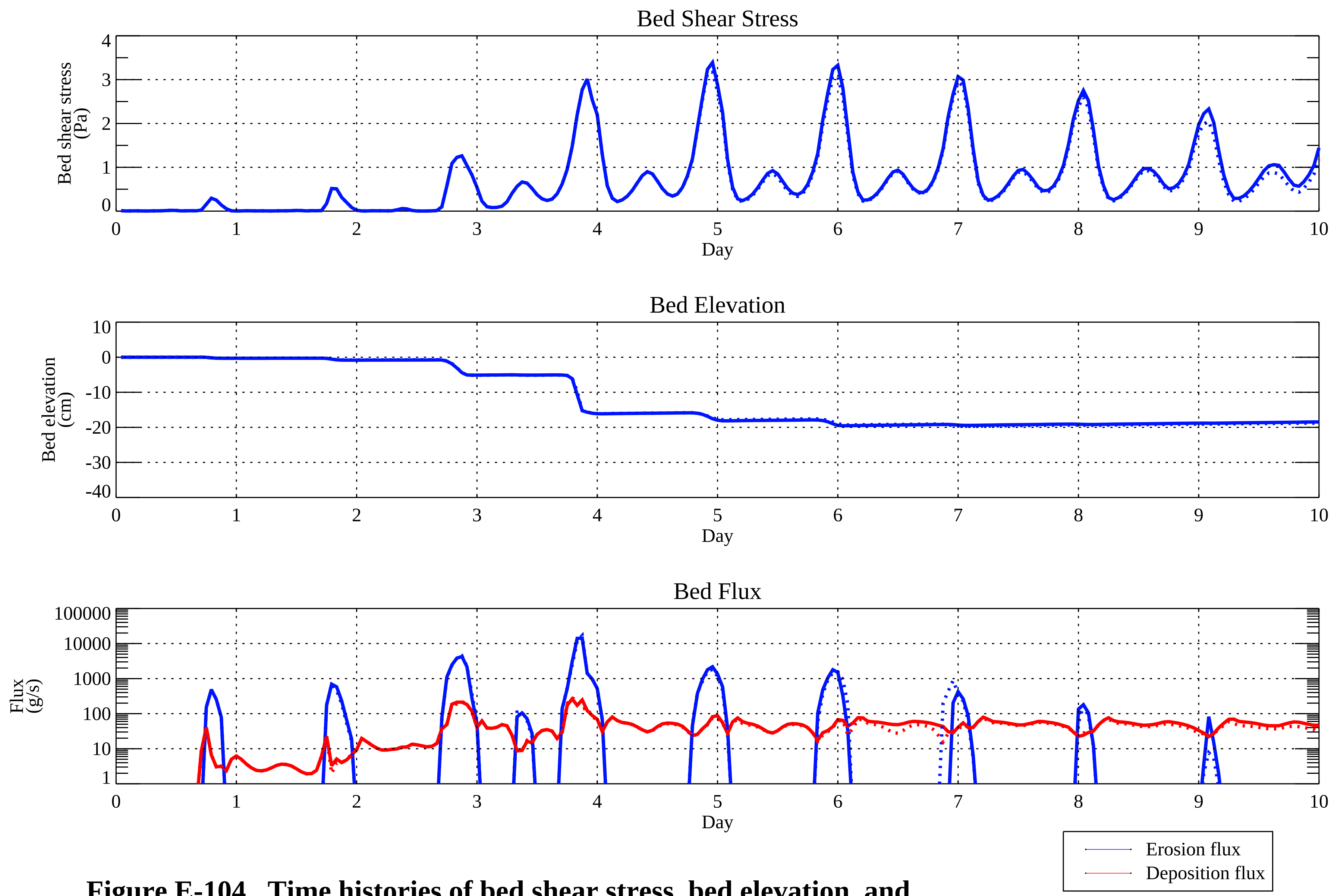

Figure E-104. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.60 (peak flow duration). Dotted line represents the base case results.

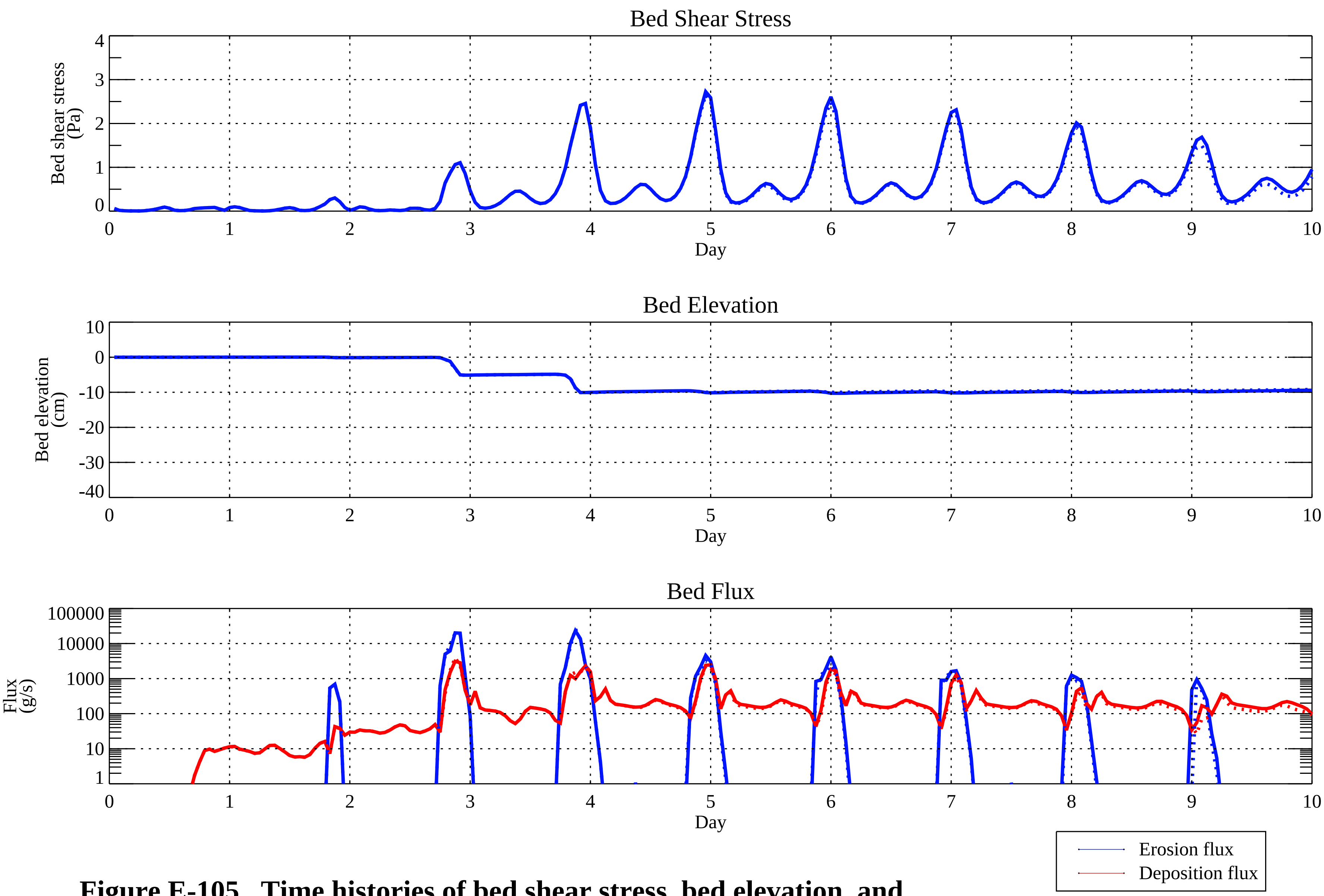

Figure E-105. Time histories of bed shear stress, bed elevation, and erosion/deposition fluxes at a specific grid cell during 100-year high-flow event: RM 3.80 (peak flow duration). Dotted line represents the base case results.

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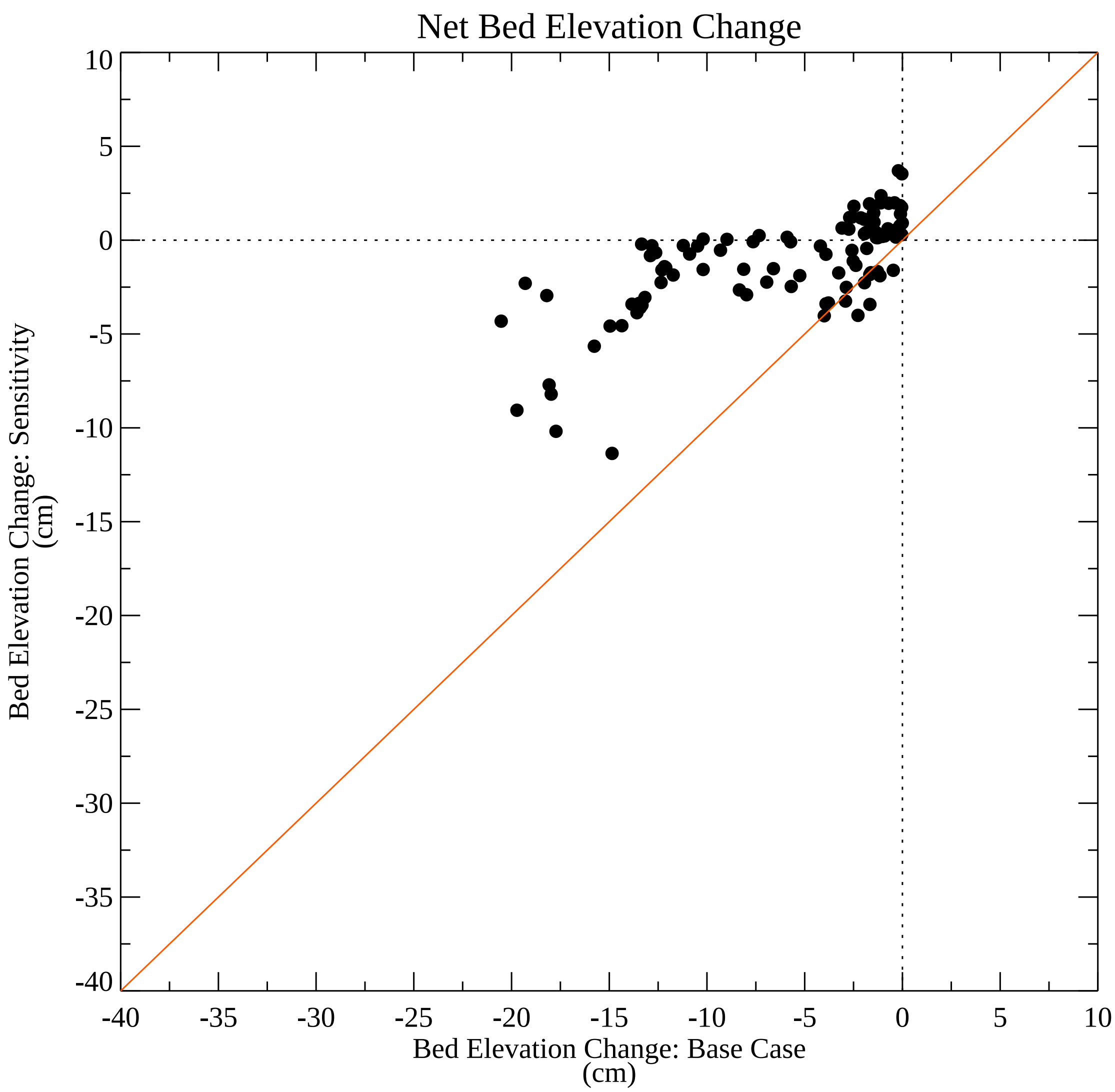

Figure E-106. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: lower-bound erosion parameters.

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Fri Apr 18 08:52:15 2008

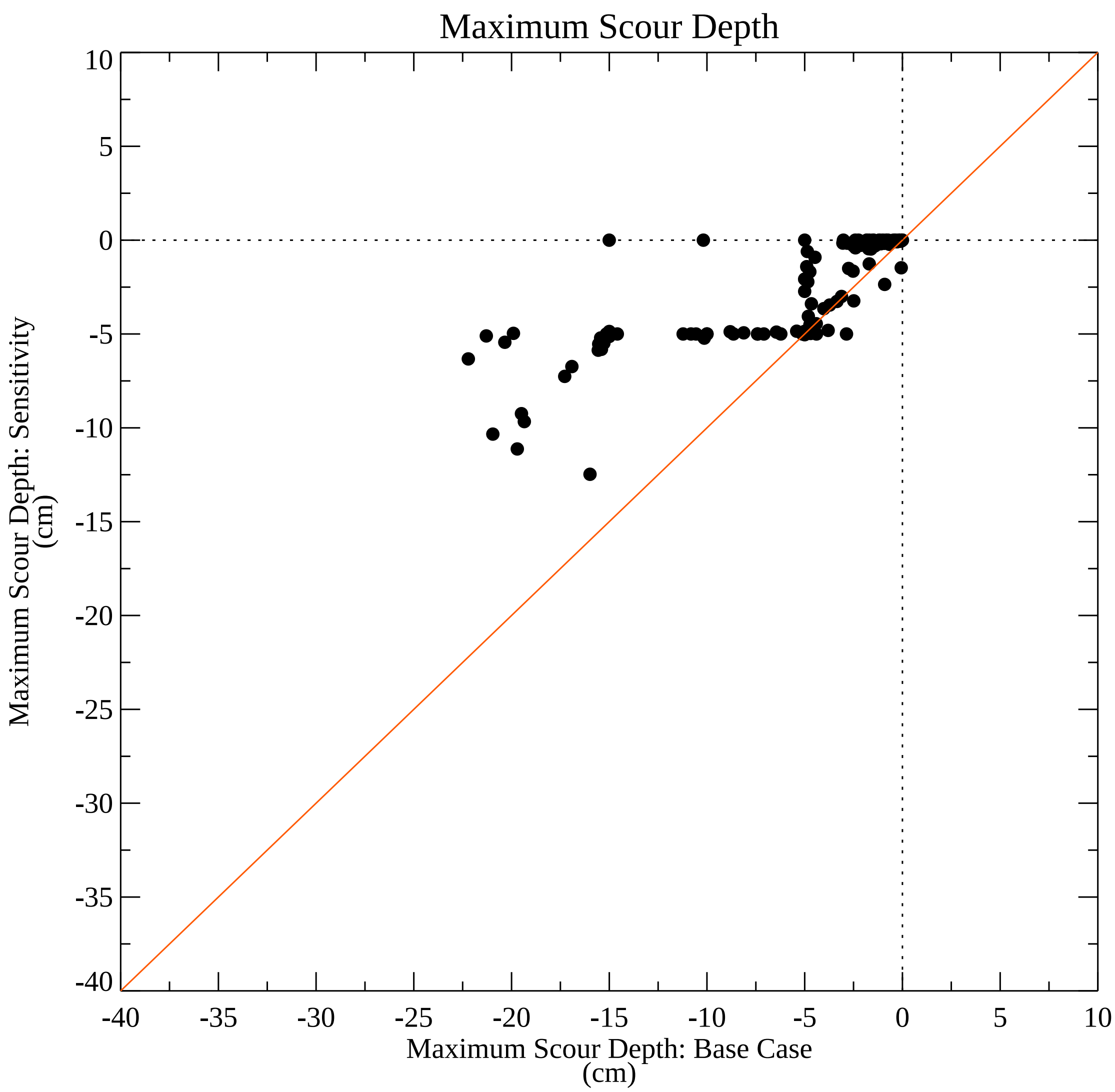

Figure E-107. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: lower-bound erosion parameters.

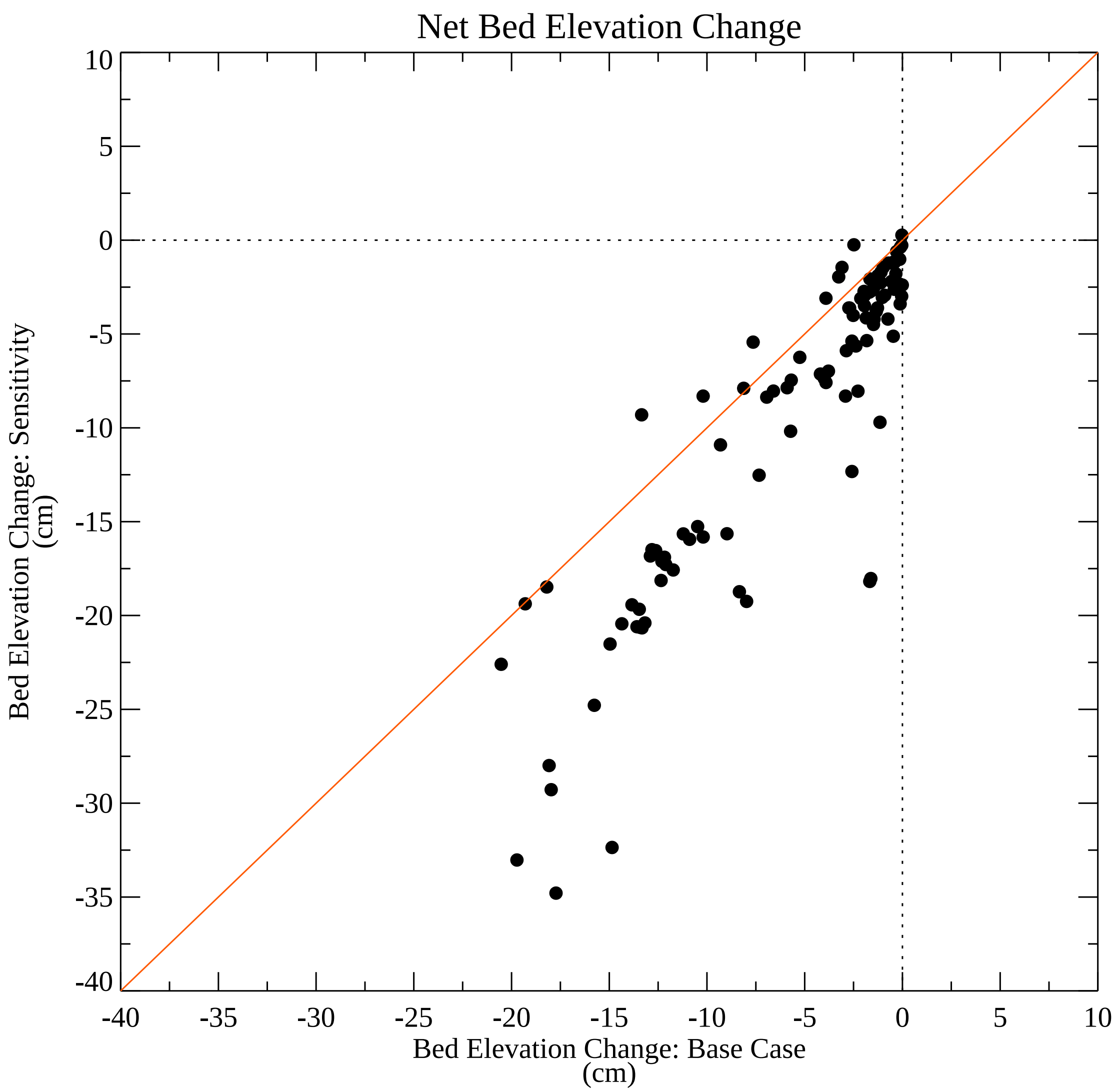

Figure E-108. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: upper-bound erosion parameters.

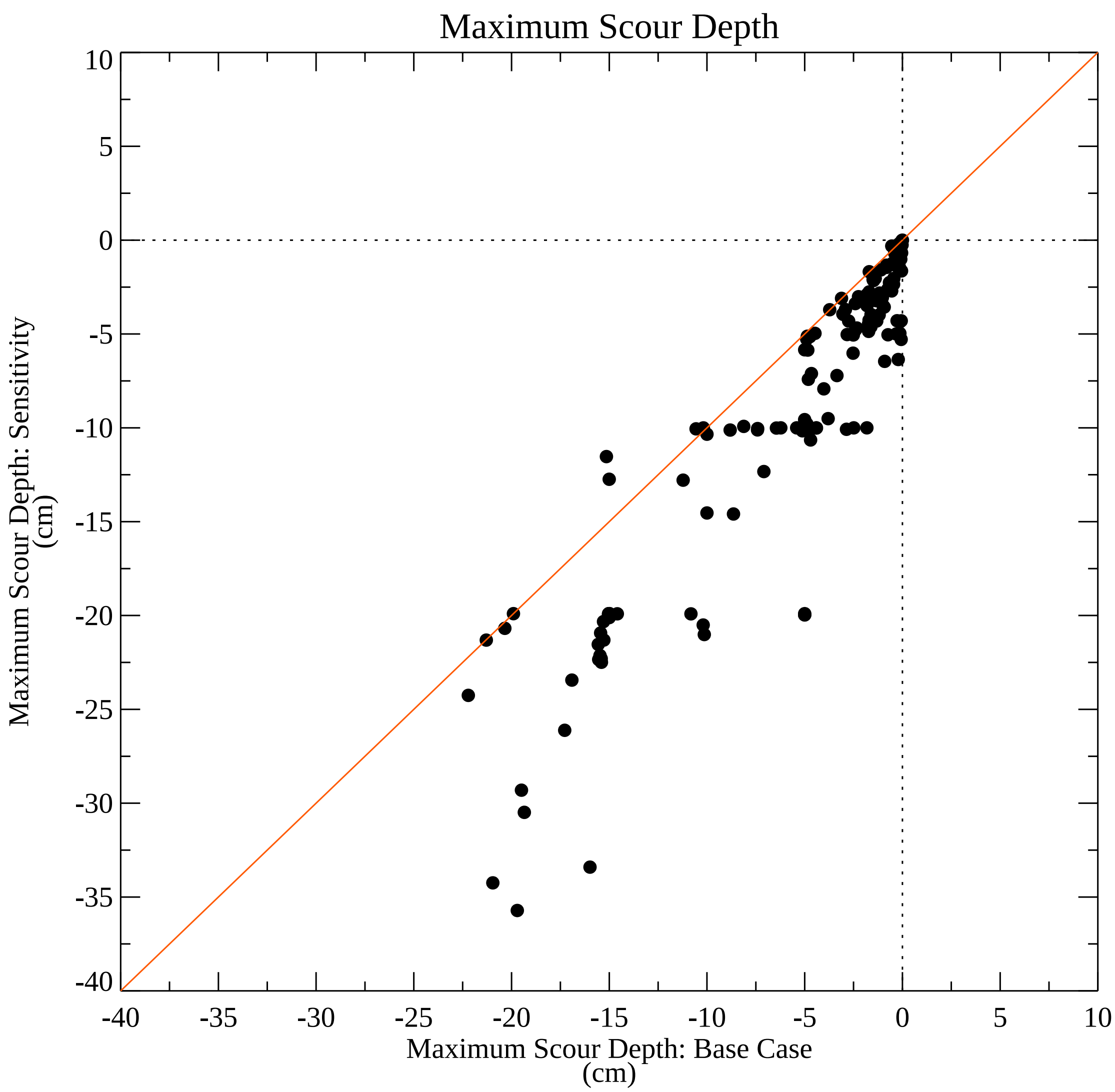

Figure E-109. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: upper-bound erosion parameters.

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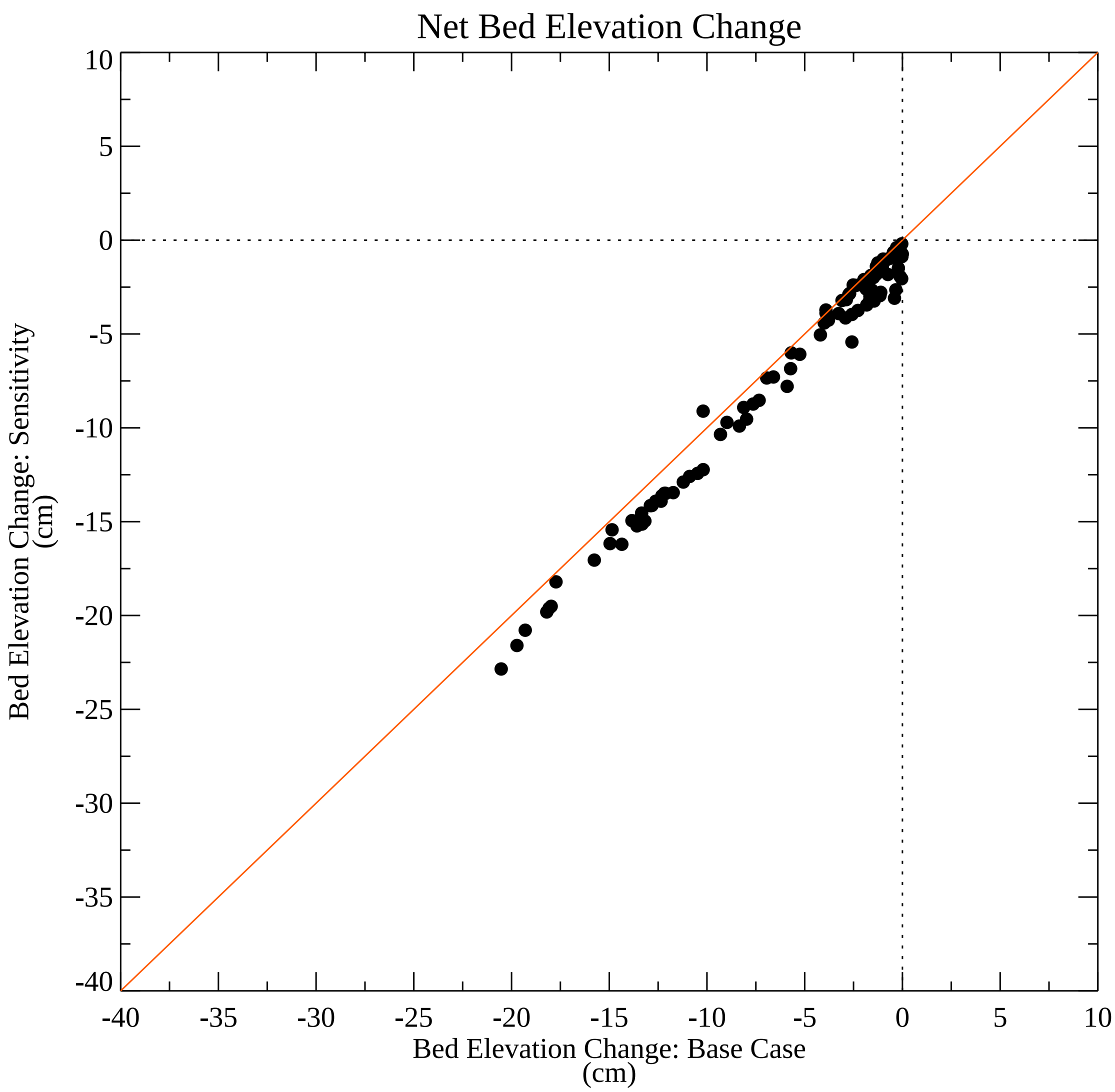

Figure E-110. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: lower-bound upstream sediment load.

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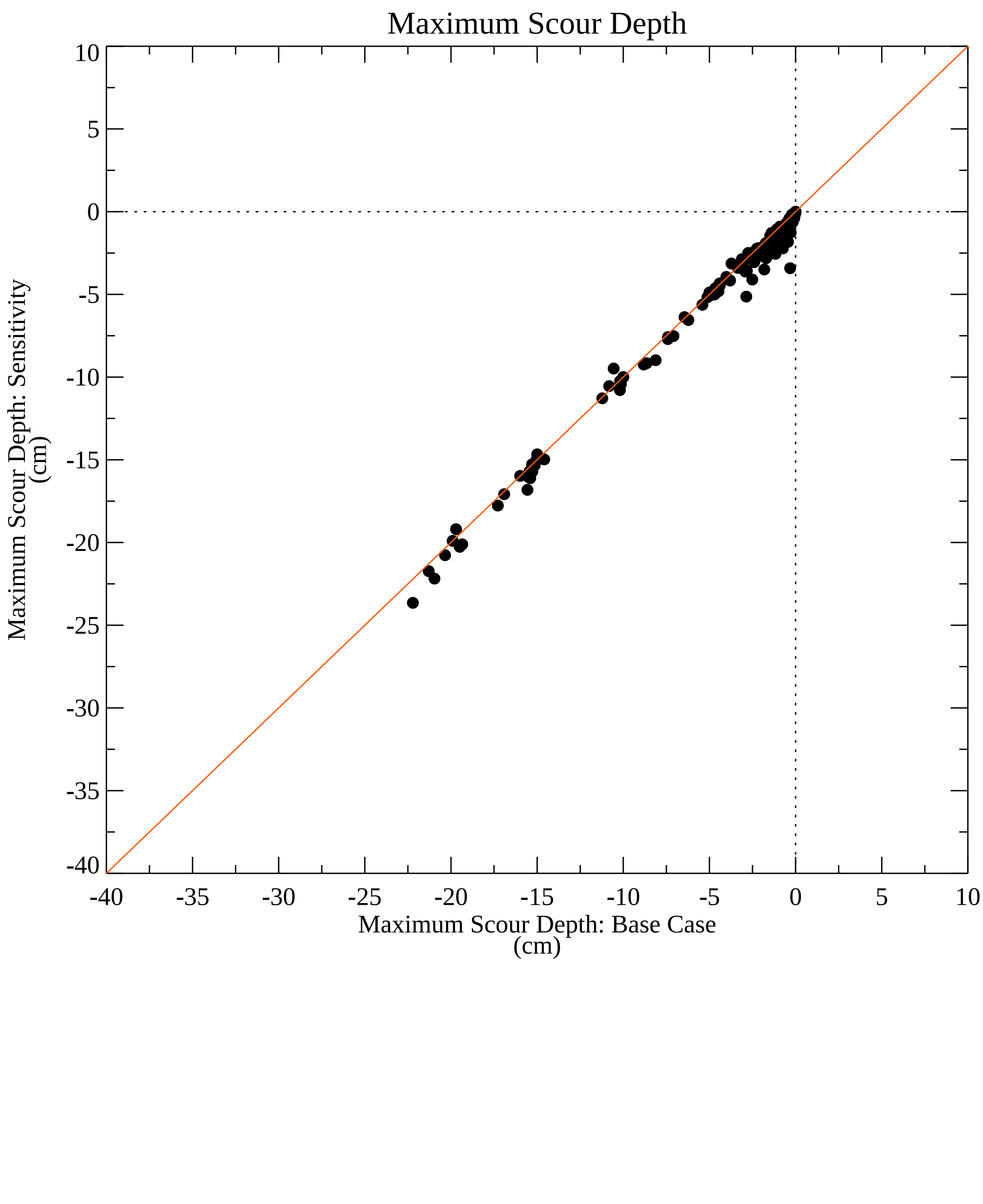

Figure E-111. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: lower-bound upstream sediment load.

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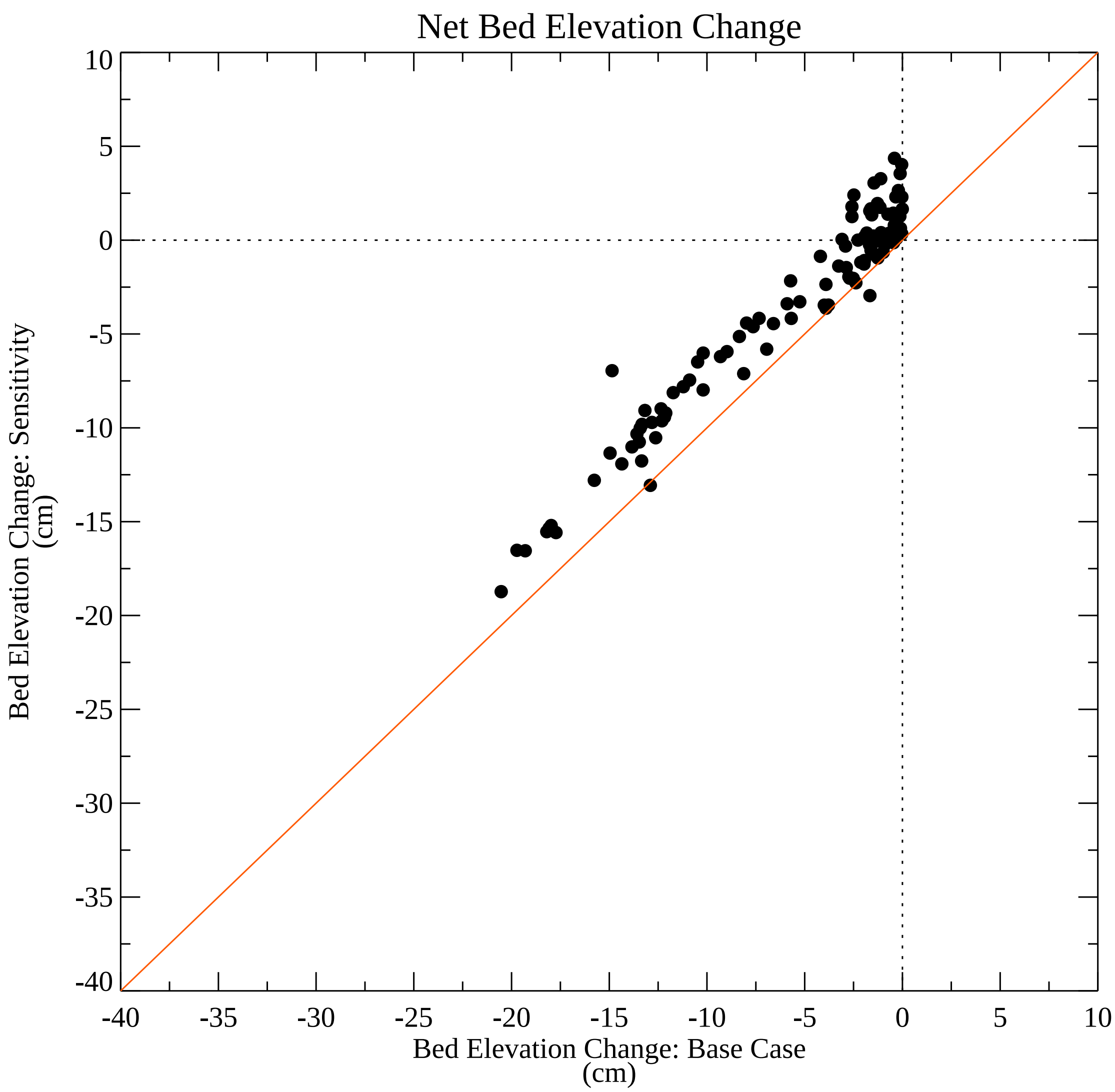

Figure E-112. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: upper-bound upstream sediment load.

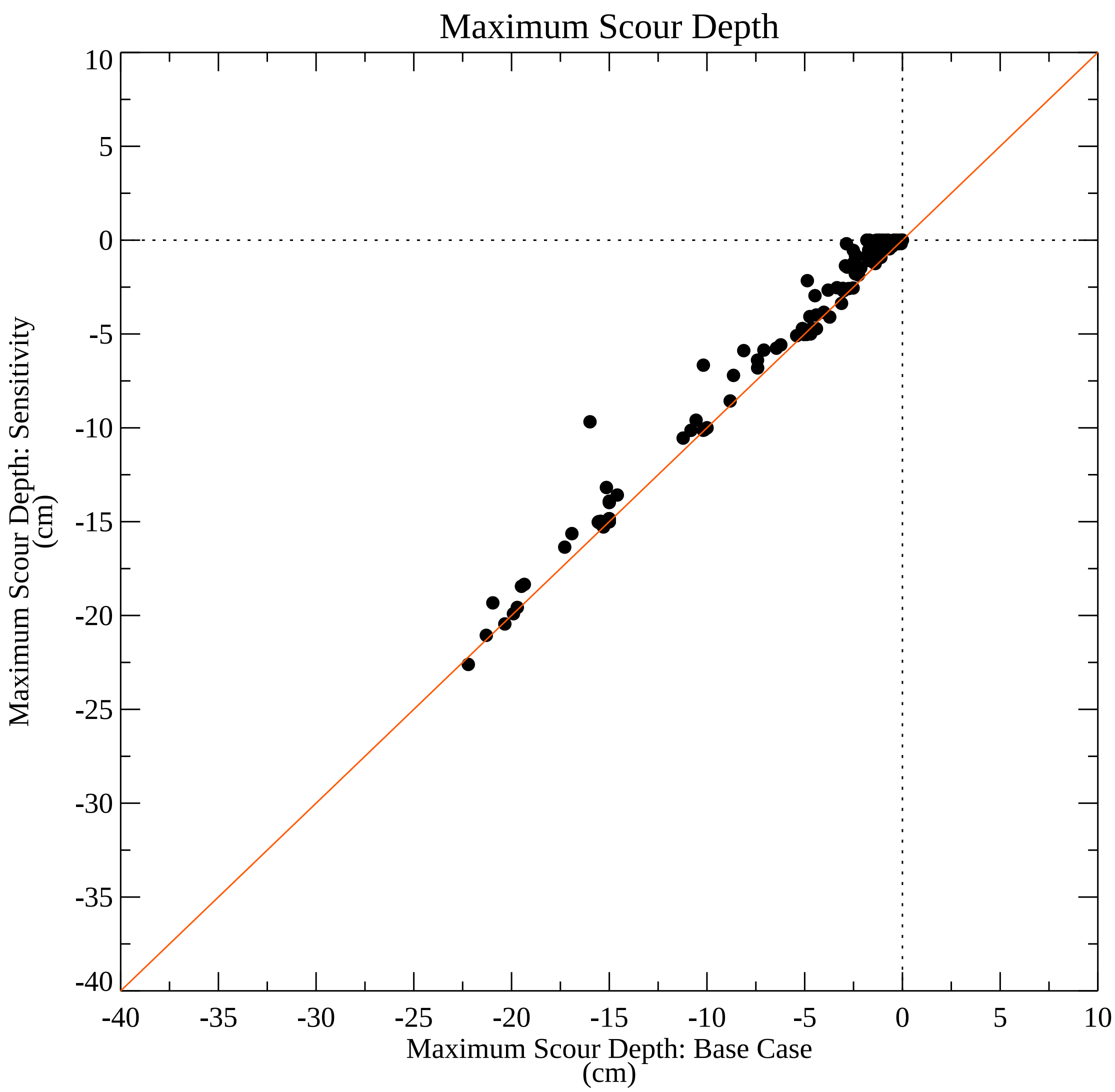

Figure E-113. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: upper-bound upstream sediment load.

FC/AC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080418.pro
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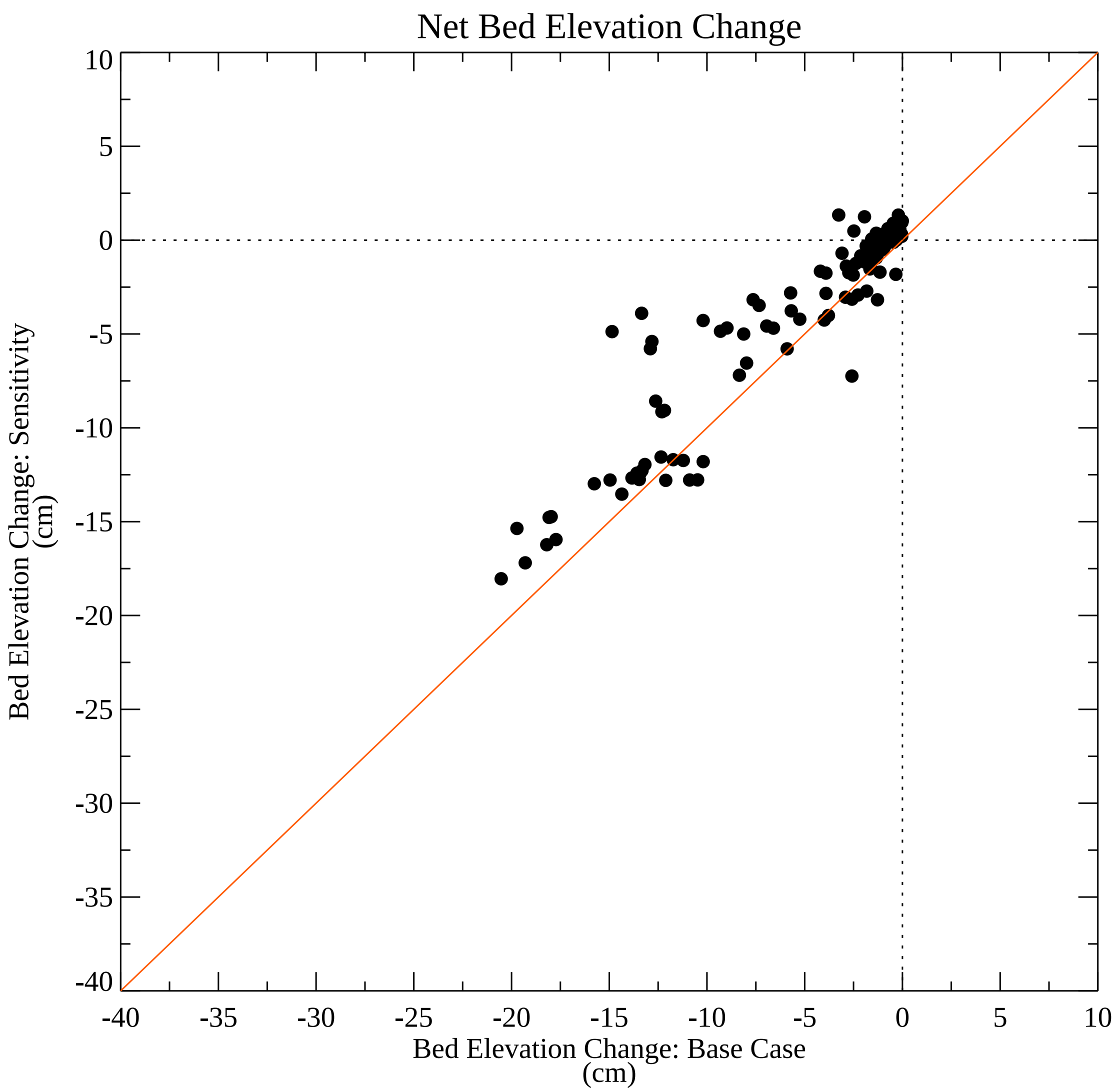

Figure E-114. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: lower-bound effective bed roughness.

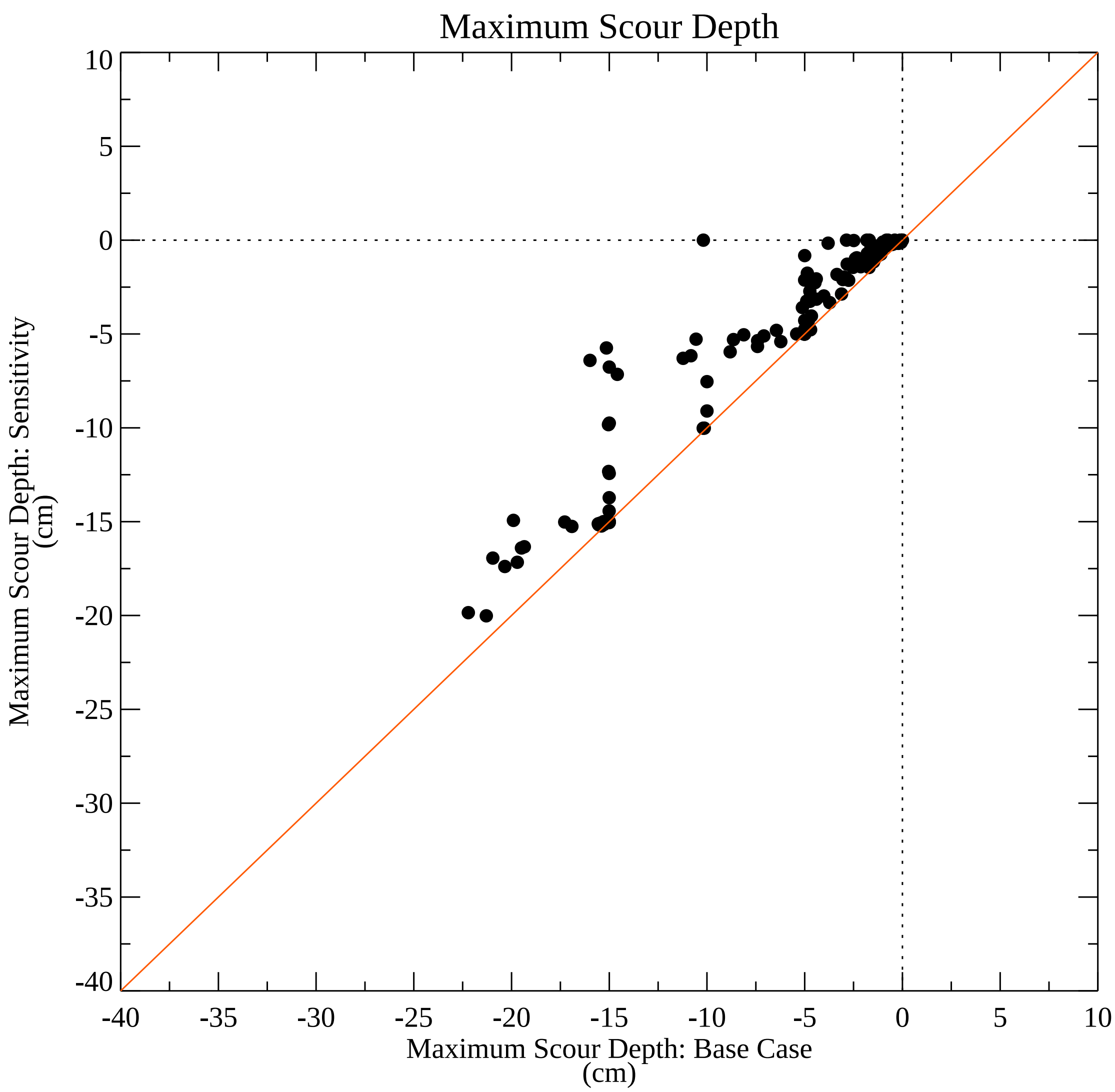

Figure E-115. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: lower-bound effective bed roughness.

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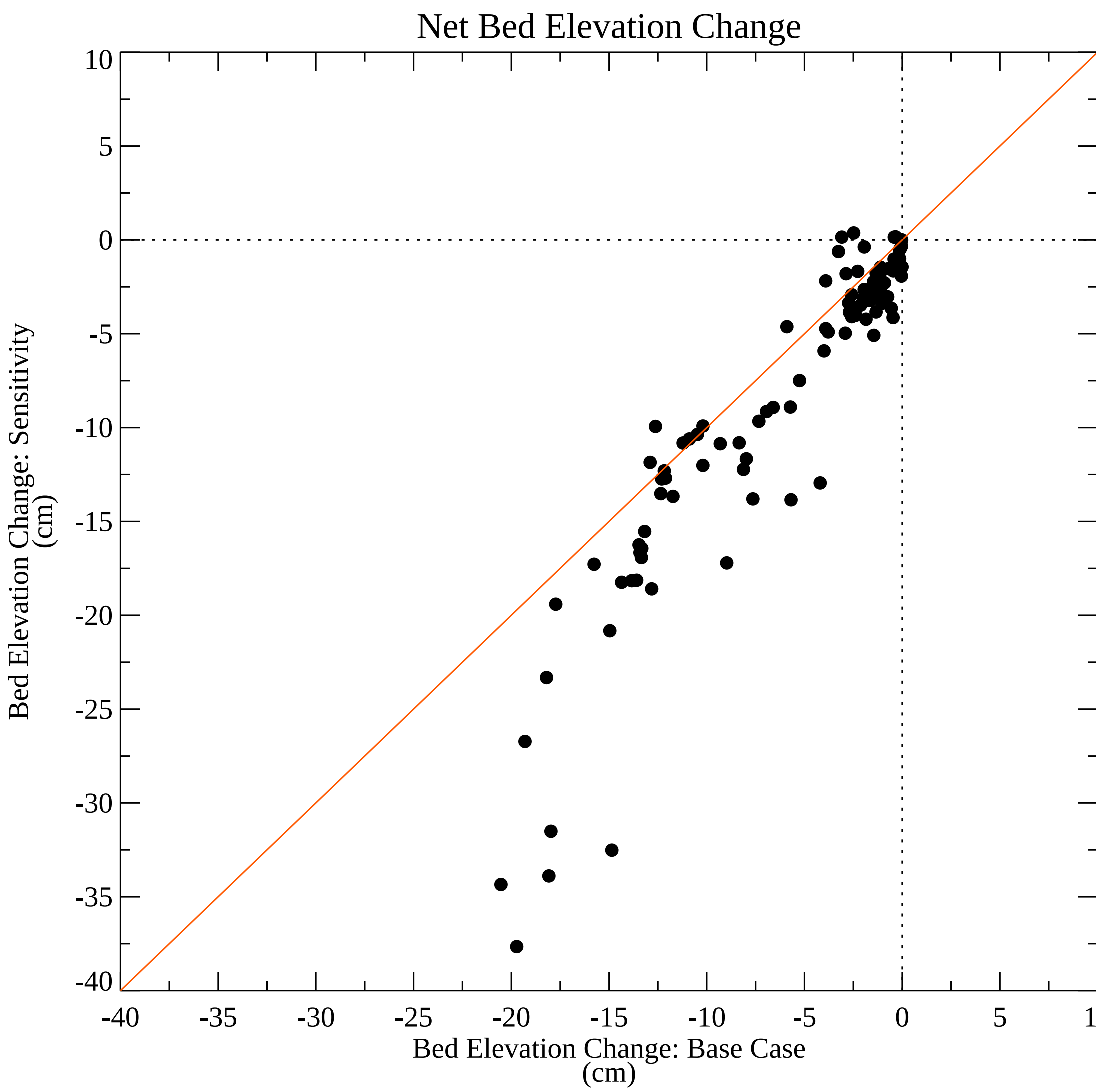

Figure E-116. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: upper-bound effective bed roughness.

FC/AC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080418.pro
Fri Apr 18 09:02:35 2008

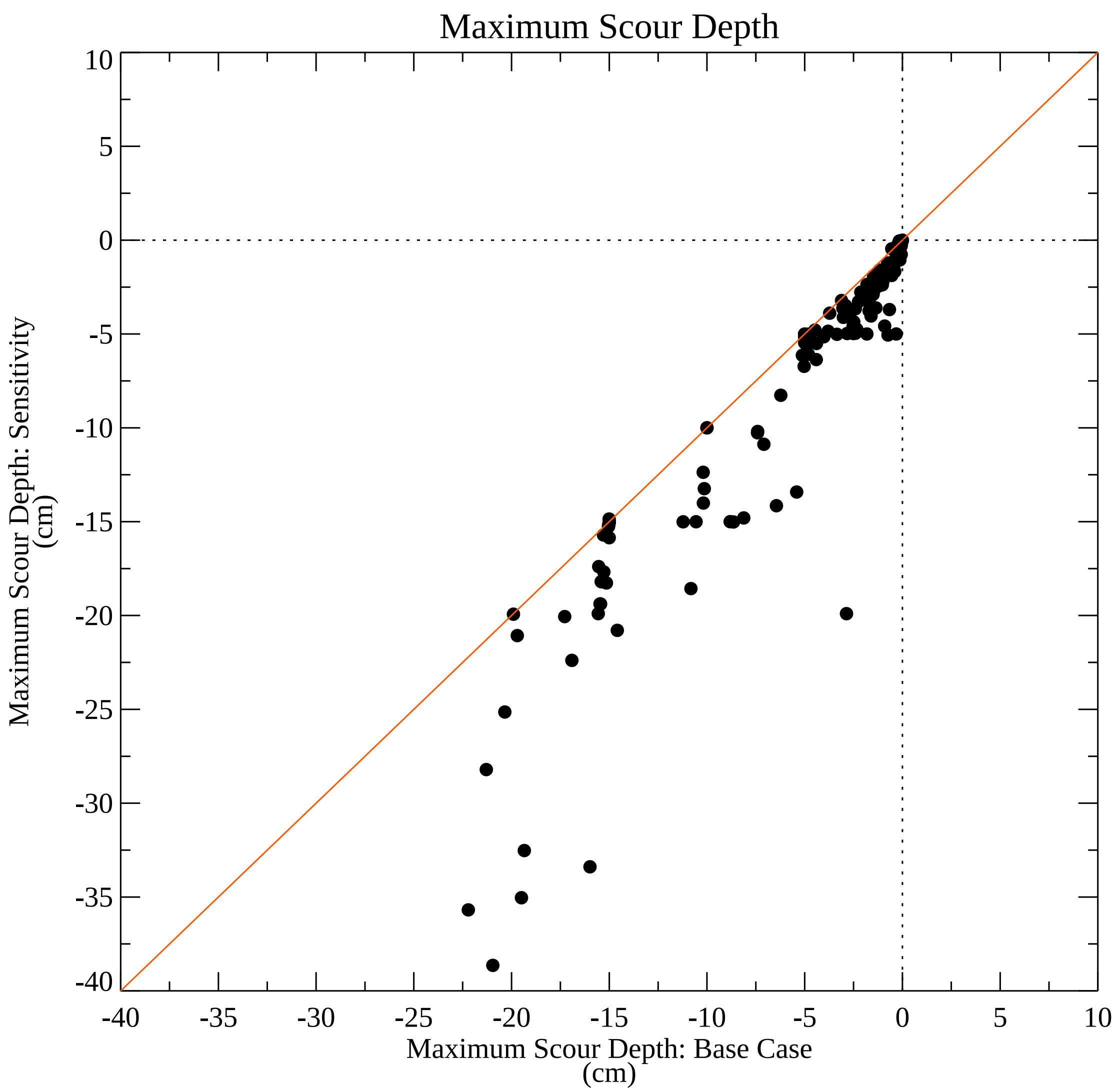

Figure E-117. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: upper-bound effective bed roughness.

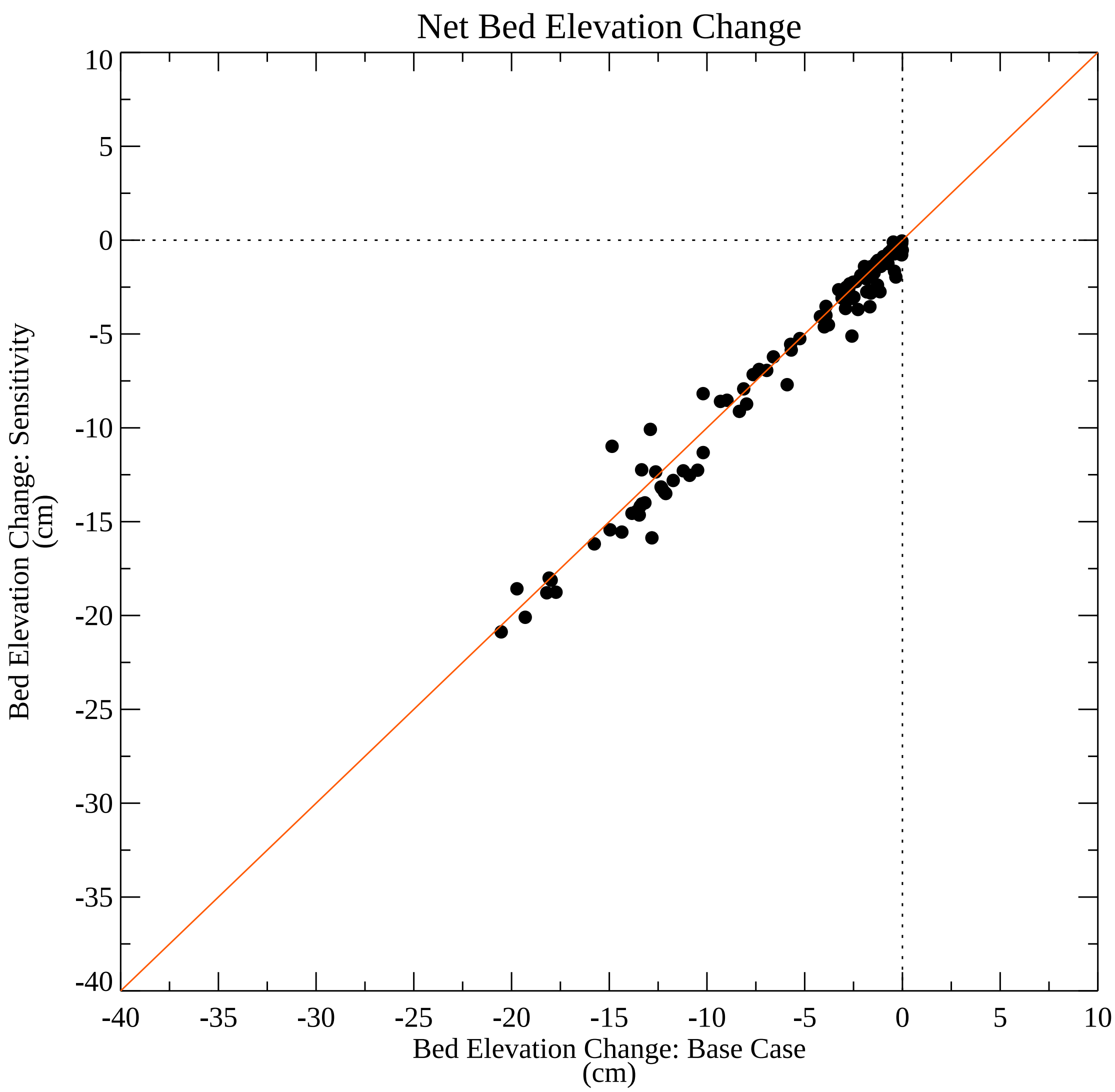

Figure E-118. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: lower-bound settling speed.

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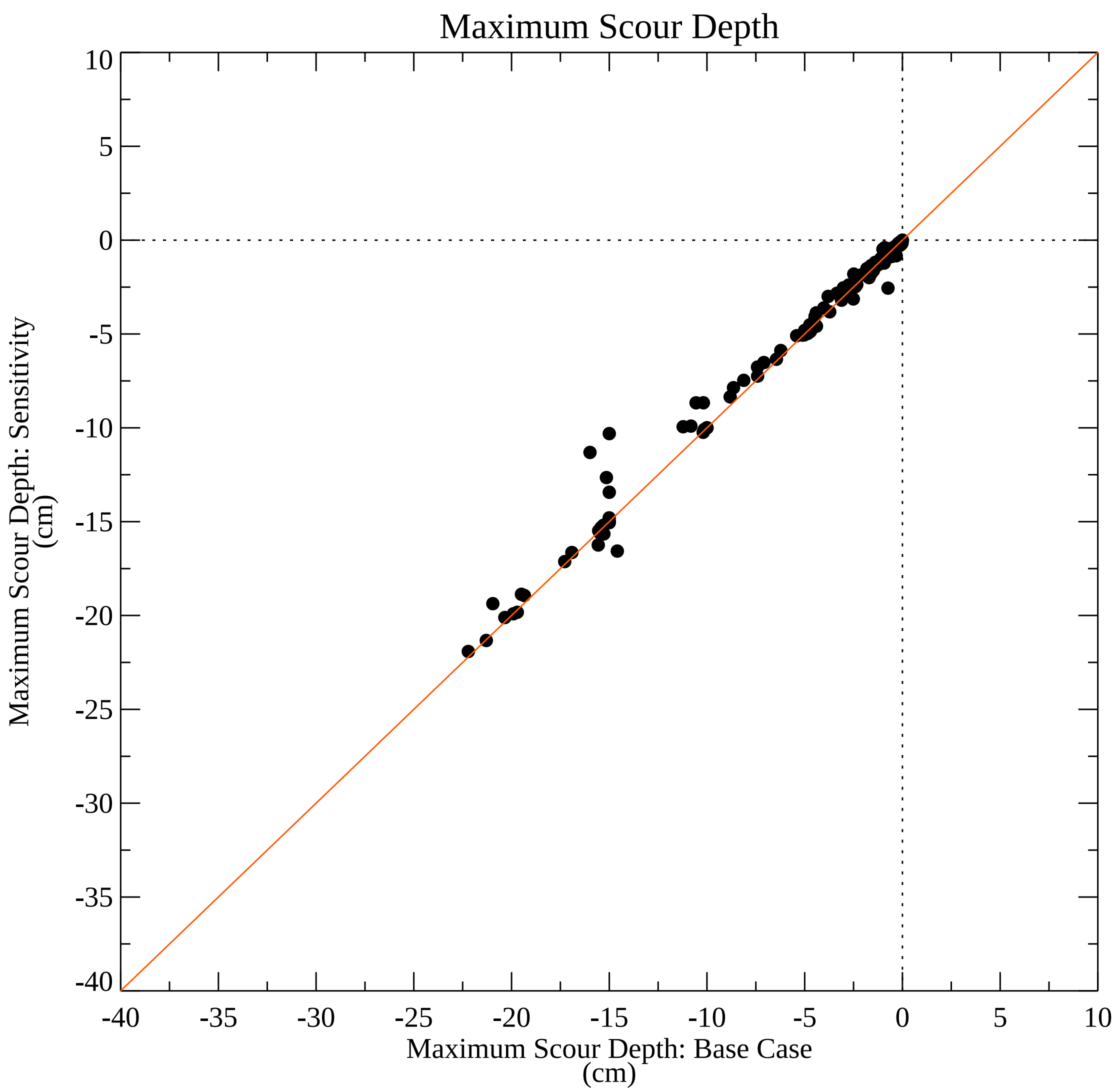

Figure E-119. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: lower-bound settling speed.

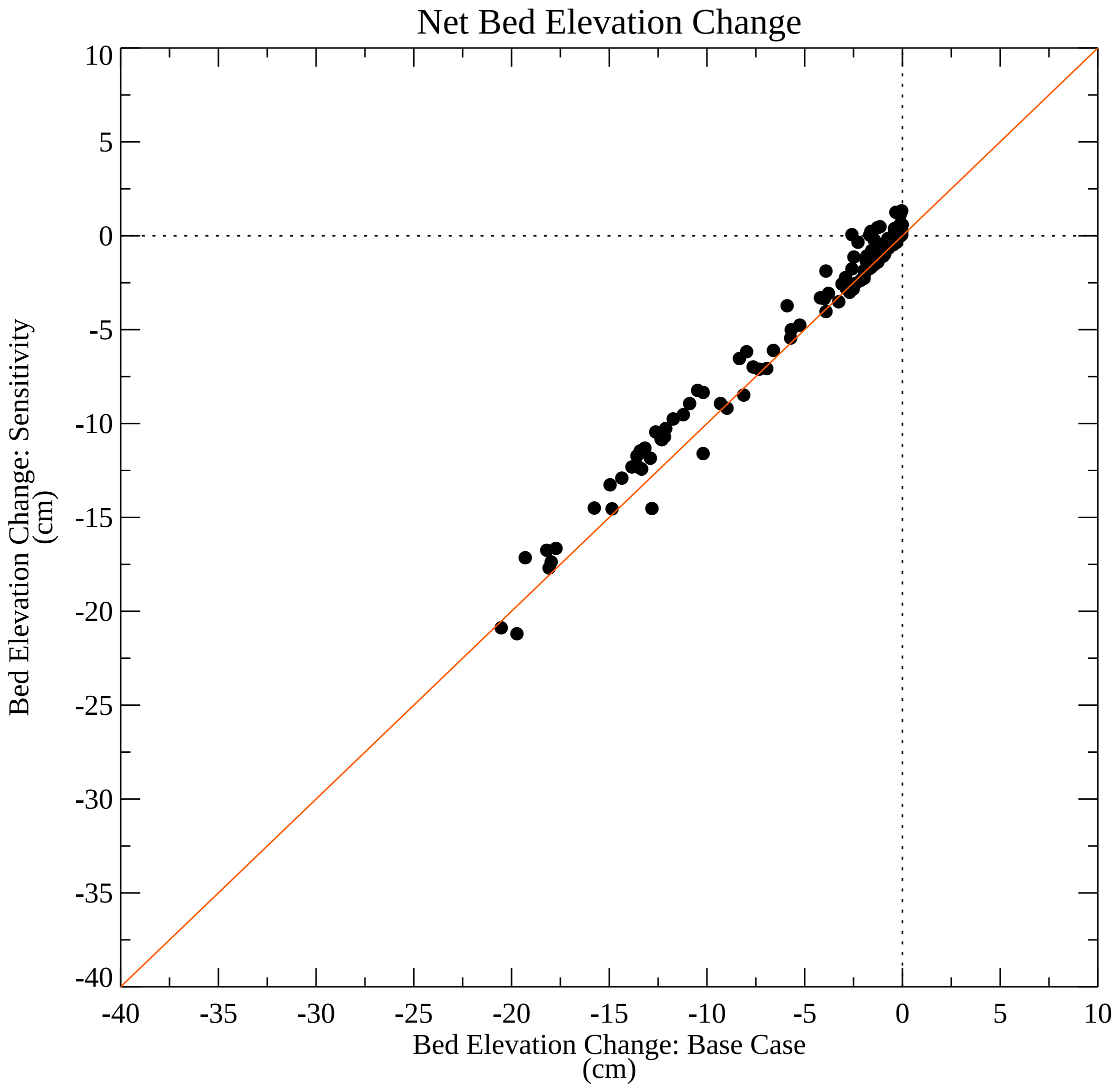

Figure E-120. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: upper-bound settling speed.

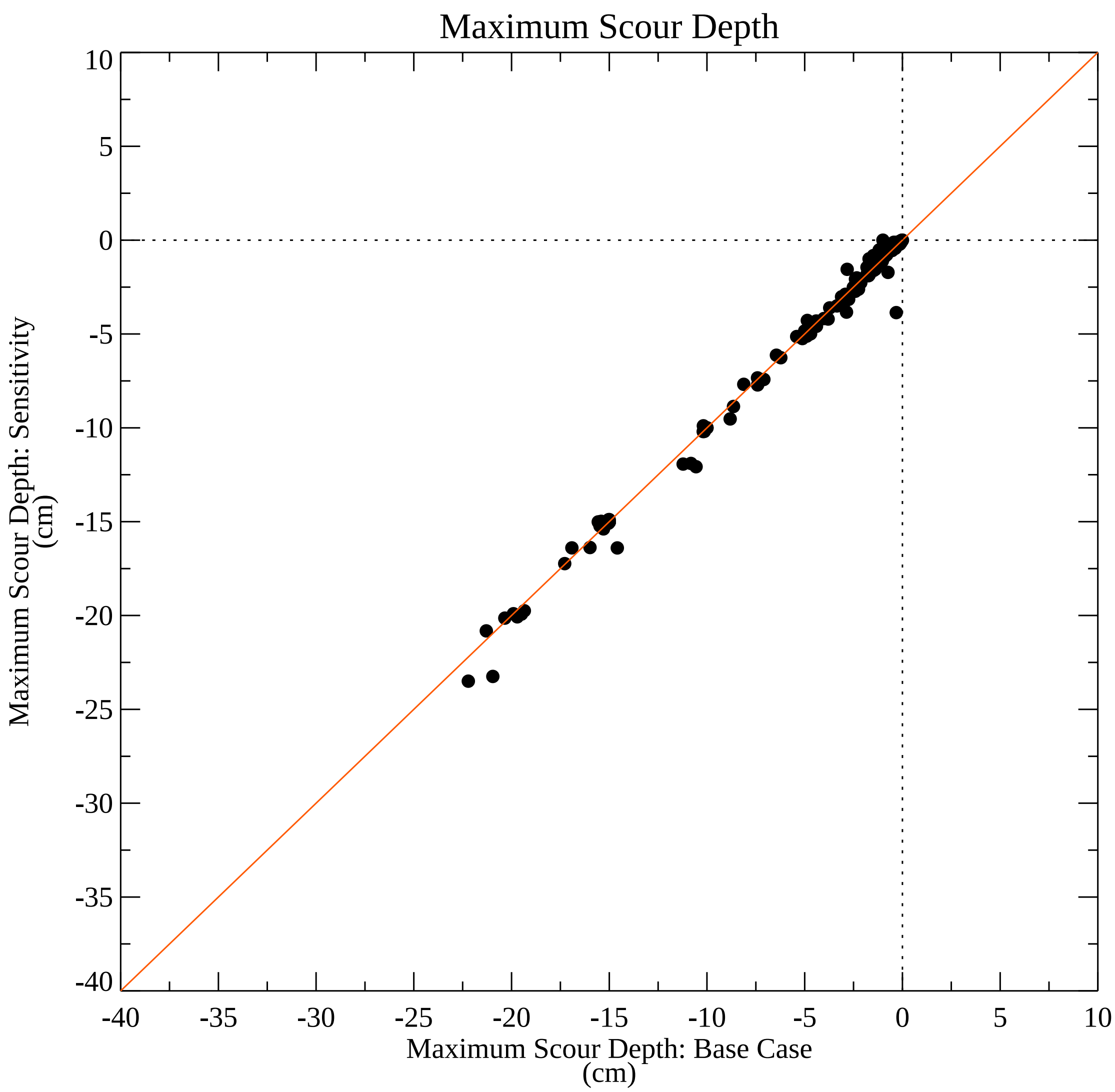

Figure E-121. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: upper-bound settling speed.

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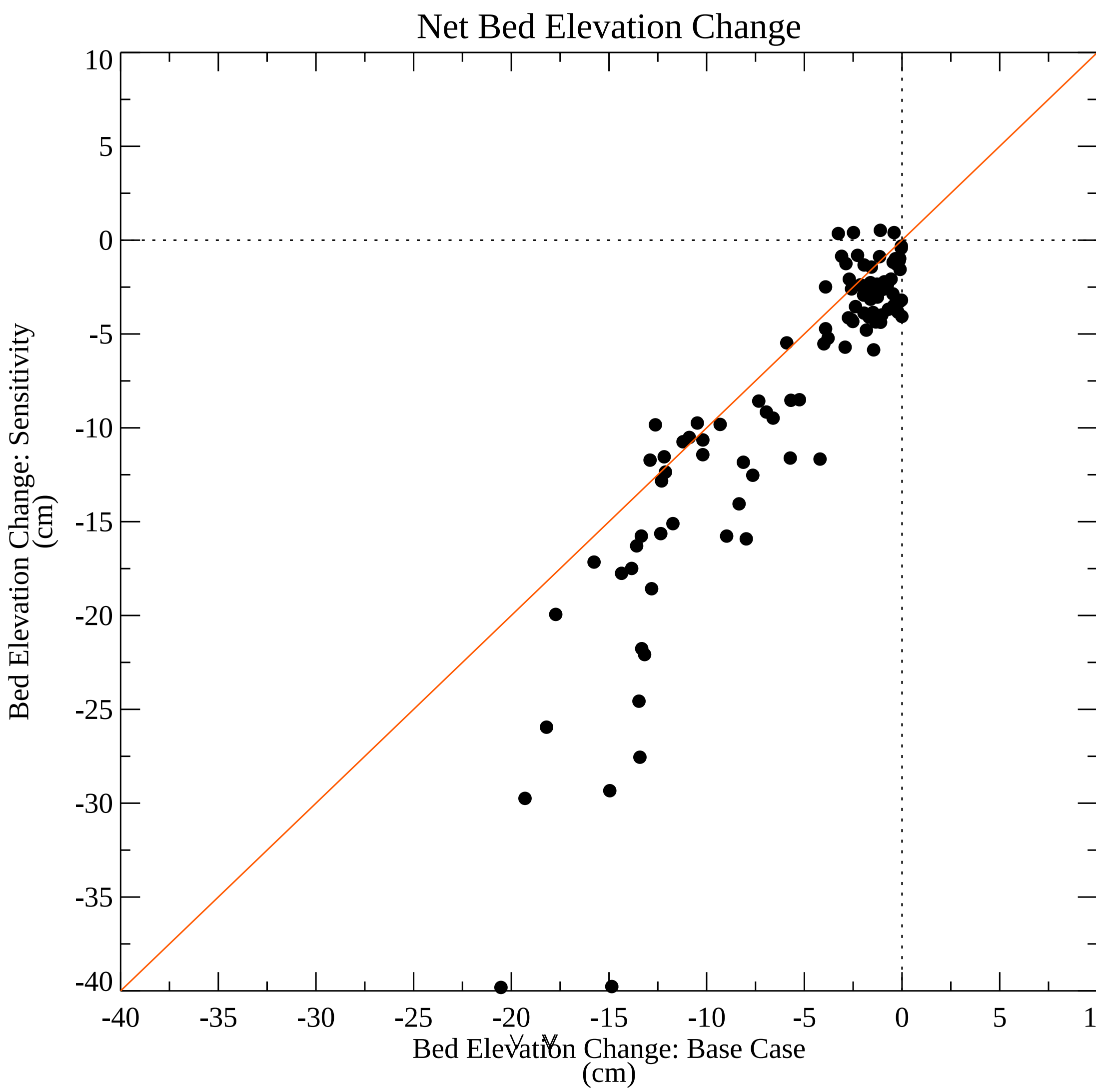

Figure E-122. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: effect of particle-shielding factor removed.

FC/AC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080418.pro
Fri Apr 18 09:12:32 2008

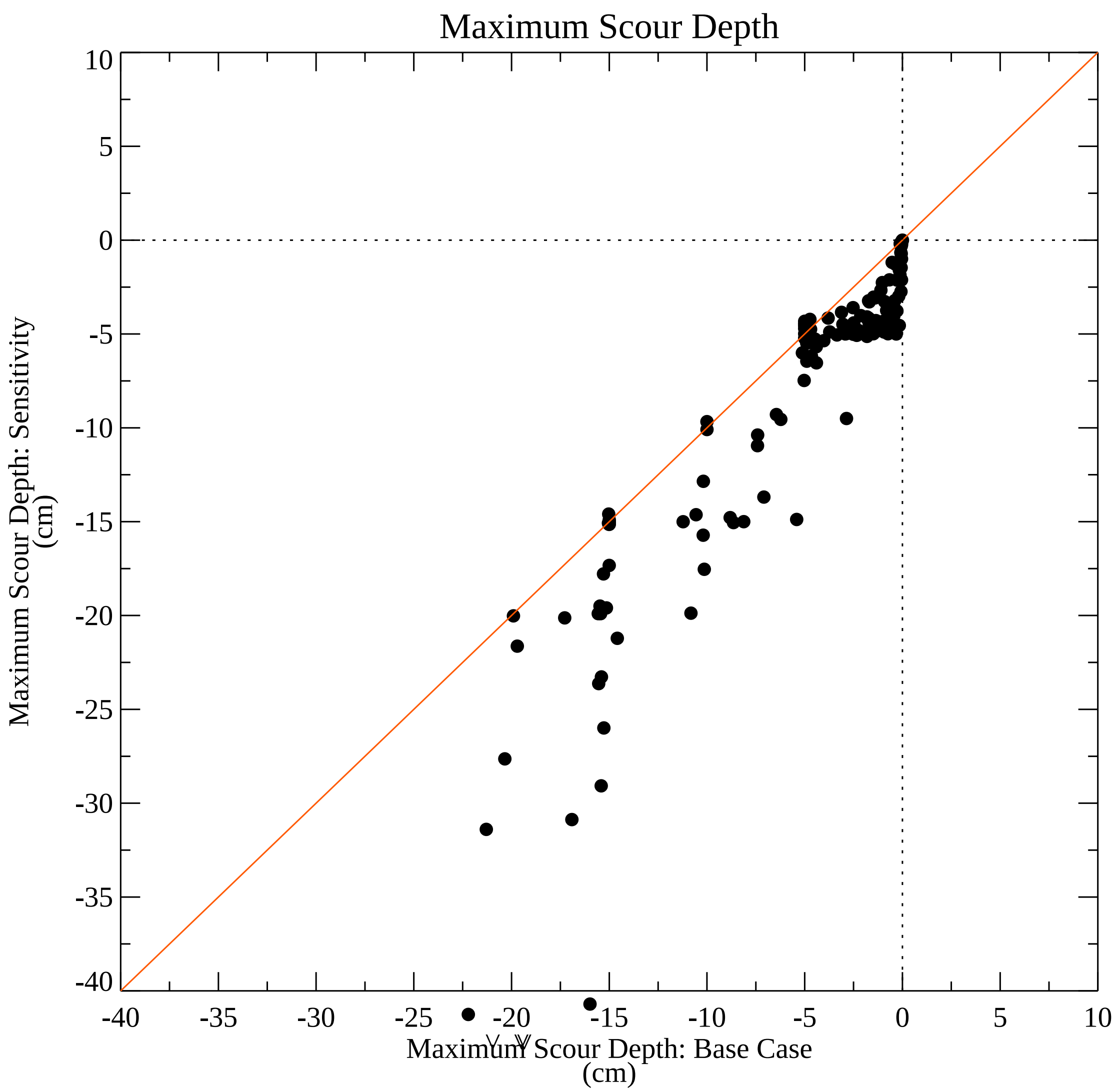

Figure E-123. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: effect of particle-shielding factor removed.

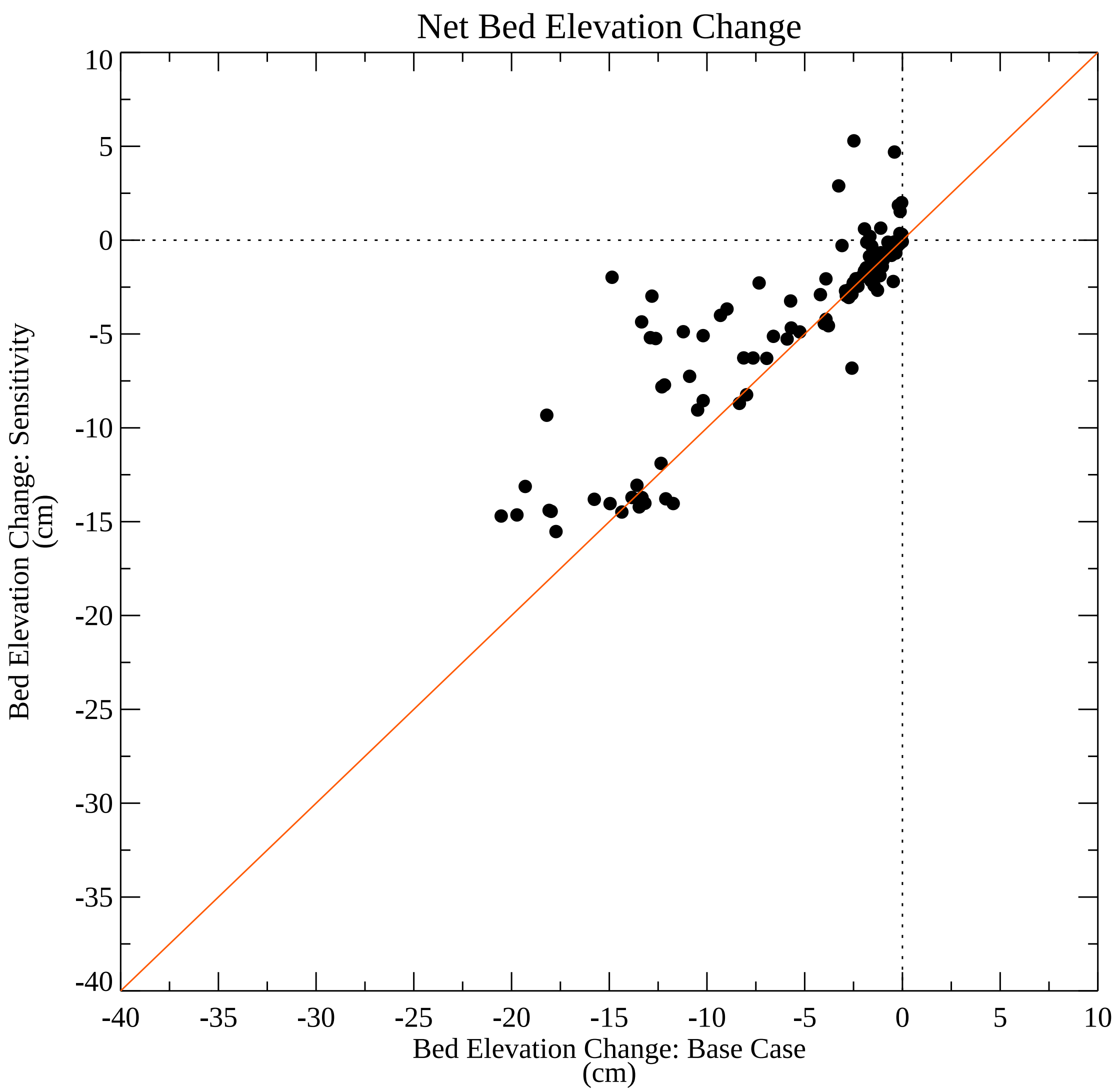

Figure E-124. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: neap tide.

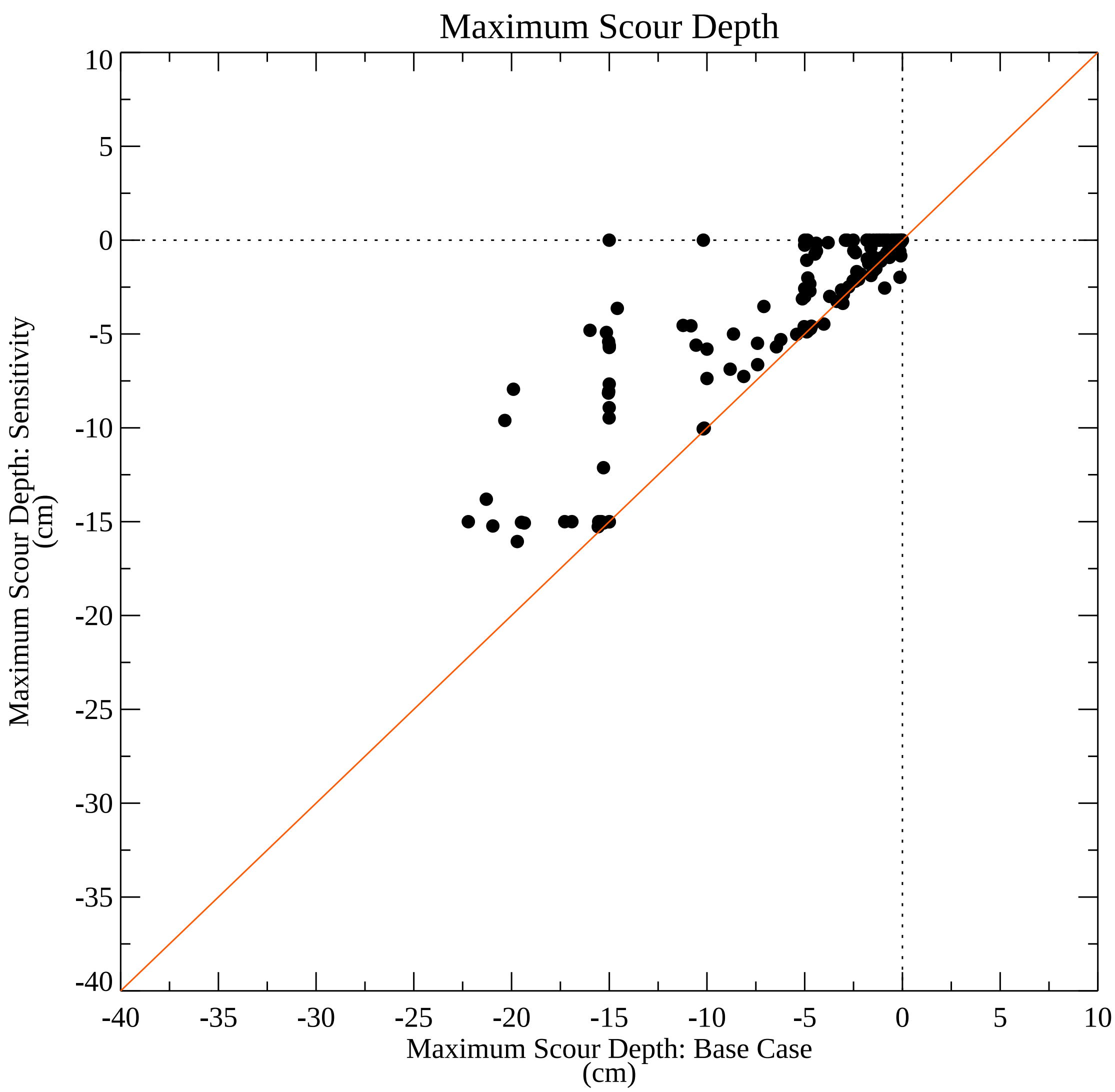

Figure E-125. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: neap tide.

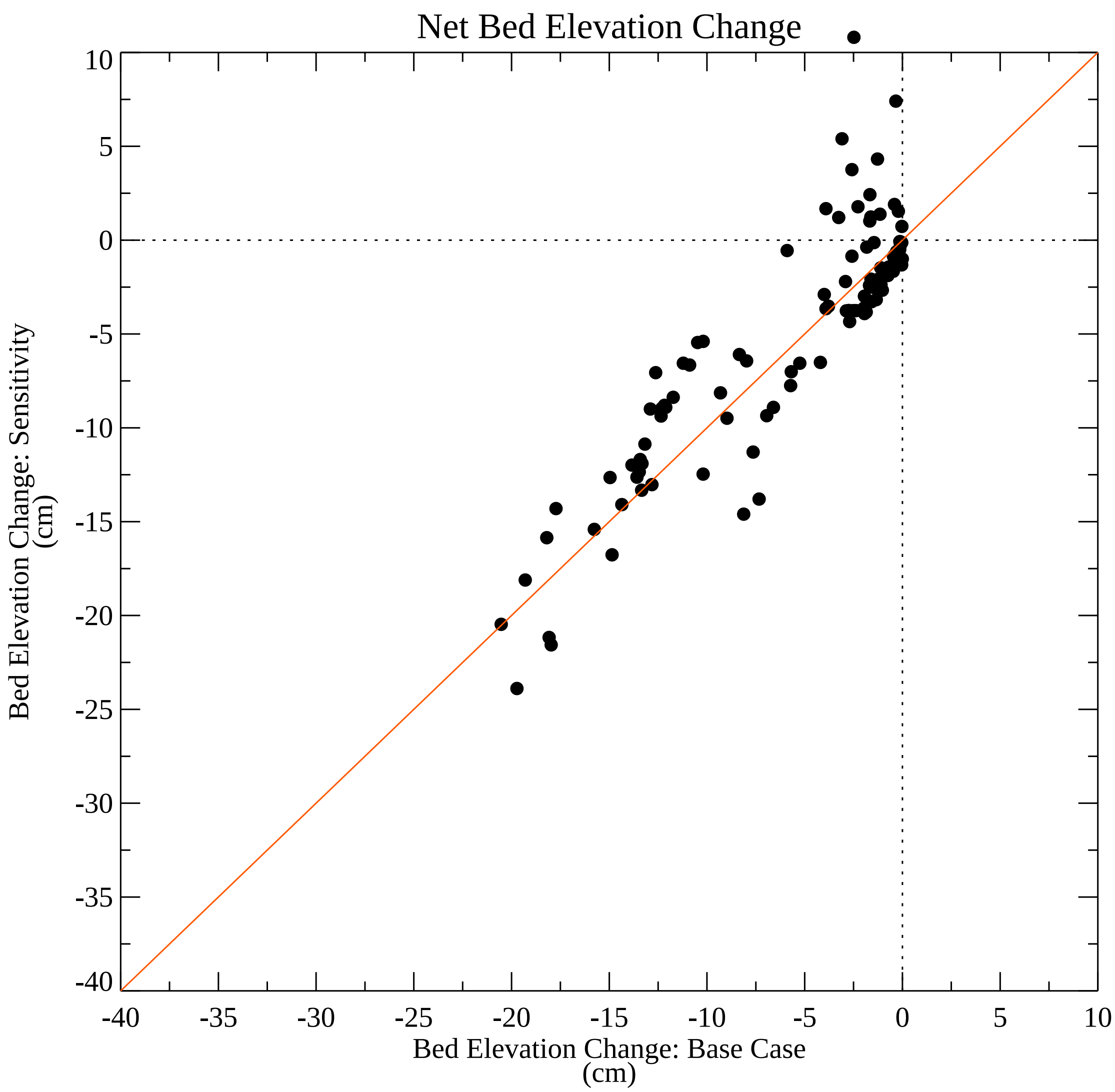

Figure E-126. One-to-one comparison of predicted net erosion during 100-year high-flow event for base case and sensitivity simulations: 8-day peak flow.

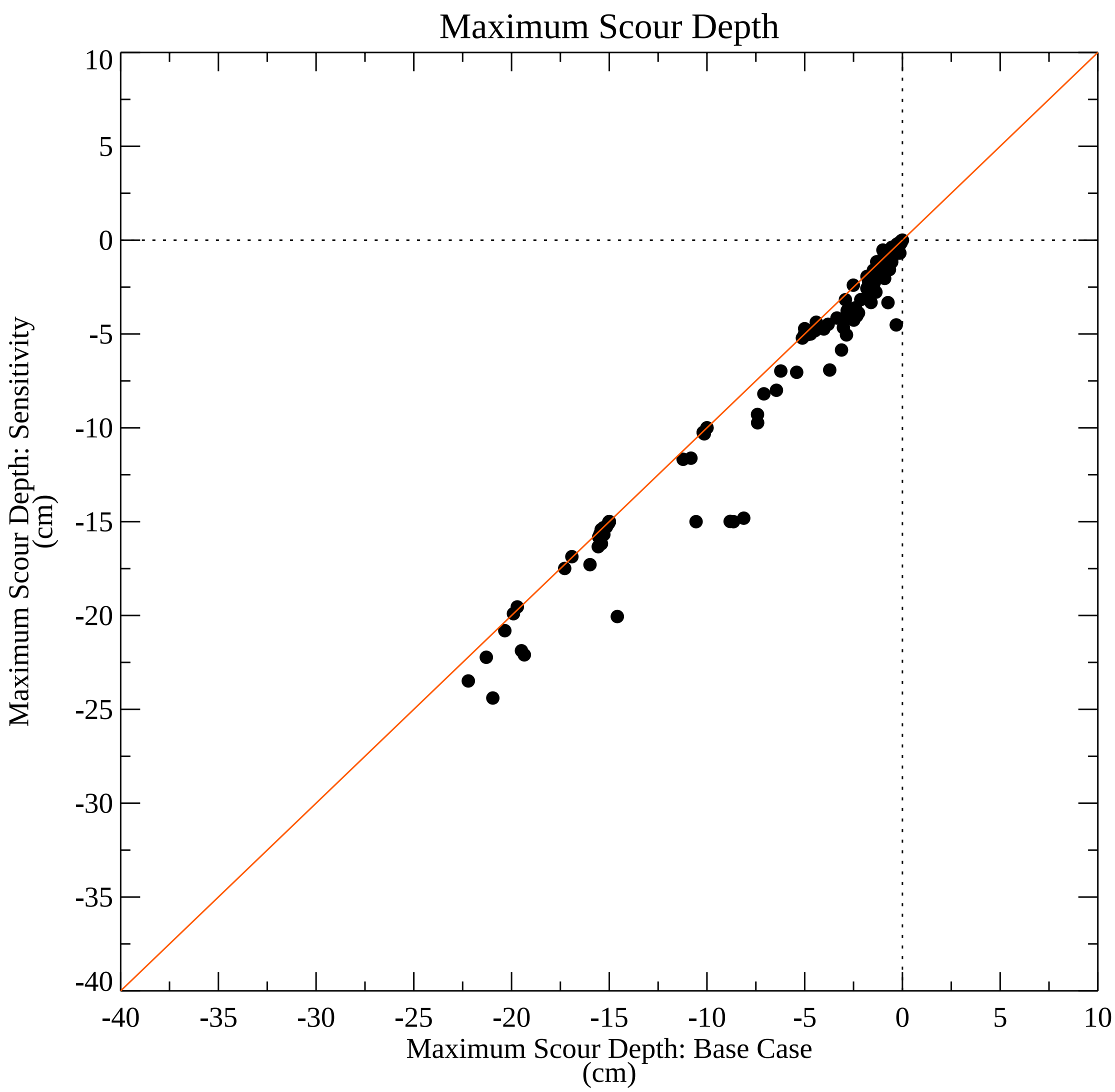

Figure E-127. One-to-one comparison of predicted maximum bed scour depth during 100-year high-flow event for base case and sensitivity simulations: 8-day peak flow.

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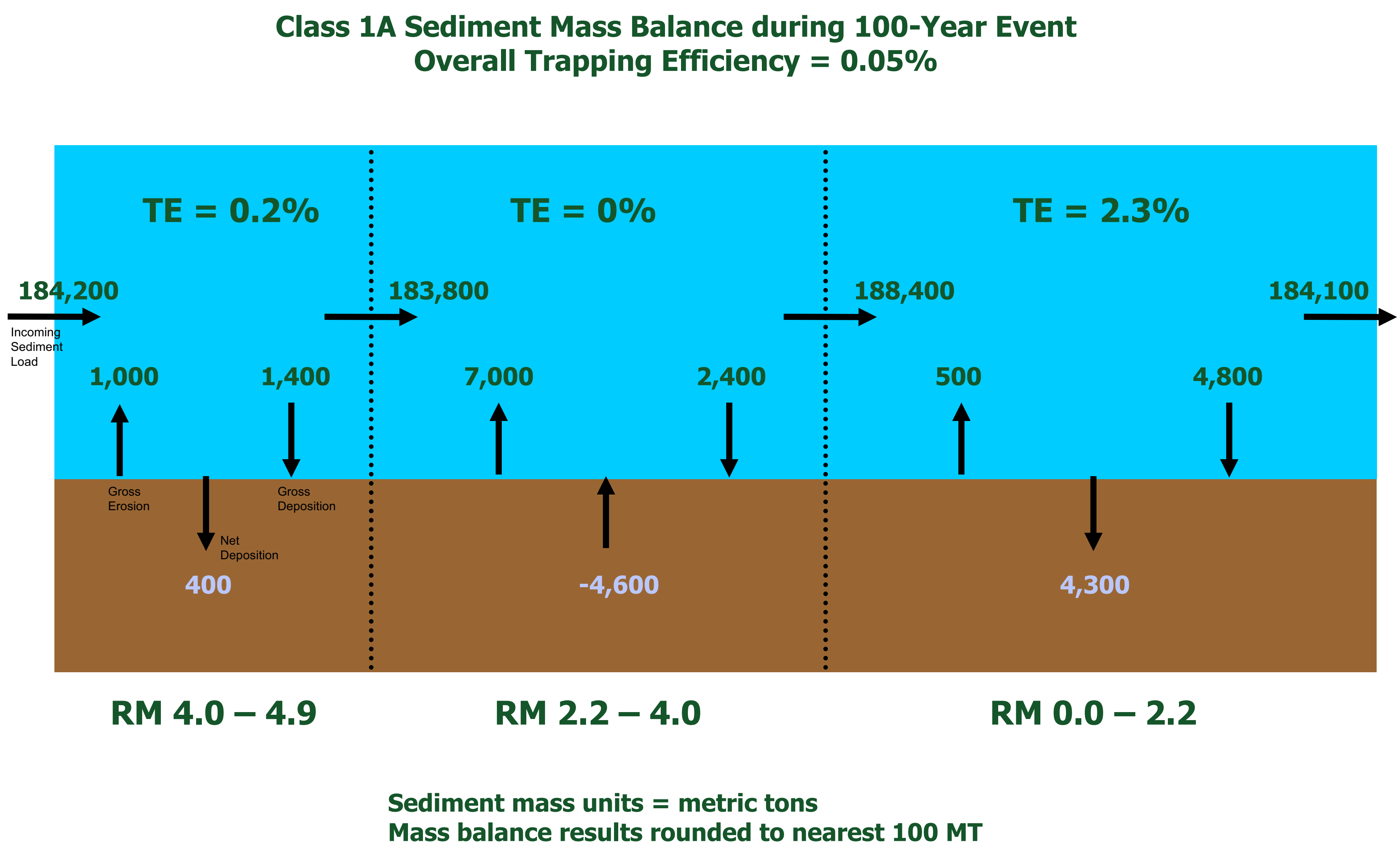


Figure E-128. Class 1A sediment mass balances for 100-year high-flow events. Trapping efficiency is percentage of incoming sediment load that is deposited within a reach.

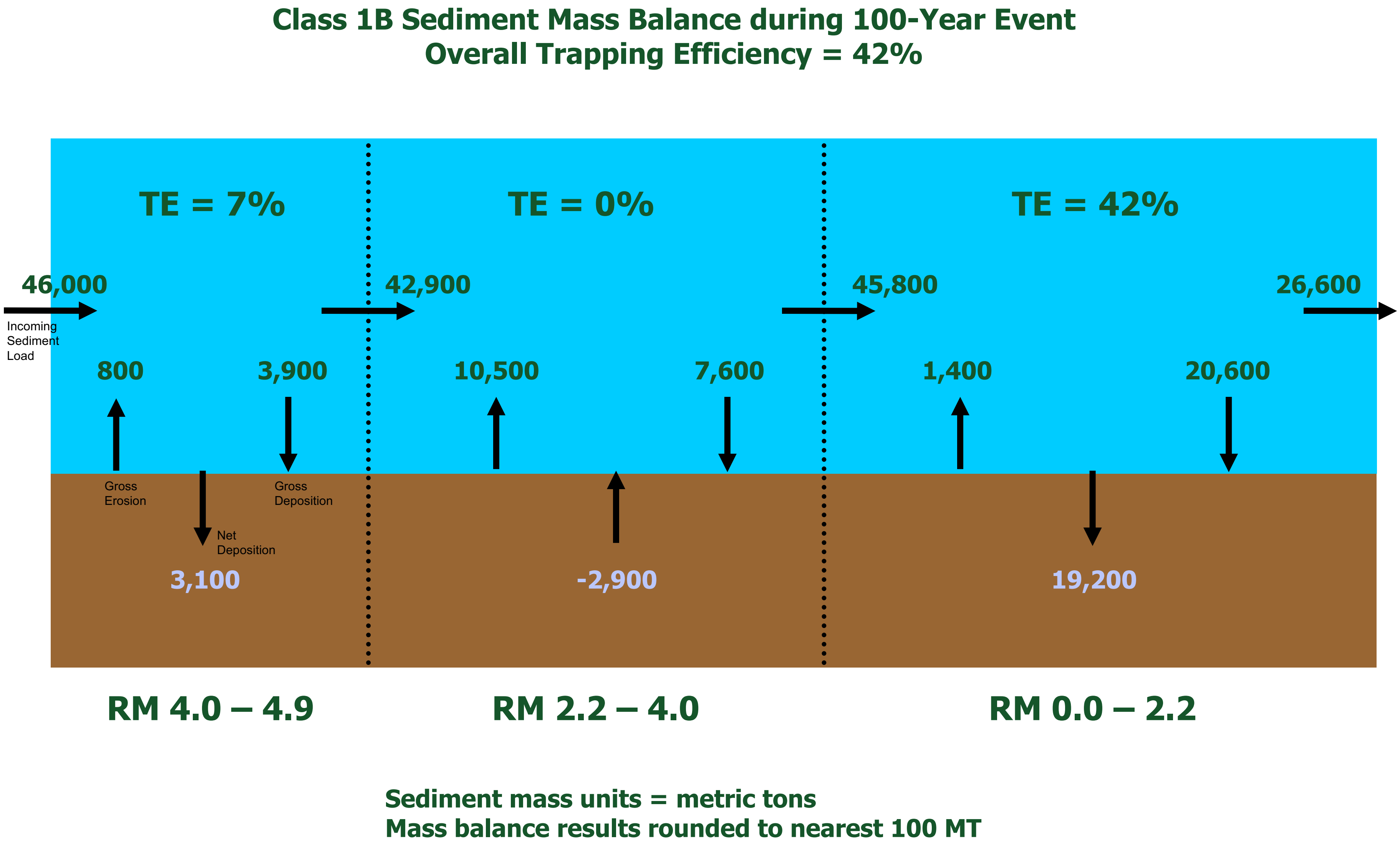
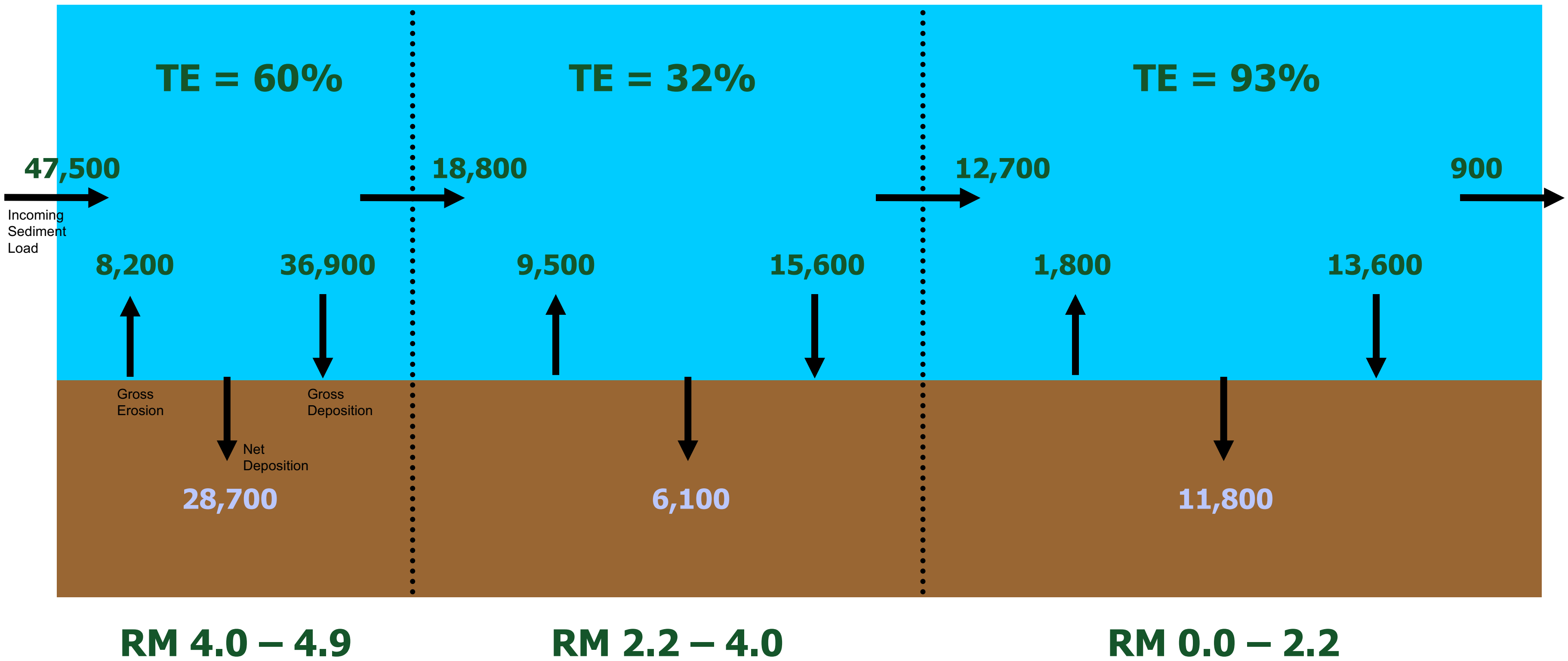


Figure E-129. Class 1B sediment mass balances for 100-year high-flow events. Trapping efficiency is percentage of incoming sediment load that is deposited within a reach.

Class 2 Sediment Mass Balance during 100-Year Event
Overall Trapping Efficiency = 98%



Sediment mass units = metric tons
Mass balance results rounded to nearest 100 MT

Figure E-130. Class 2 sediment mass balances for 100-year high-flow events. Trapping efficiency is percentage of incoming sediment load that is deposited within a reach.

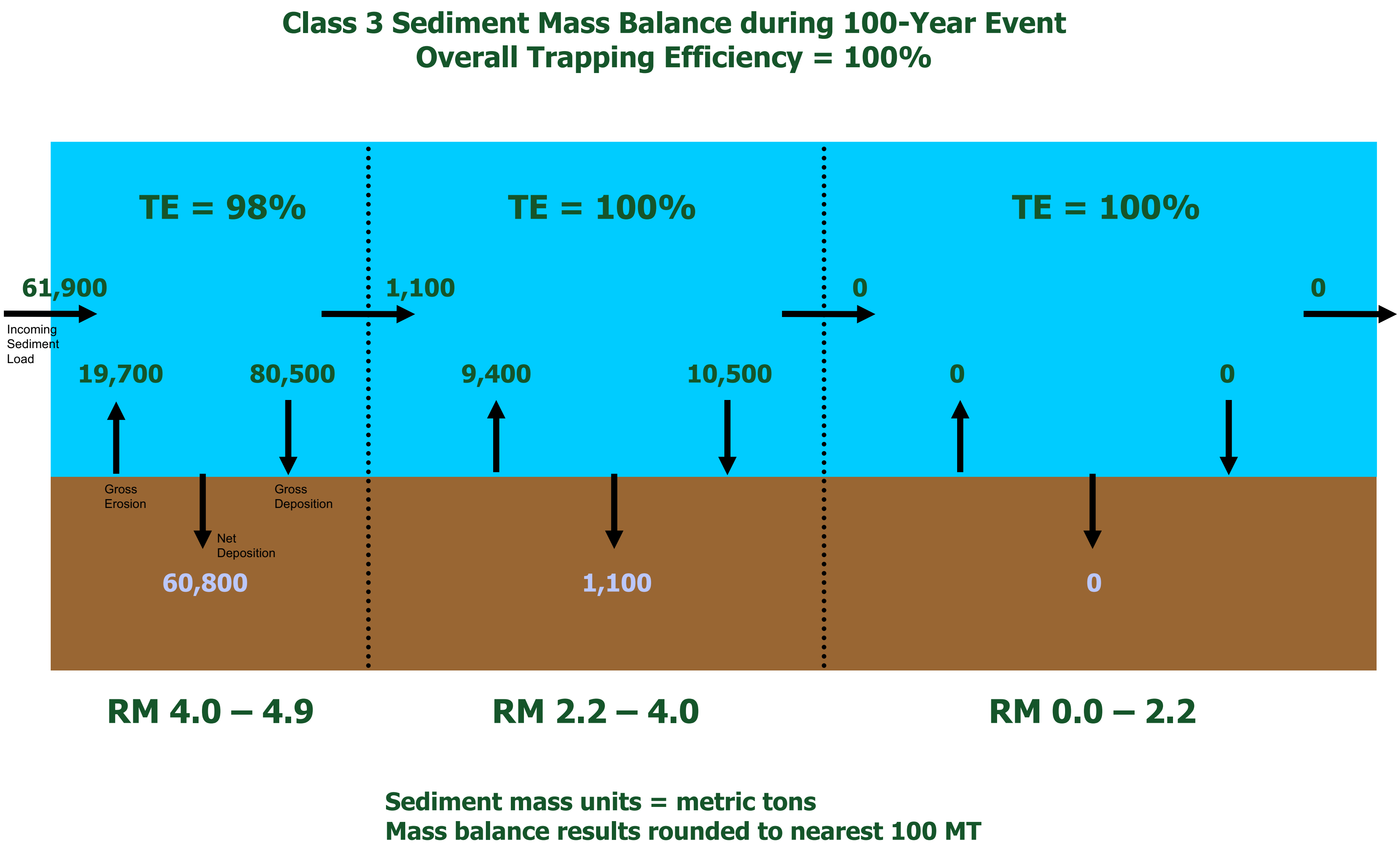


Figure E-131. Class 3 sediment mass balances for 100-year high-flow events. Trapping efficiency is percentage of incoming sediment load that is deposited within a reach.

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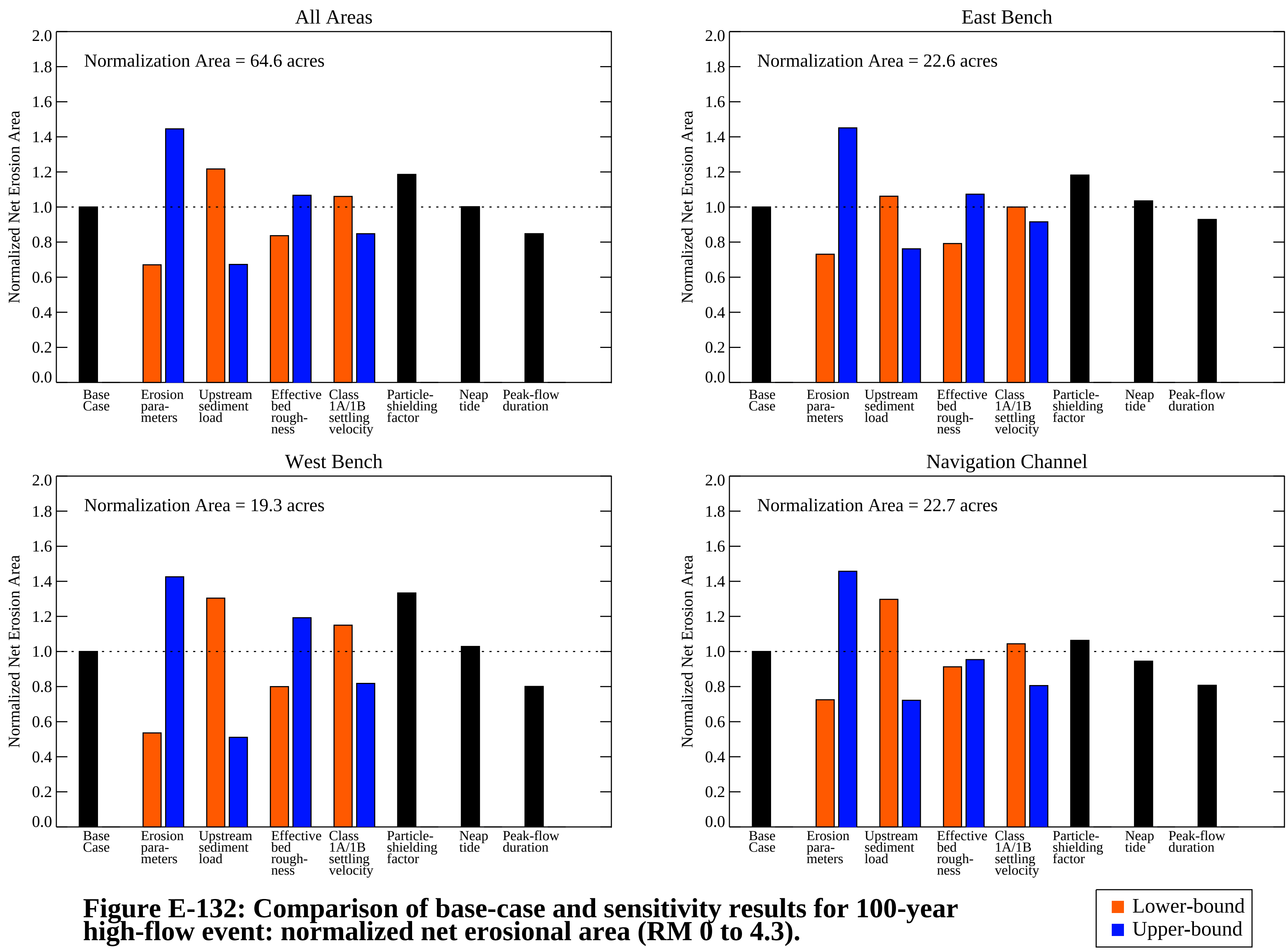

Figure E-132: Comparison of base-case and sensitivity results for 100-year high-flow event: normalized net erosional area (RM 0 to 4.3).

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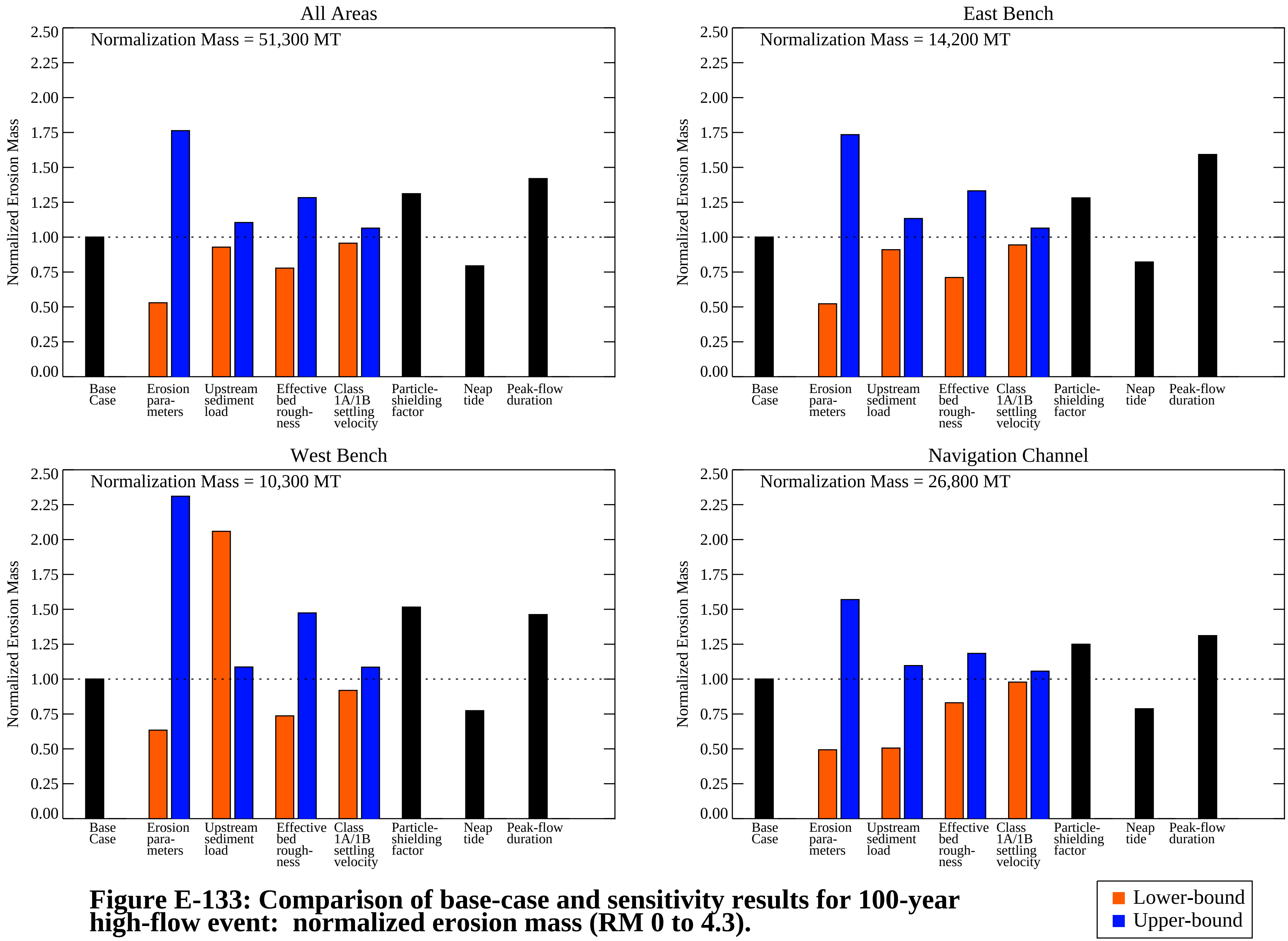

Figure E-133: Comparison of base-case and sensitivity results for 100-year high-flow event: normalized erosion mass (RM 0 to 4.3).

FC/AC - D:\RETldw\Analysis\Model_output\sensitivity_runs\compare_runs_080910.pro
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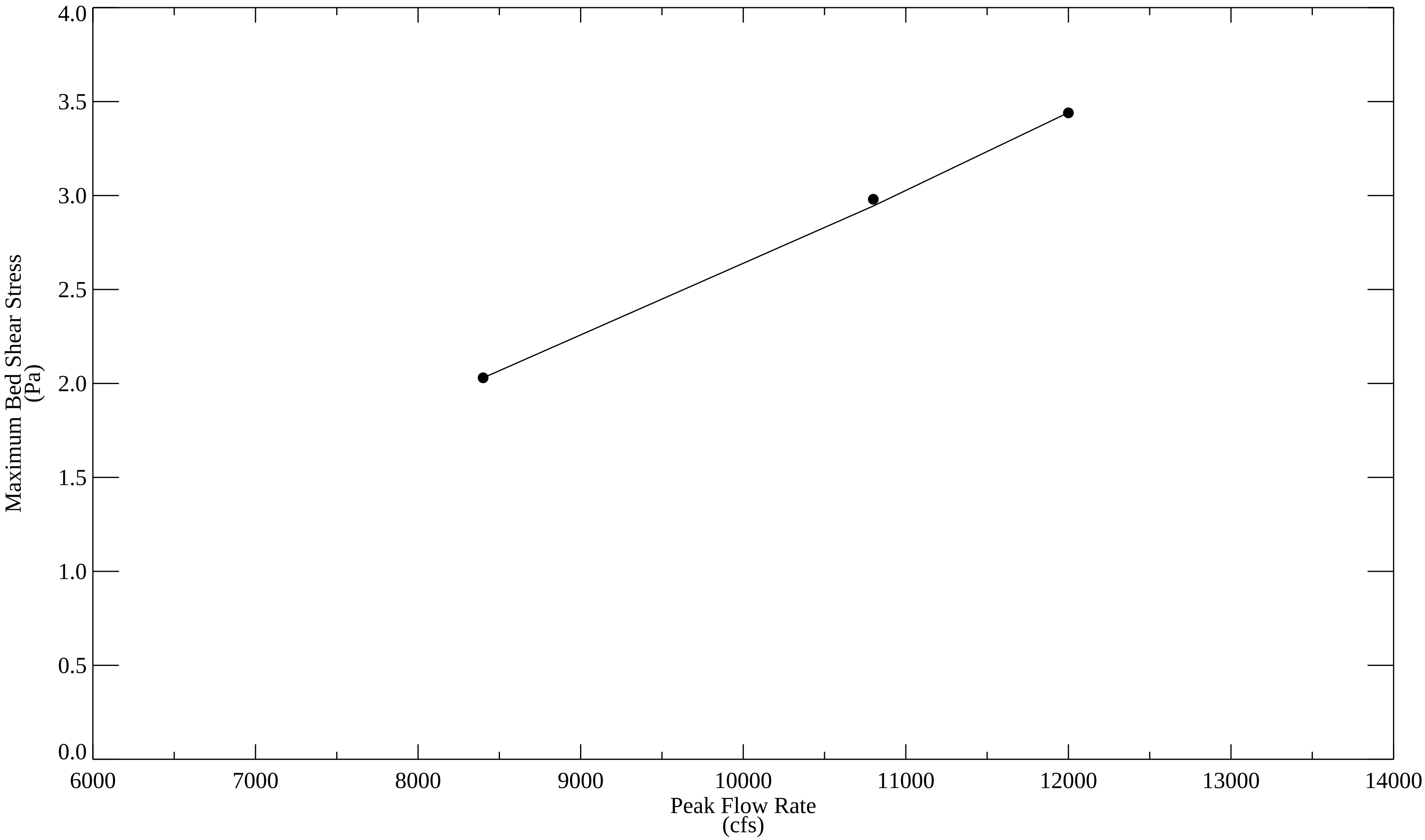

Figure E-134. Relationship between maximum bed shear stress within cohesive bed area and peak flow rate during high-flow events.

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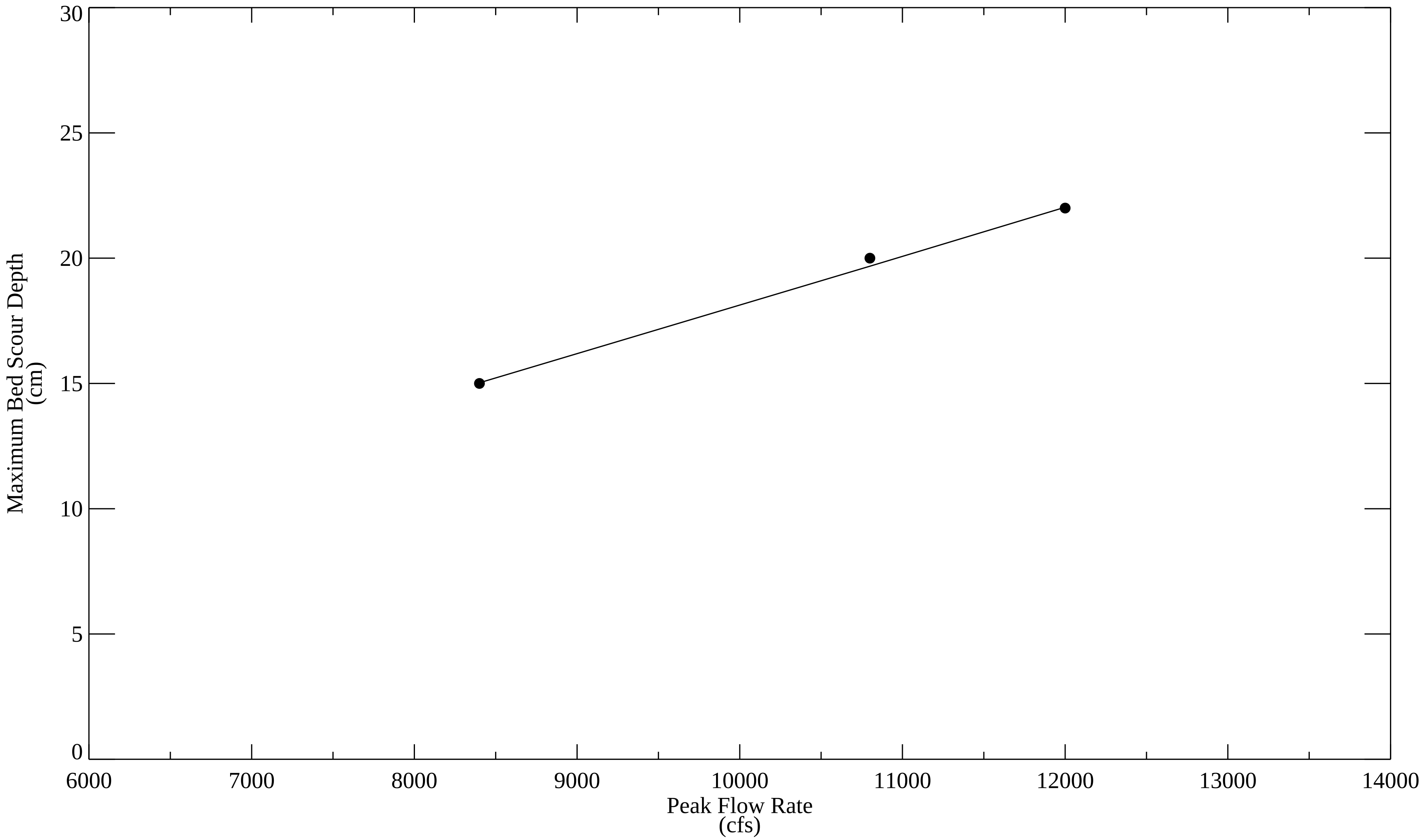

Figure E-135. Relationship between maximum bed scour depth within cohesive bed area and peak flow rate during high-flow events.

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Fri Sep 19 16:09:15 2008