

Appendix F

Probability Distributions of the Two-Day Water Volumes to Create Relief Flows

Lamprey River Water Management Plan

August 2013

Probability Distributions of the Two-Day Water Volumes to Create Relief Flows

The plots in this Appendix were developed from the 30-year daily flow data sets used to develop the protected instream flows. The analysis in this case calculated the volume of water necessary to increase the river flow from the reading up to the protected instream flow (common, critical, rare), for the two days immediately after the catastrophic duration occurred. To read the plots in this Appendix, they are organized by bioperiod and 30-year flow record (Naturalized, formerly referred to as the pre-Colonial, and modern, referred to herein as “Today”): Today’s Flows are those measured at the Packers Falls gage today, and the Naturalized/Pre-Colonial flows are Today’s Flows with the effects of dam operations and withdrawals removed from the records. In addition, the Appendix F figures are presented at three locations along the Lamprey Designated River: Wadleigh Falls, Lee Hook Road, and Packers Falls. In each plot, the lower horizontal axis is the water volume for rare and critical protected instream flows (in acre-feet), the upper horizontal axis is the water volume for the common protected instream flows (in acre-feet), and the vertical axis is the non-exceedance probability (basically, the percent of time that volume is needed to provide relief flows).

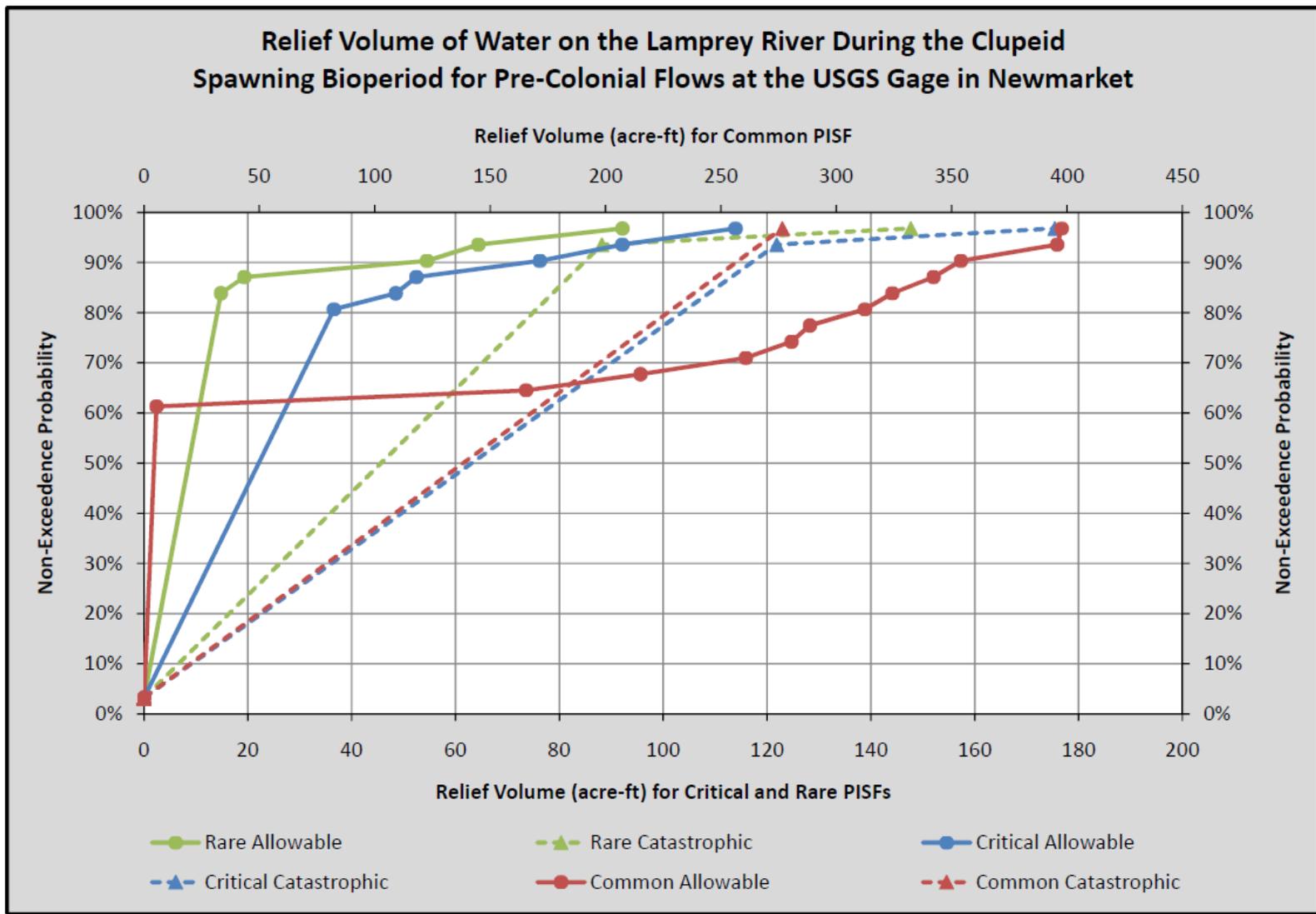


Figure F.1. Relief Water Volume During Clupeid Spawning Bioperiod For Naturalized Flows at Packers Falls.

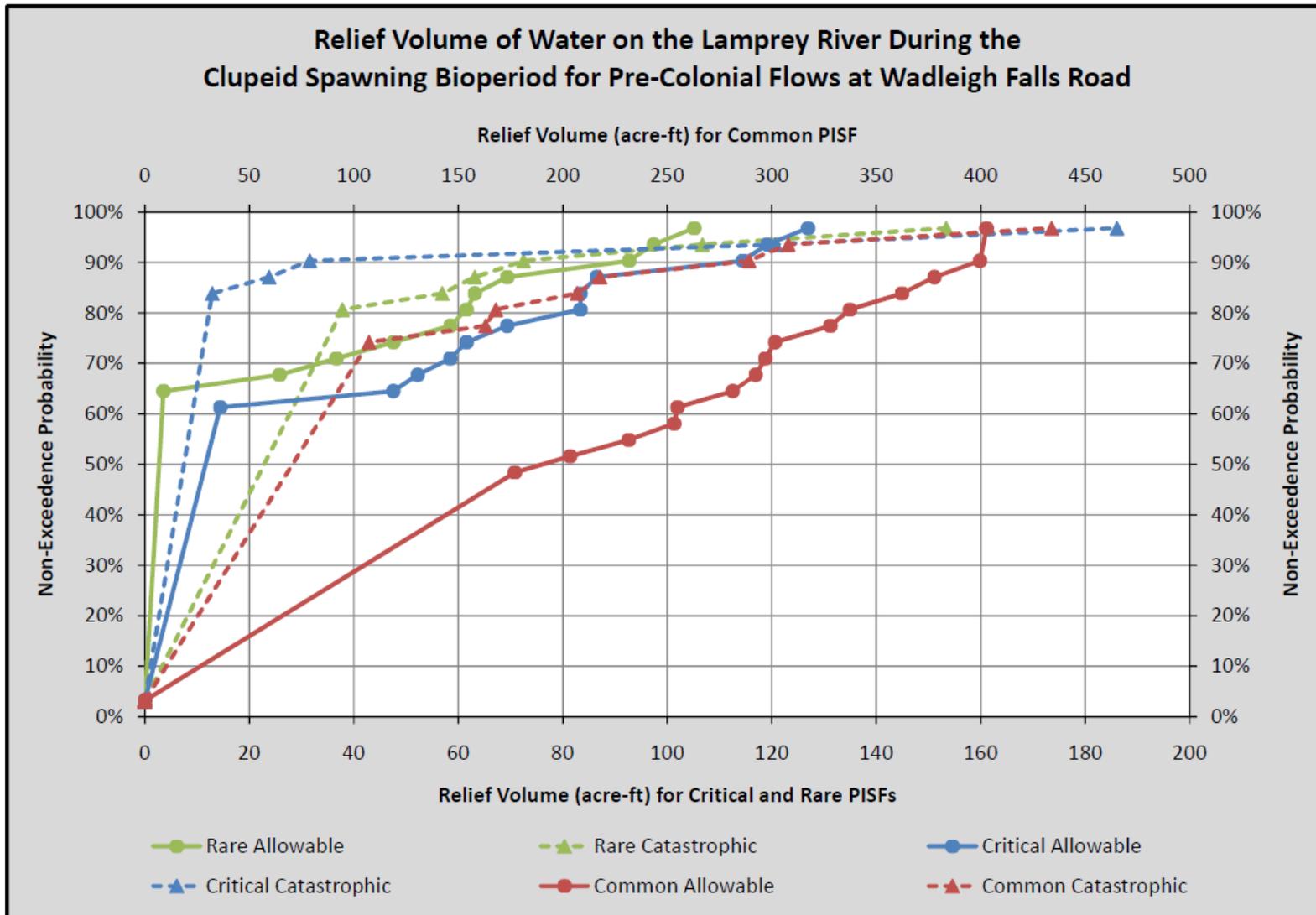


Figure F.2. Relief Water Volume During Clupeid Spawning Bioperiod For Naturalized Flows at Wadleigh Falls

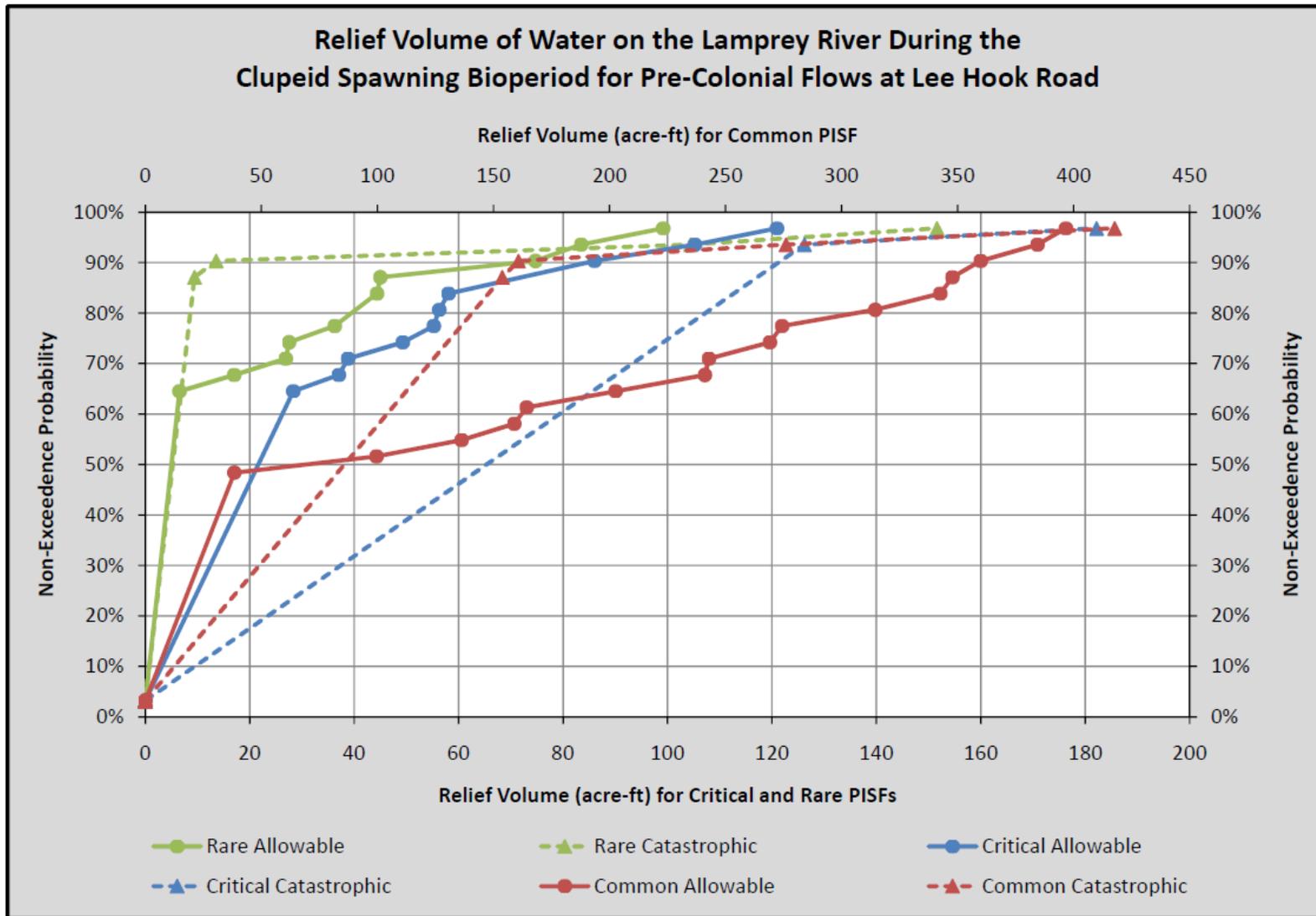
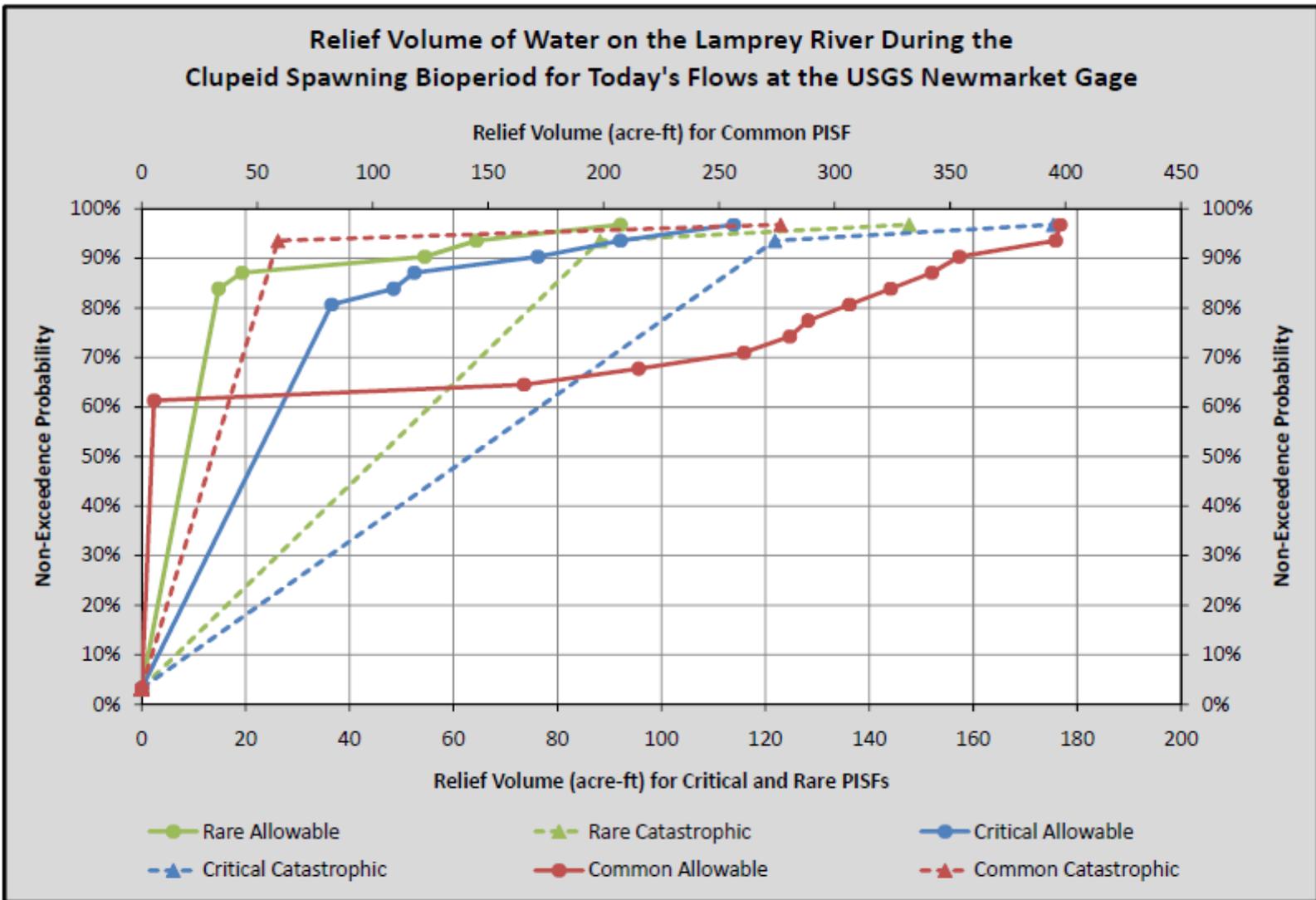


Figure F.3. Relief Water Volume During Clupeid Spawning Bioperiod For Naturalized Flows at Lee Hook Road.



Relief Water Volume During Clupeid Spawning Bioperiod For Today's Hydrology at Packers Falls.

Figure F.4.

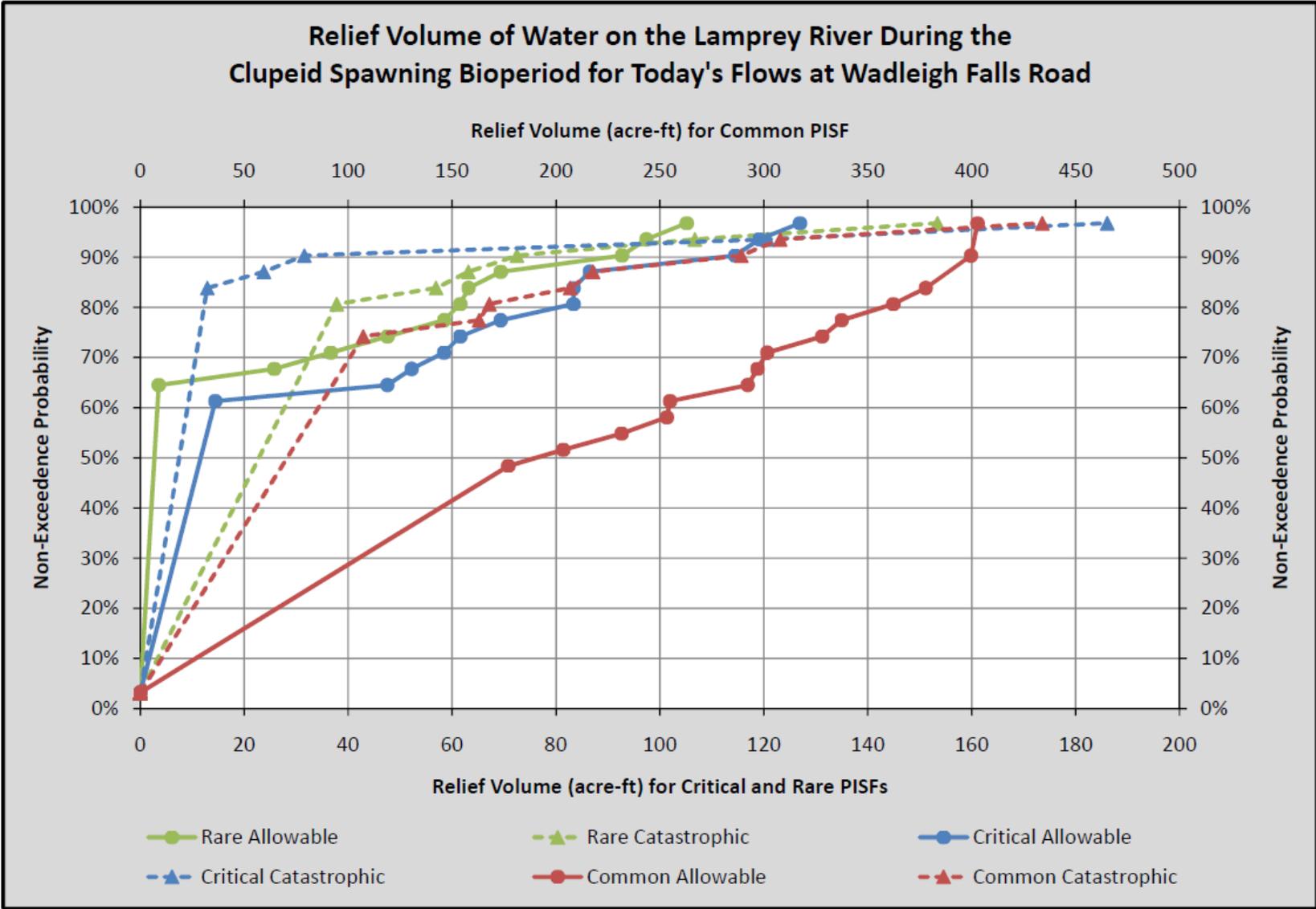
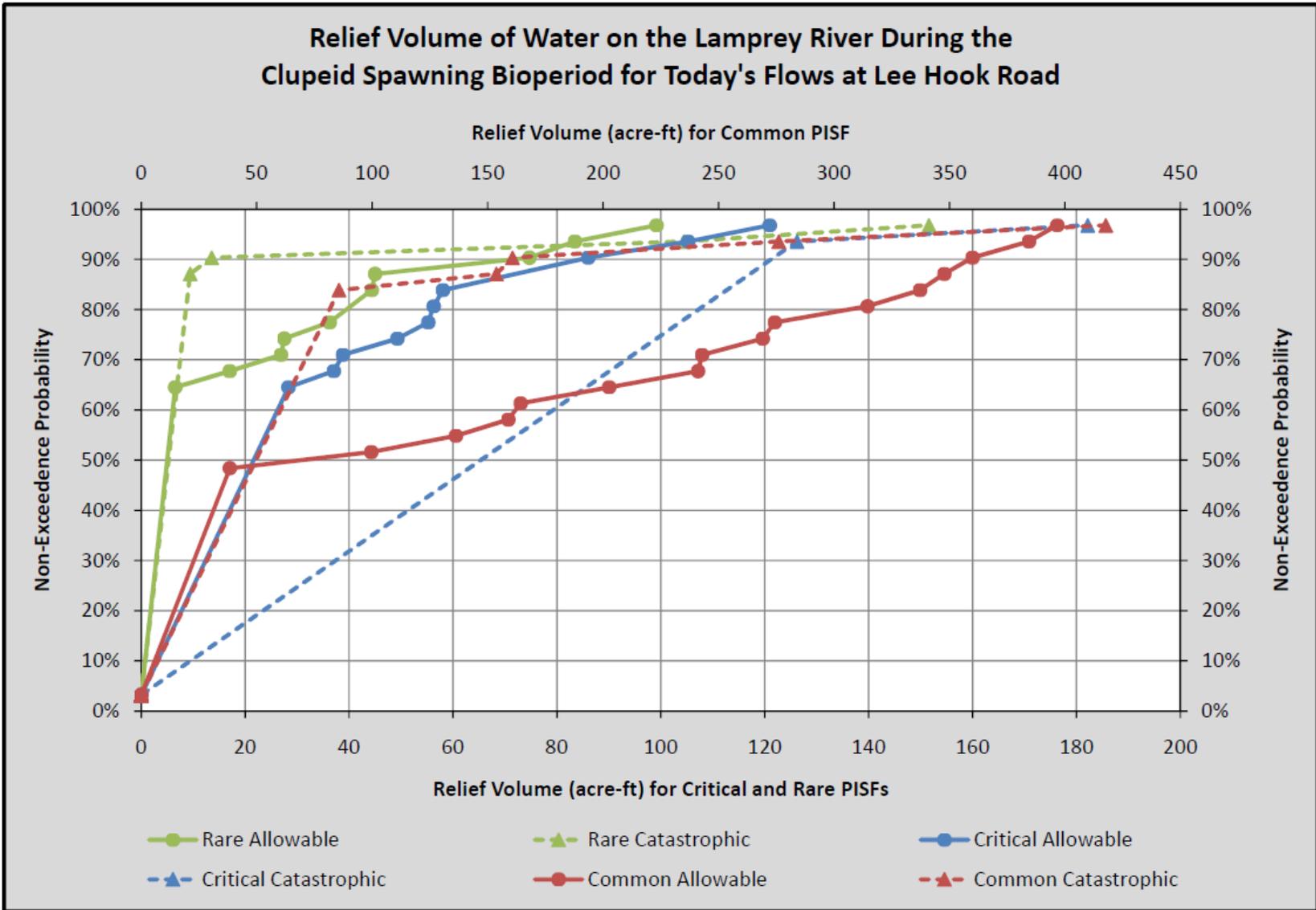
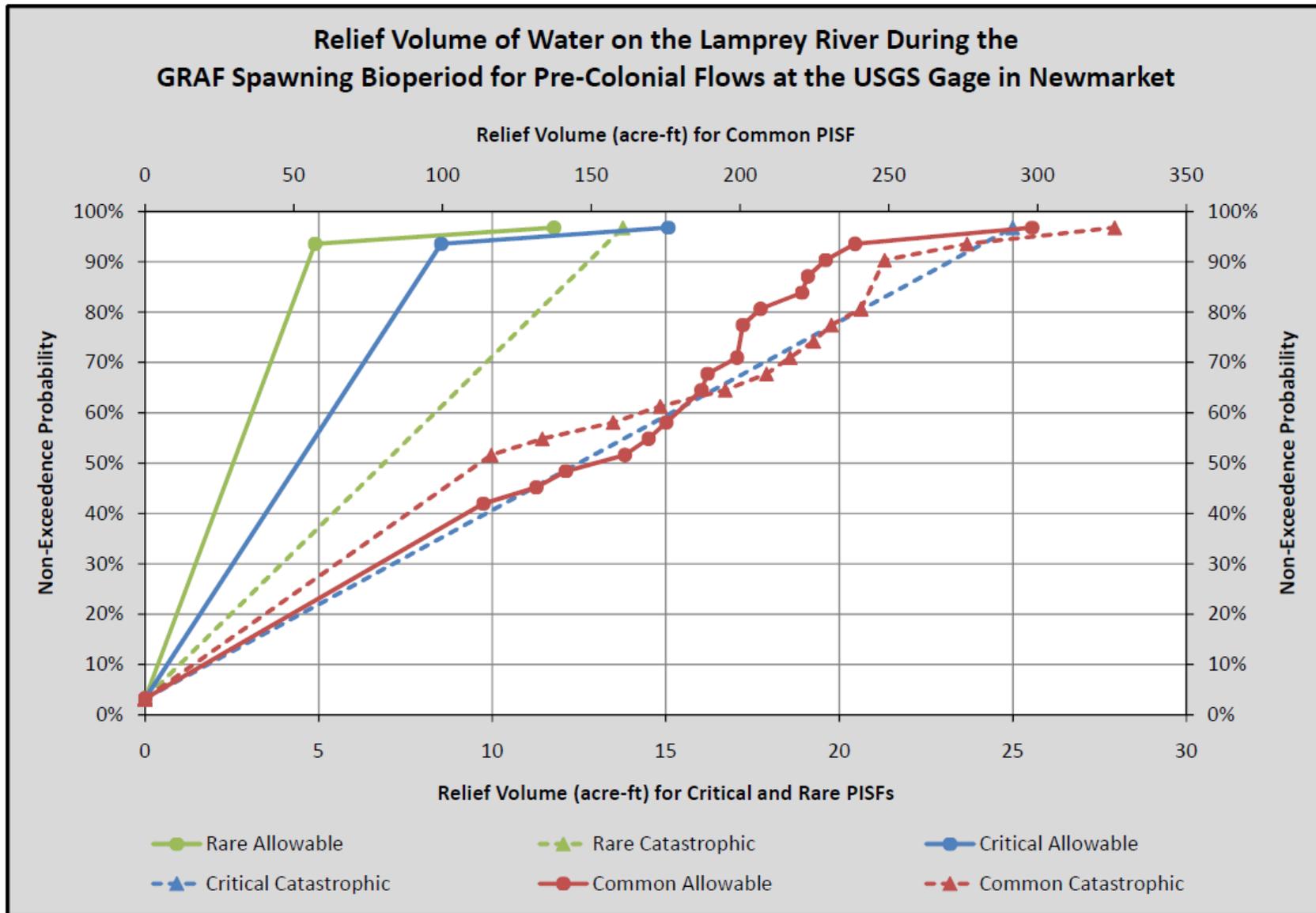


Figure F.5. Relief Water Volume During Clupeid Spawning Bioperiod For Today's Hydrology at Wadleigh Falls.



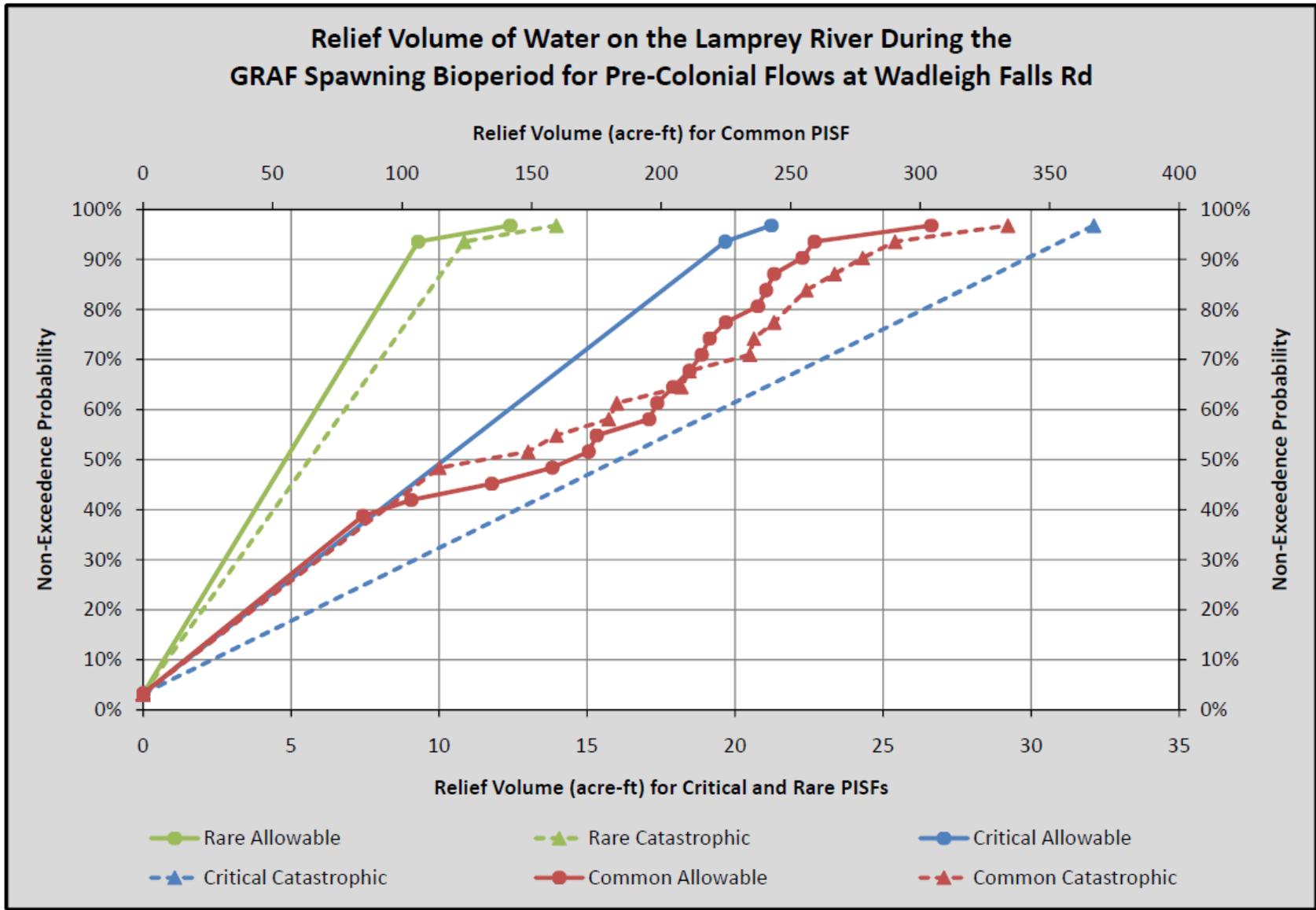
Figure

F.6. Relief Water Volume During Clupeid Spawning Bioperiod For Today's Hydrology at Lee Hook Road.



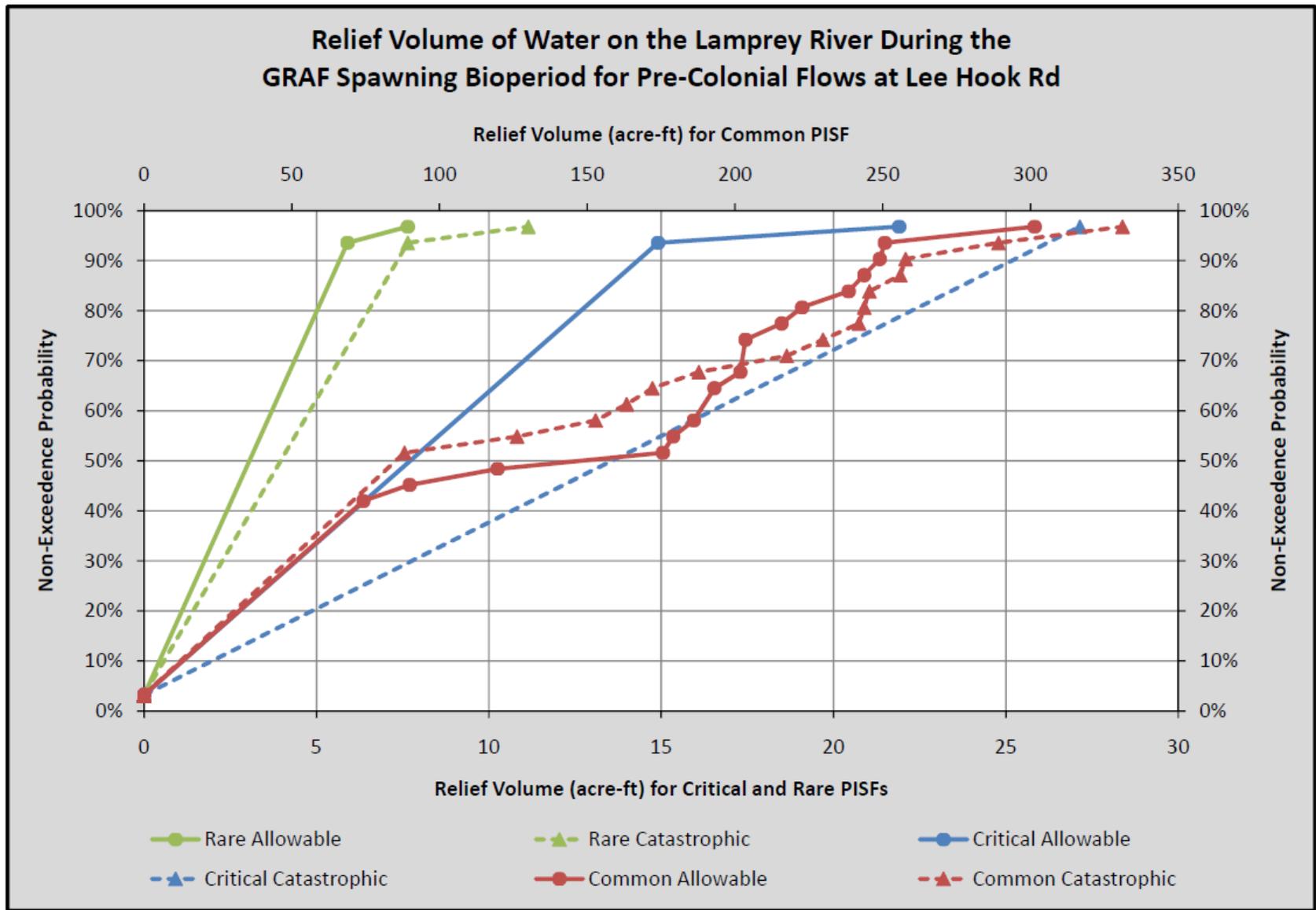
Figure

F.7. Relief Water Volume During GRAF Spawning Bioperiod For Naturalized Flows at Packers Falls.



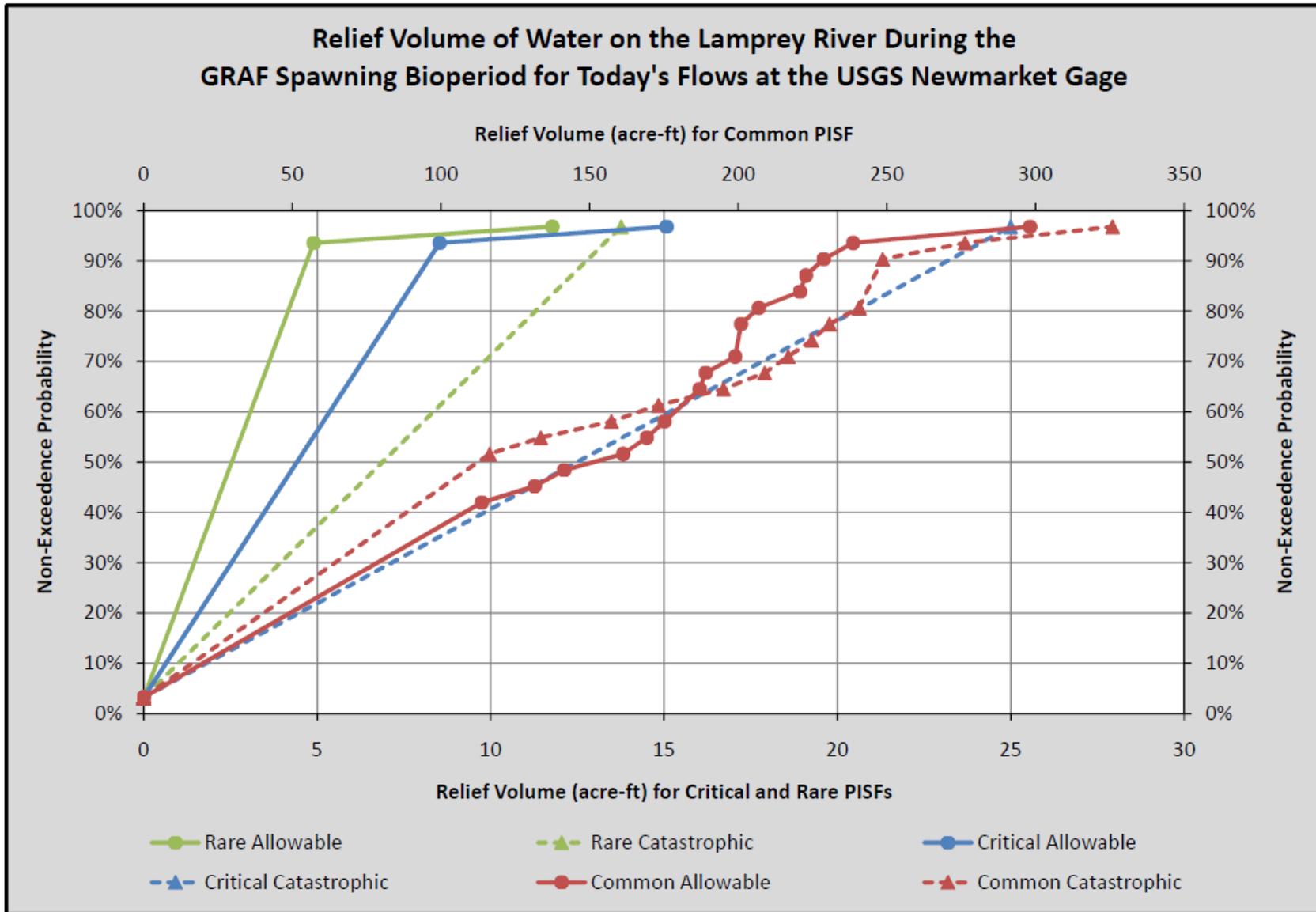
Figure

F.8. Relief Water Volume During GRAF Spawning Bioperiod For Naturalized Flows at Wadleigh Falls



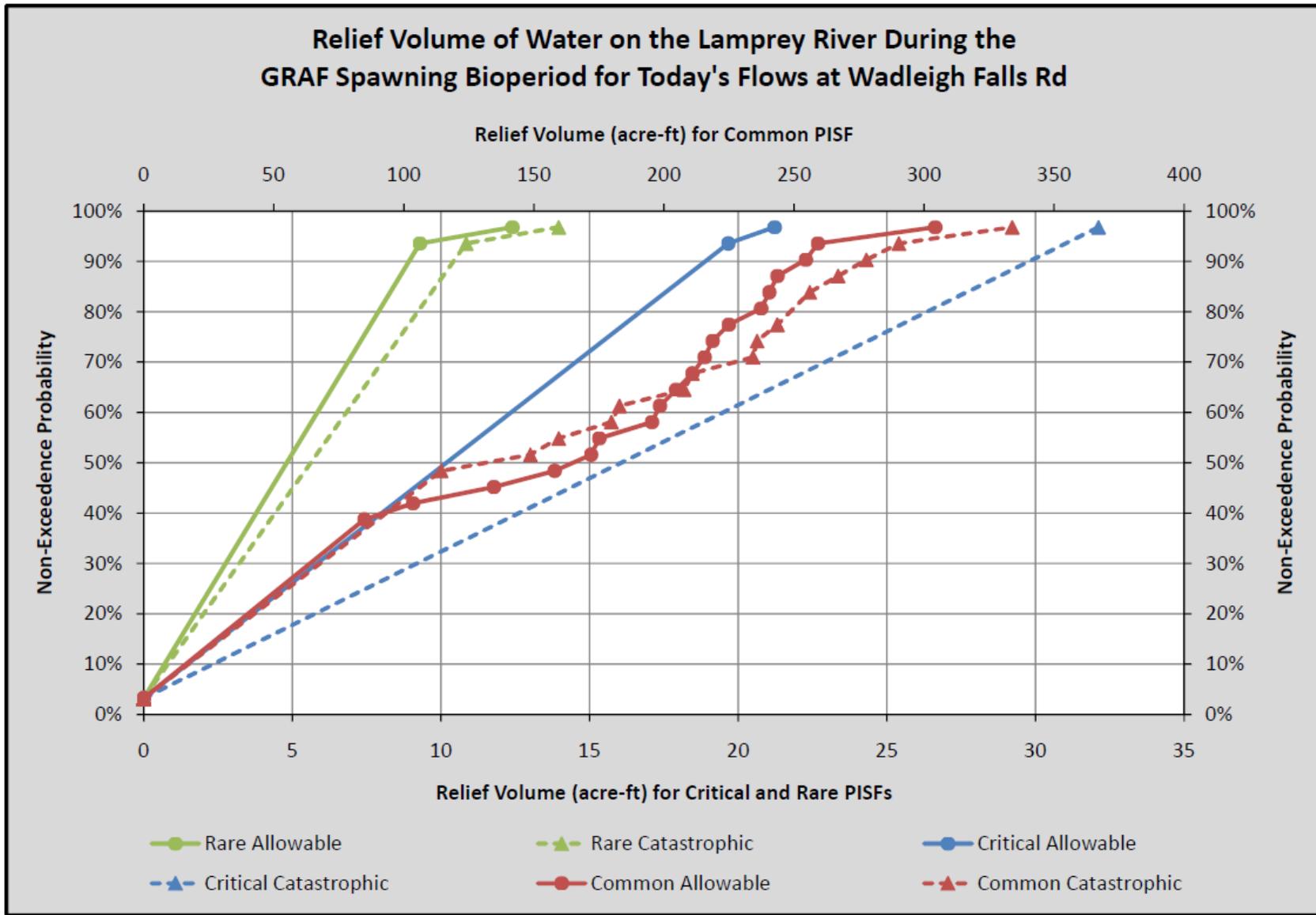
Figure

F.9. Relief Water Volume During GRAF Spawning Bioperiod For Naturalized Flows at Lee Hook Road.



Figure

F.10. Relief Water Volume During GRAF Spawning Bioperiod For Today's Hydrology at Packers Falls.



F.11. Relief Water Volume During GRAF Spawning Bioperiod For Today's Hydrology at Wadleigh Falls.

Figure

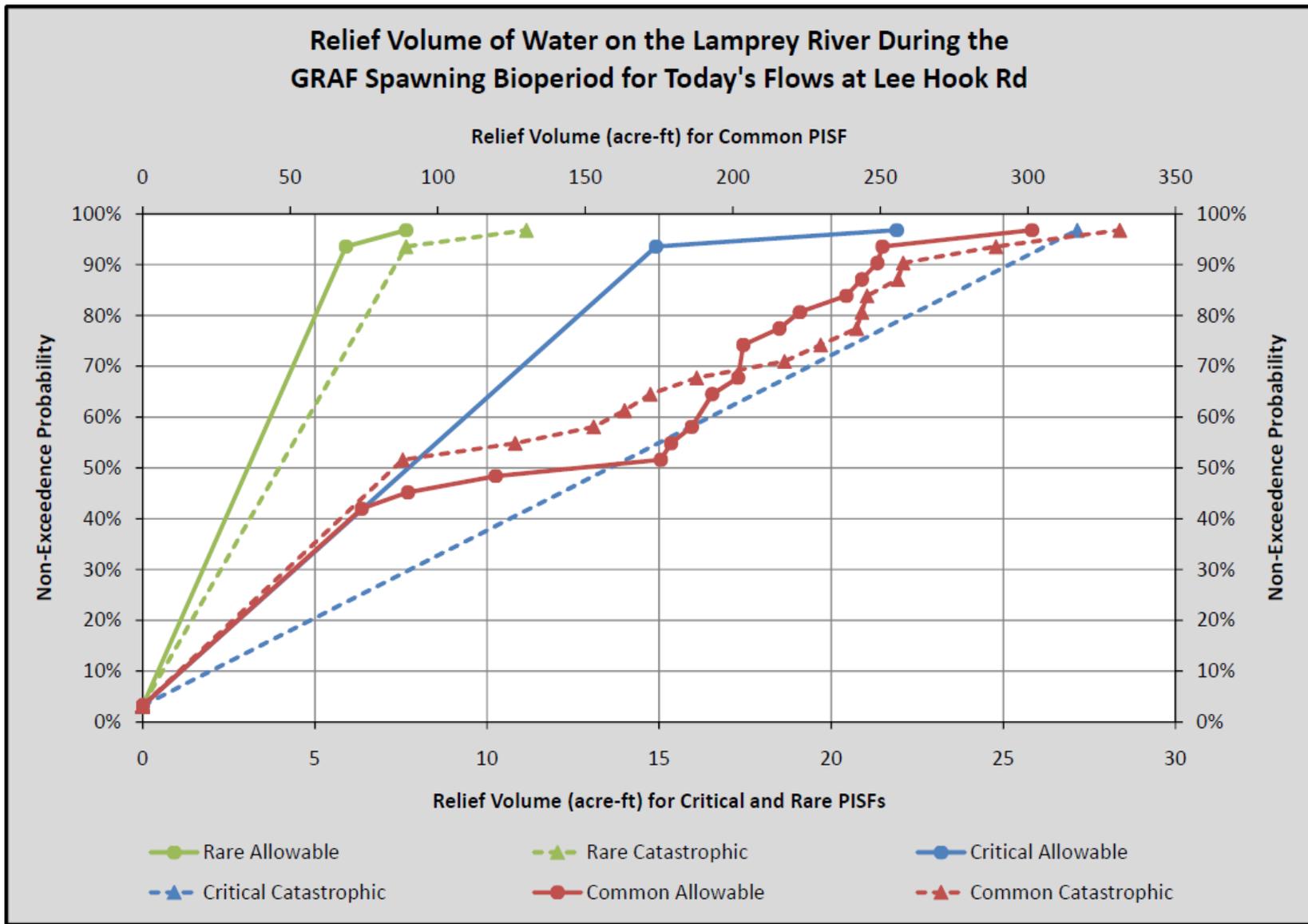
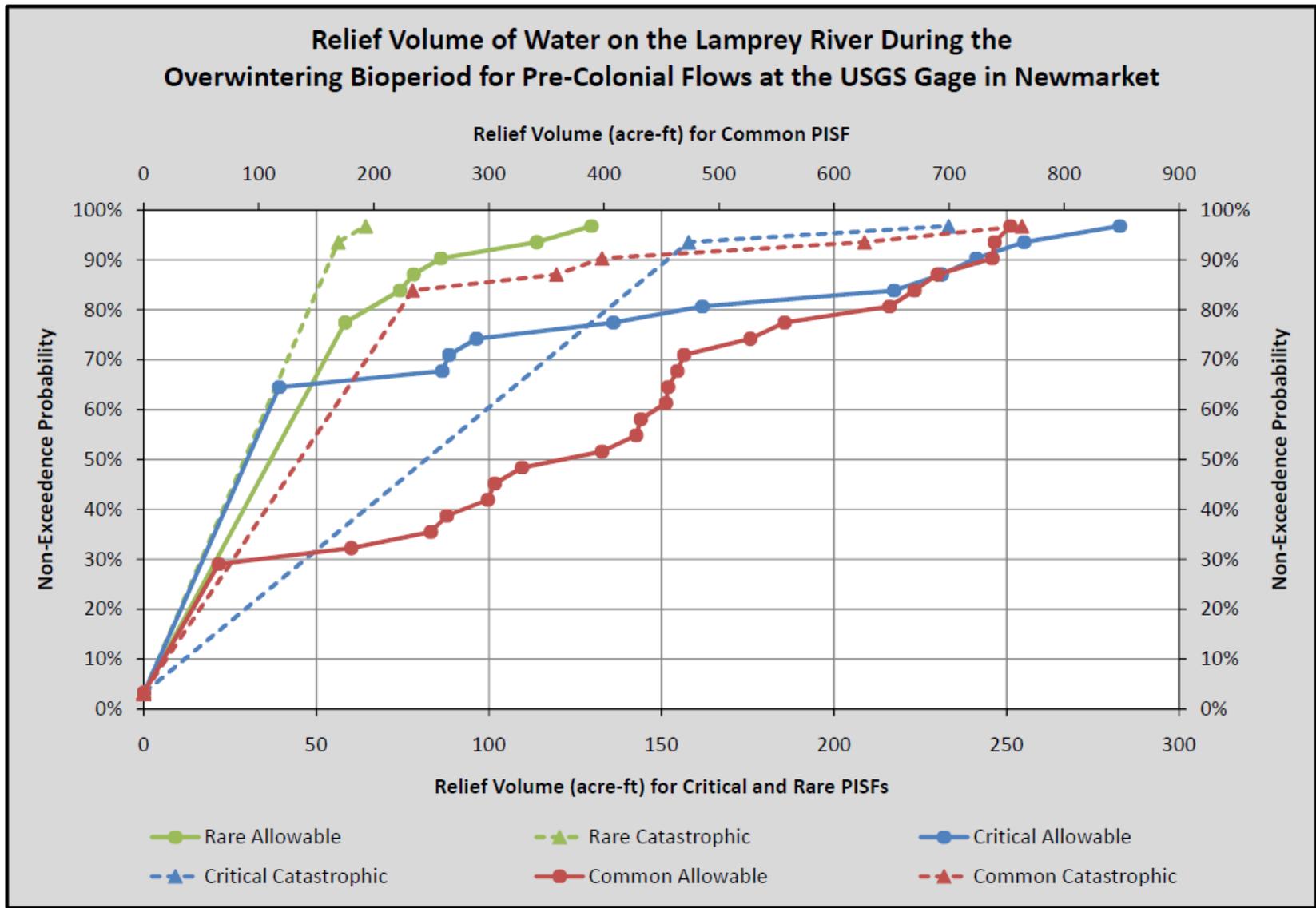


Figure F.12.

Relief Water Volume During GRAF Spawning Bioperiod For Today's Hydrology at Lee Hook Road.



Figure

F.13. Relief Water Volume During Overwintering Bioperiod For Naturalized Flows at Packers Falls.

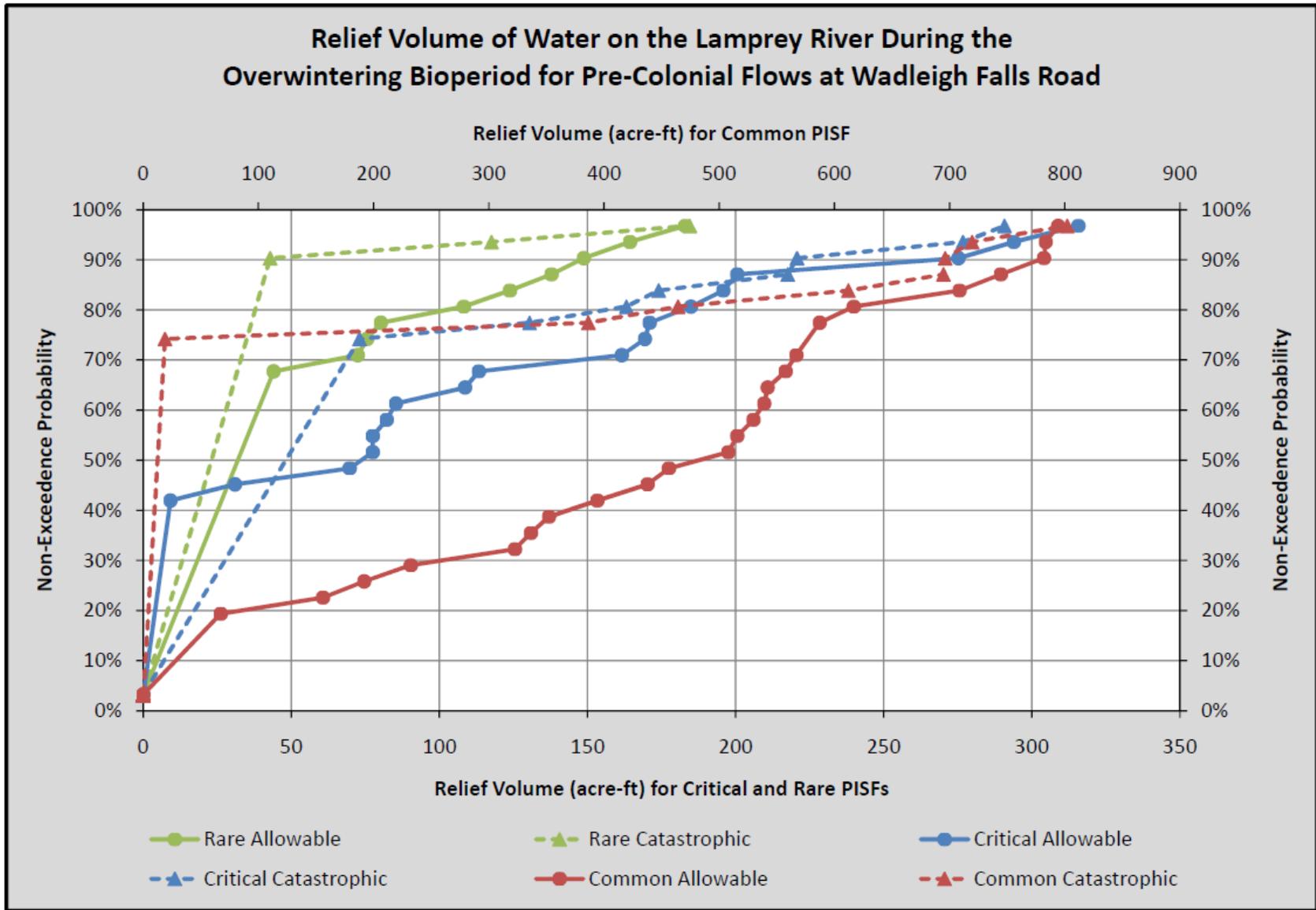


Figure F.14. Relief Water Volume During Overwintering Bioperiod For Naturalized Flows at Wadleigh Falls.

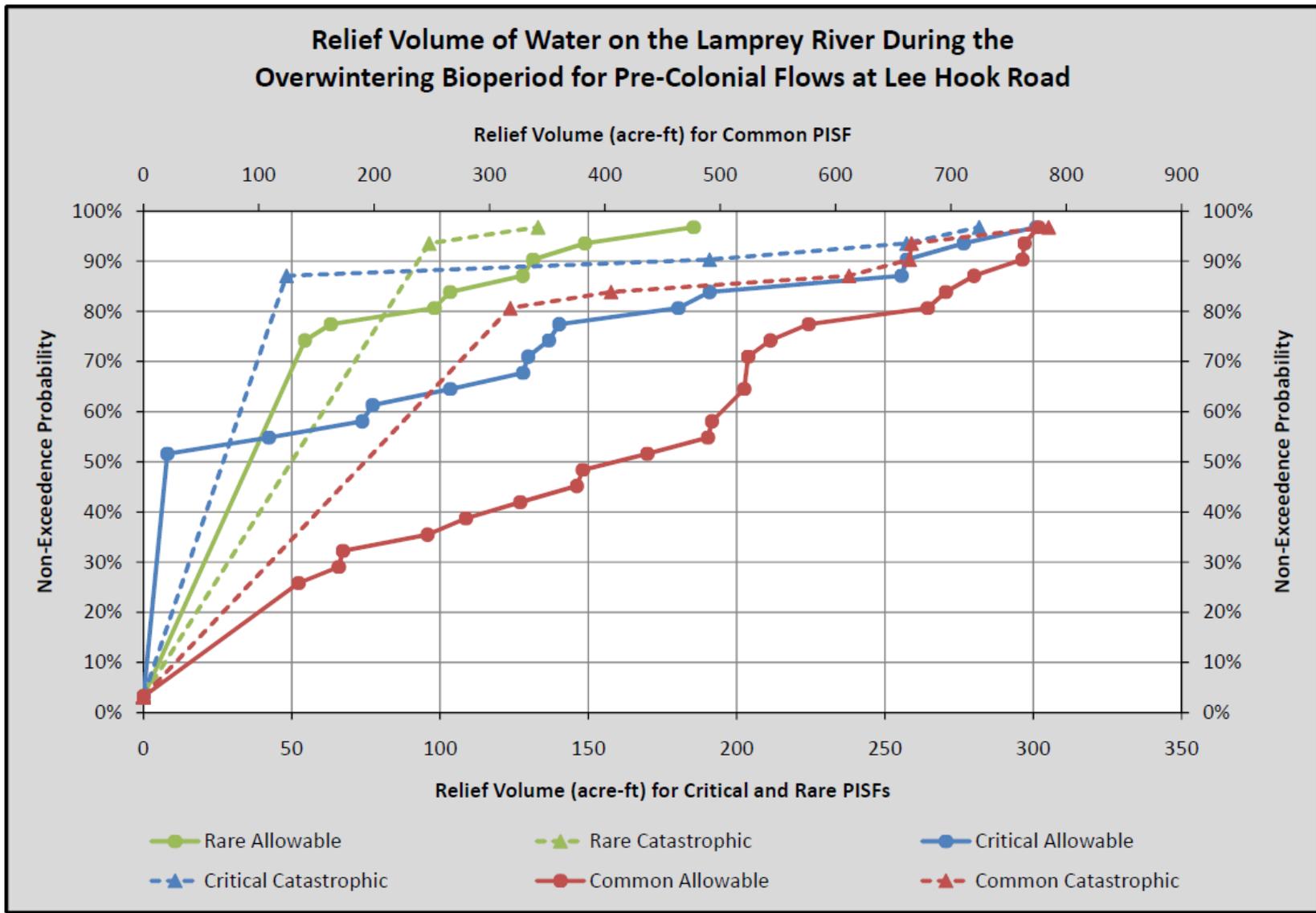
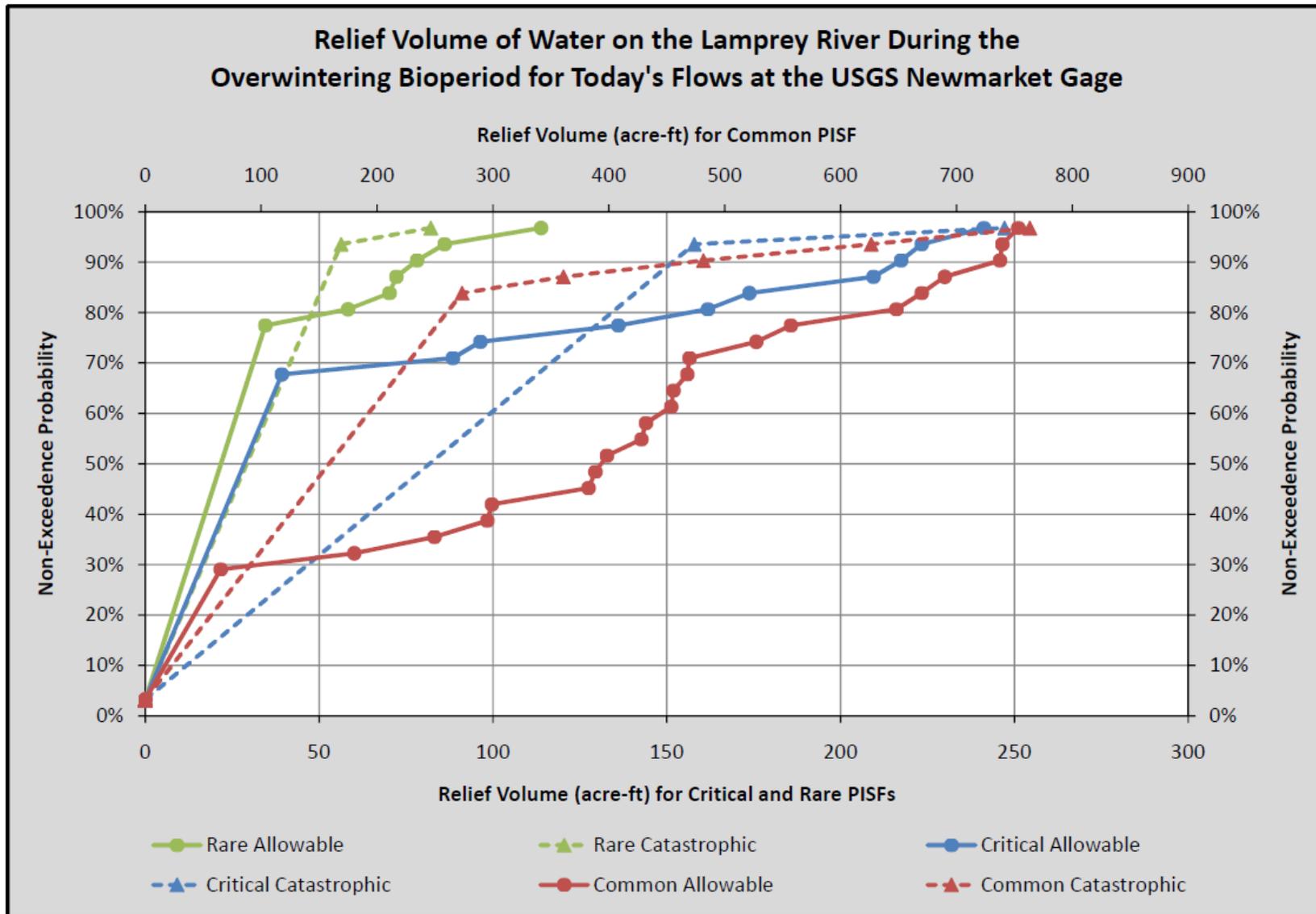
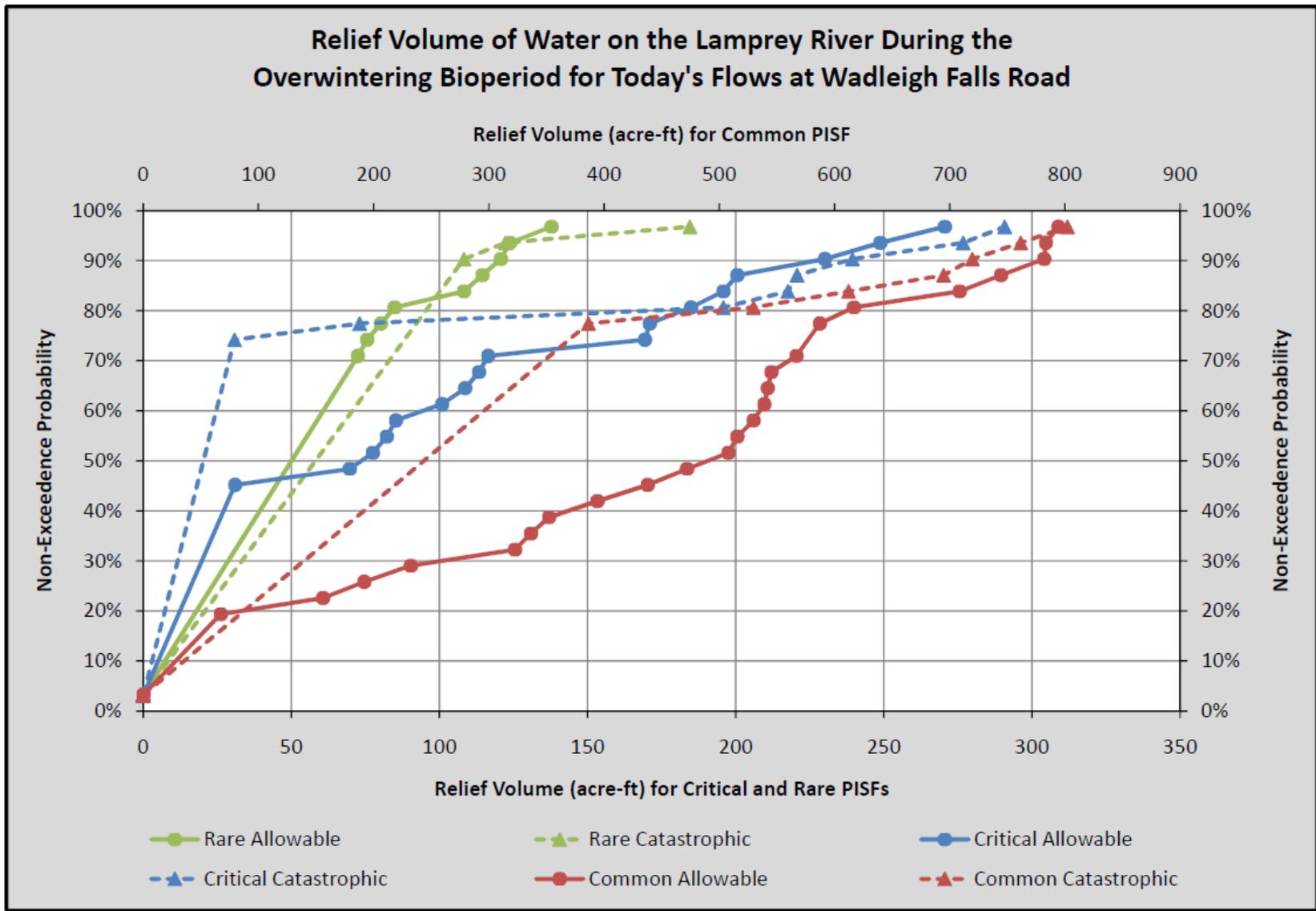


Figure F.15. Relief Water Volume During Overwintering Bioperiod For Naturalized Flows at Lee Hook Road.



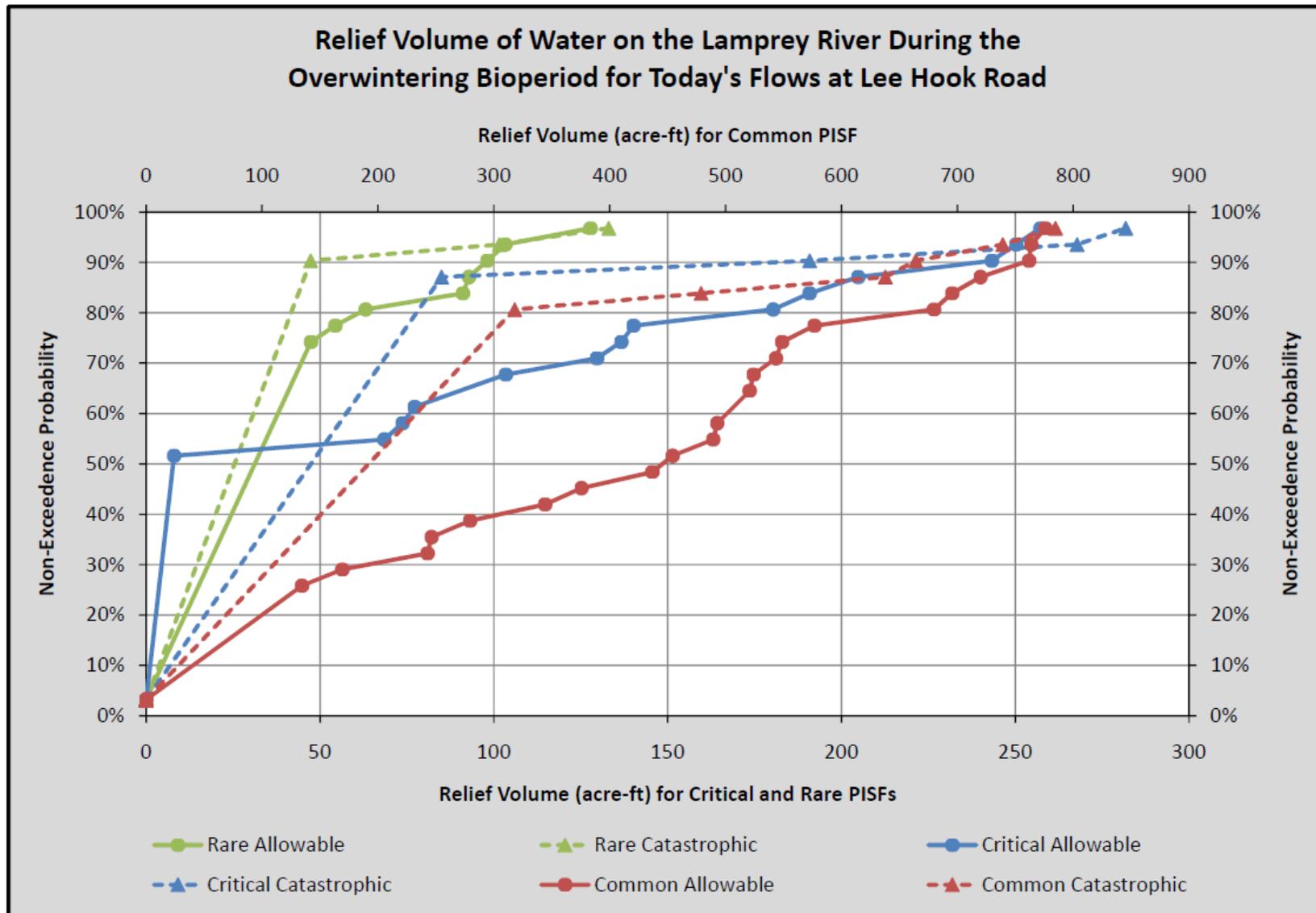
Figure

F.16. Relief Water Volume During Overwintering Bioperiod For Today's Hydrology at Packers Falls.



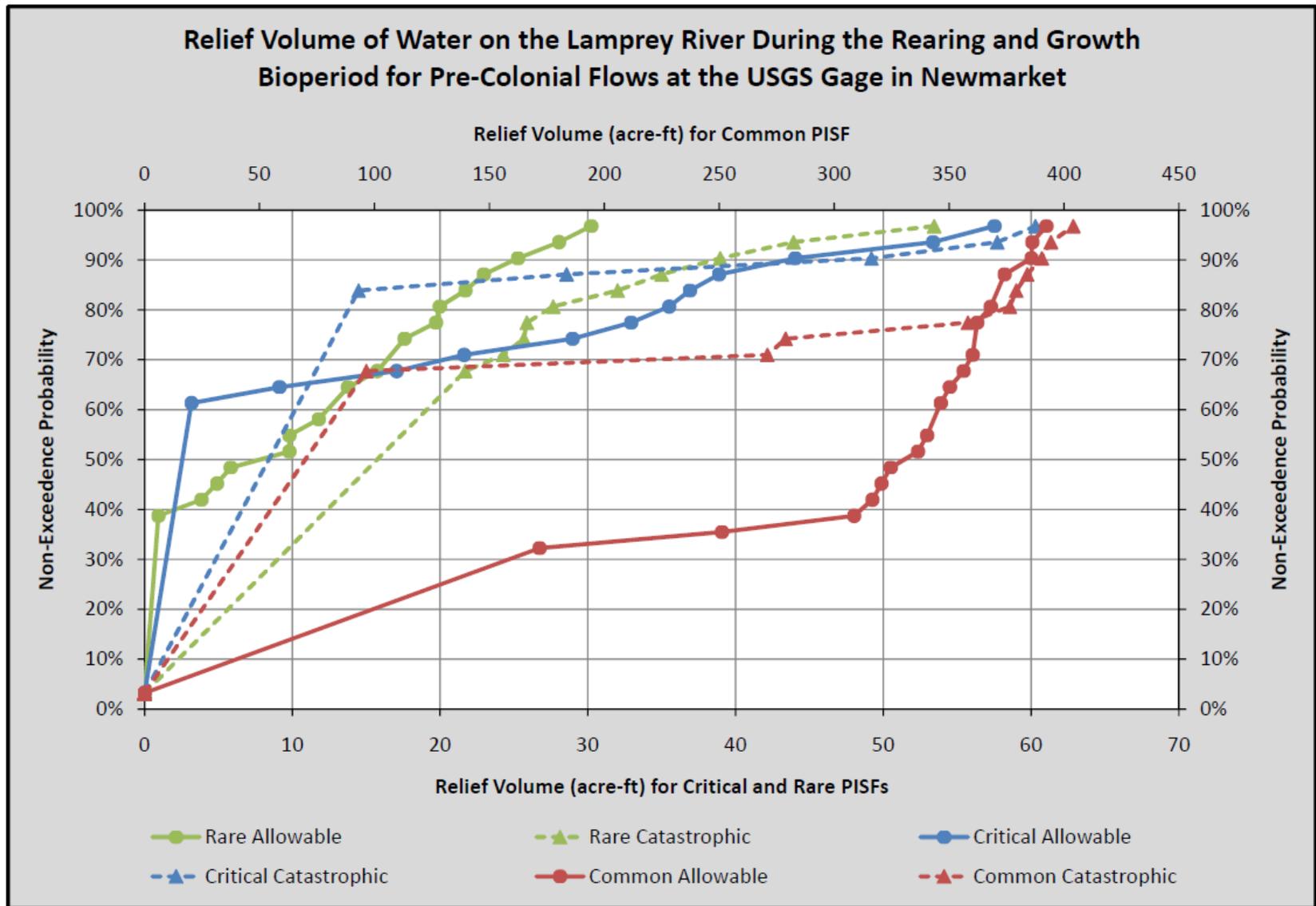
F.17. Relief Water Volume During Overwintering Bioperiod For Today's Hydrology at Wadleigh Falls

Figure



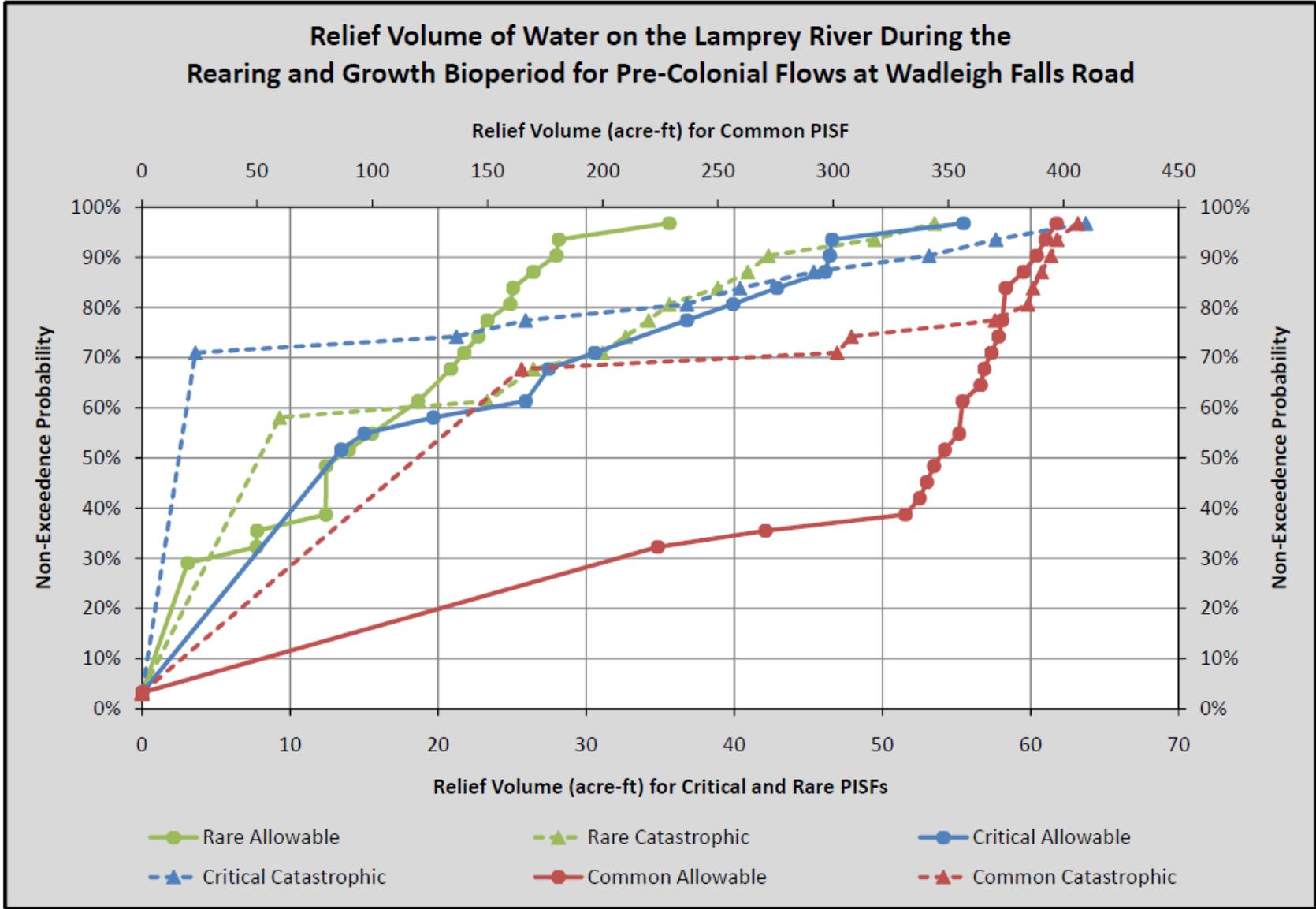
F.18. Relief Water Volume During Overwintering Bioperiod For Today's Hydrology at Lee Hook

Figure



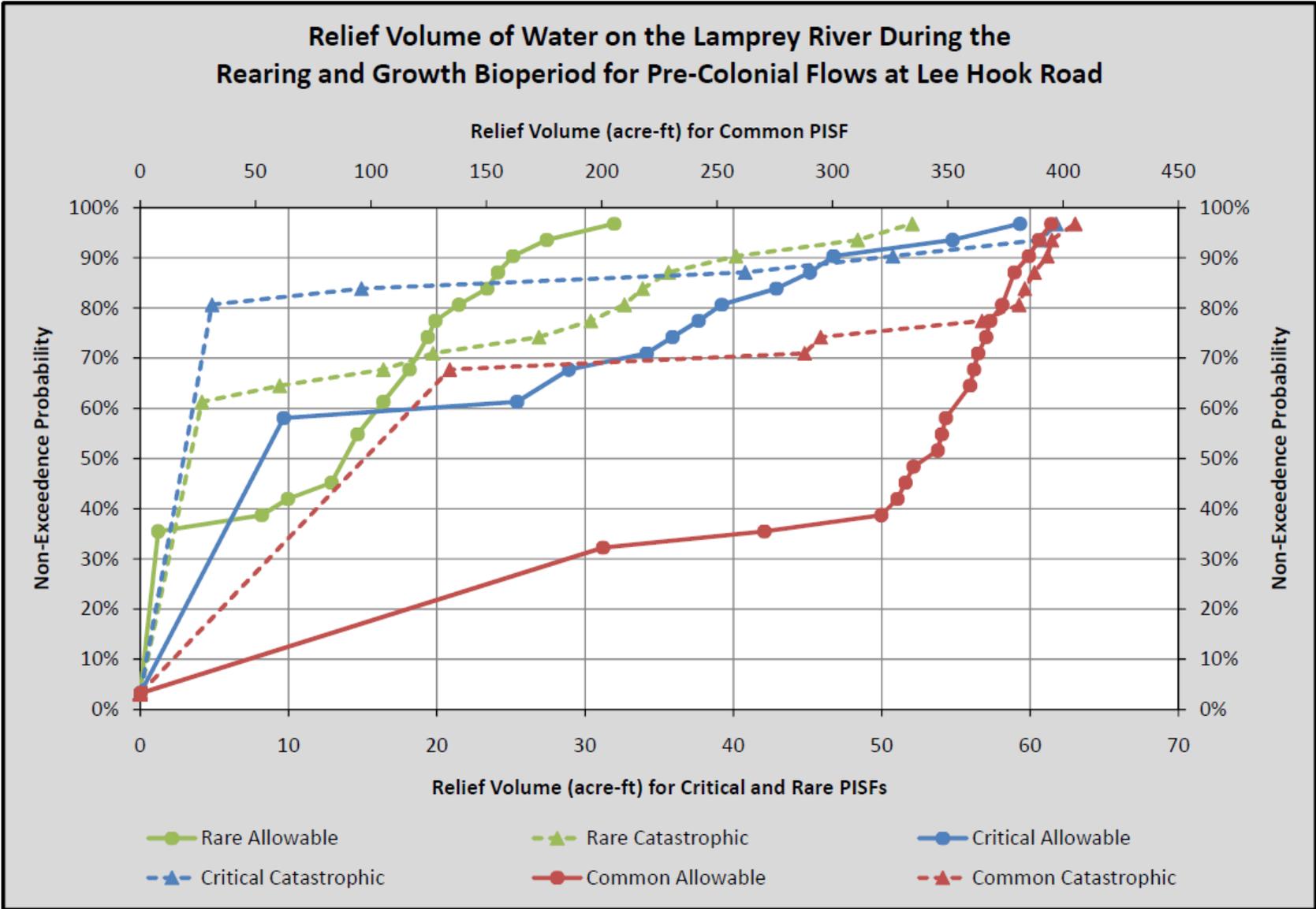
Road.

Figure F.19. Relief Water Volume During Rearing and Growth Bioperiod For Naturalized Flows at Packers Falls.



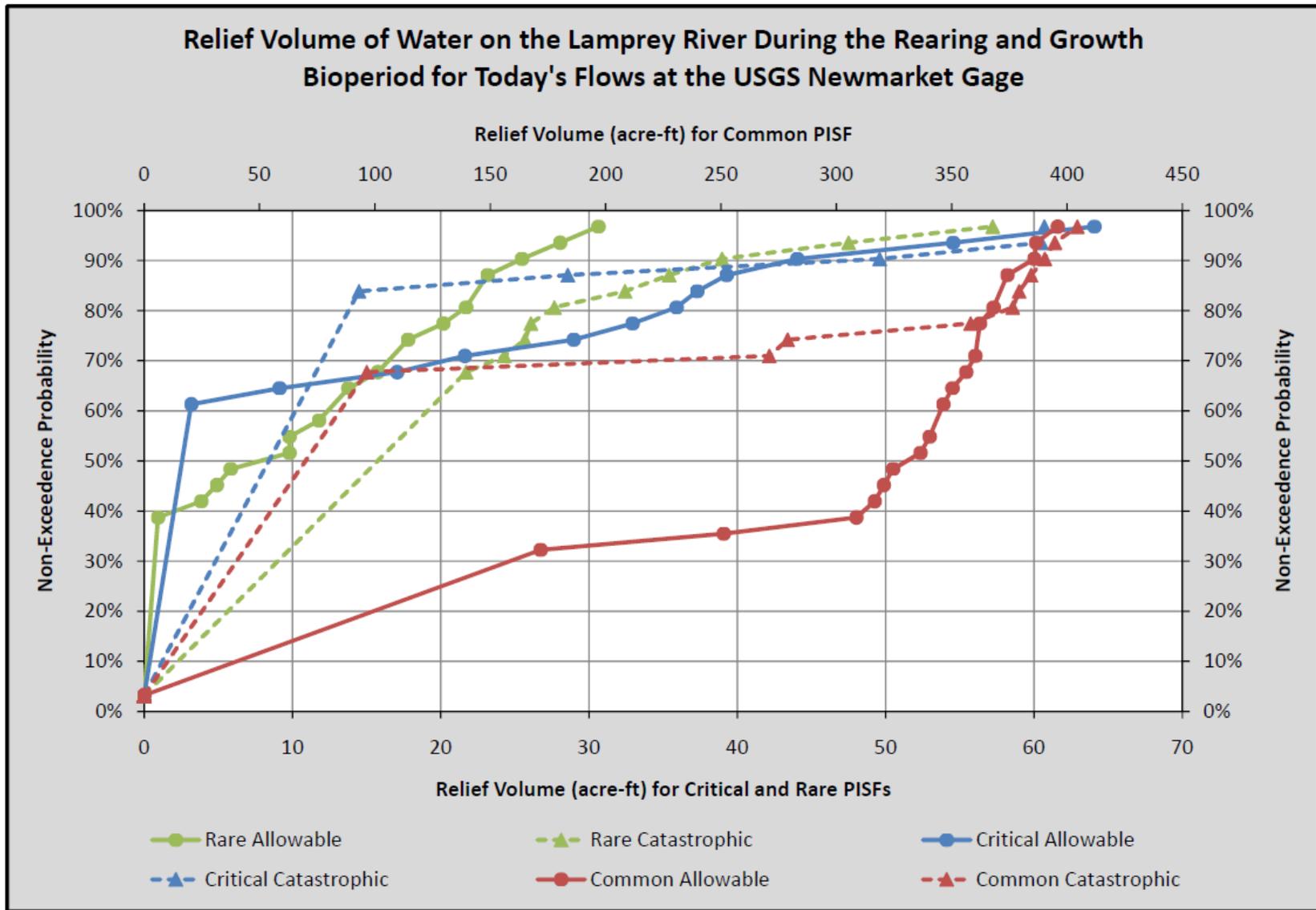
Figure

F.20. Relief Water Volume During Rearing and Growth Bioperiod For Naturalized Flows at Wadleigh Falls.



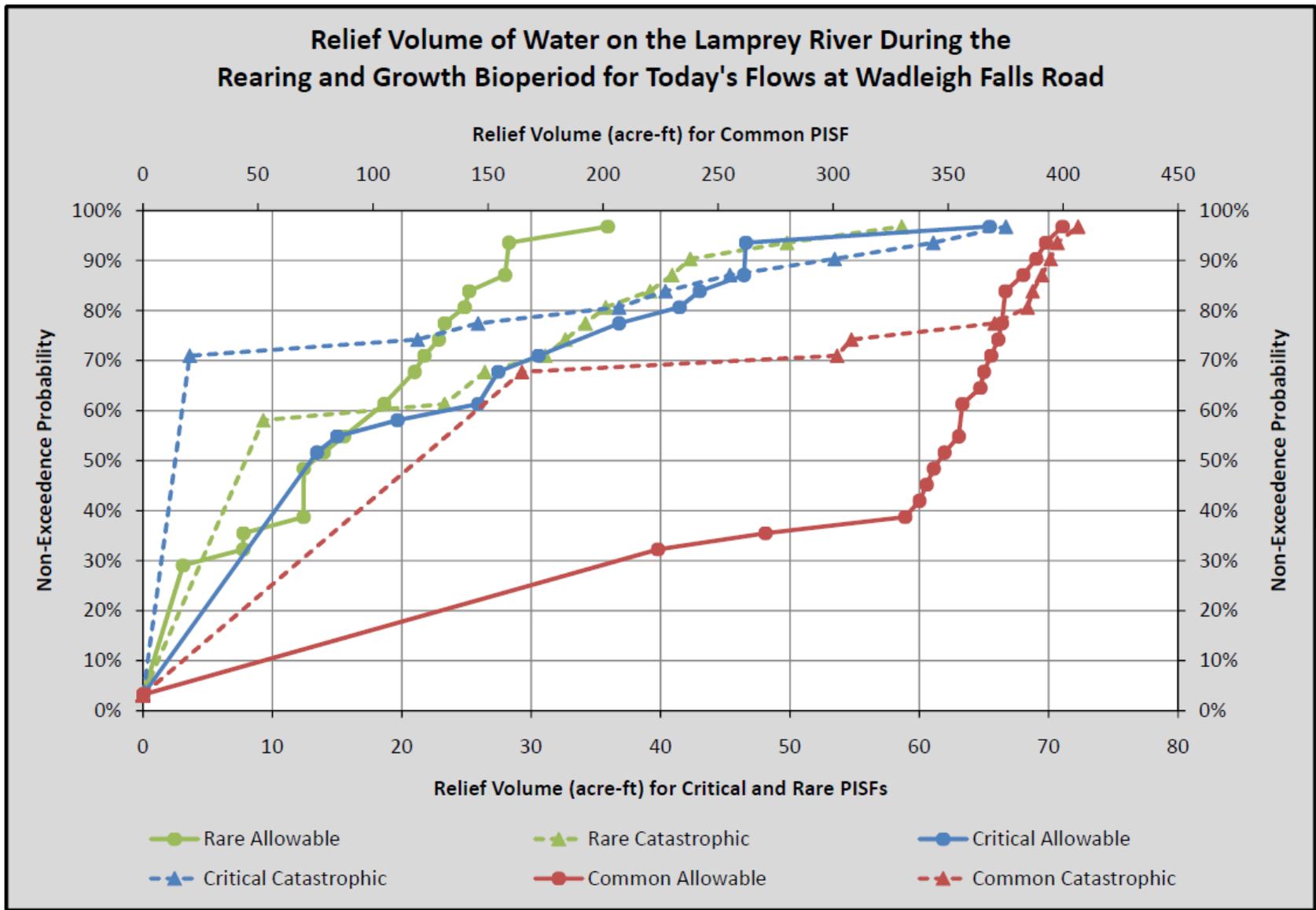
Figure

F.21. Relief Water Volume During Rearing and Growth Bioperiod For Naturalized Flows at Lee Hook Road.



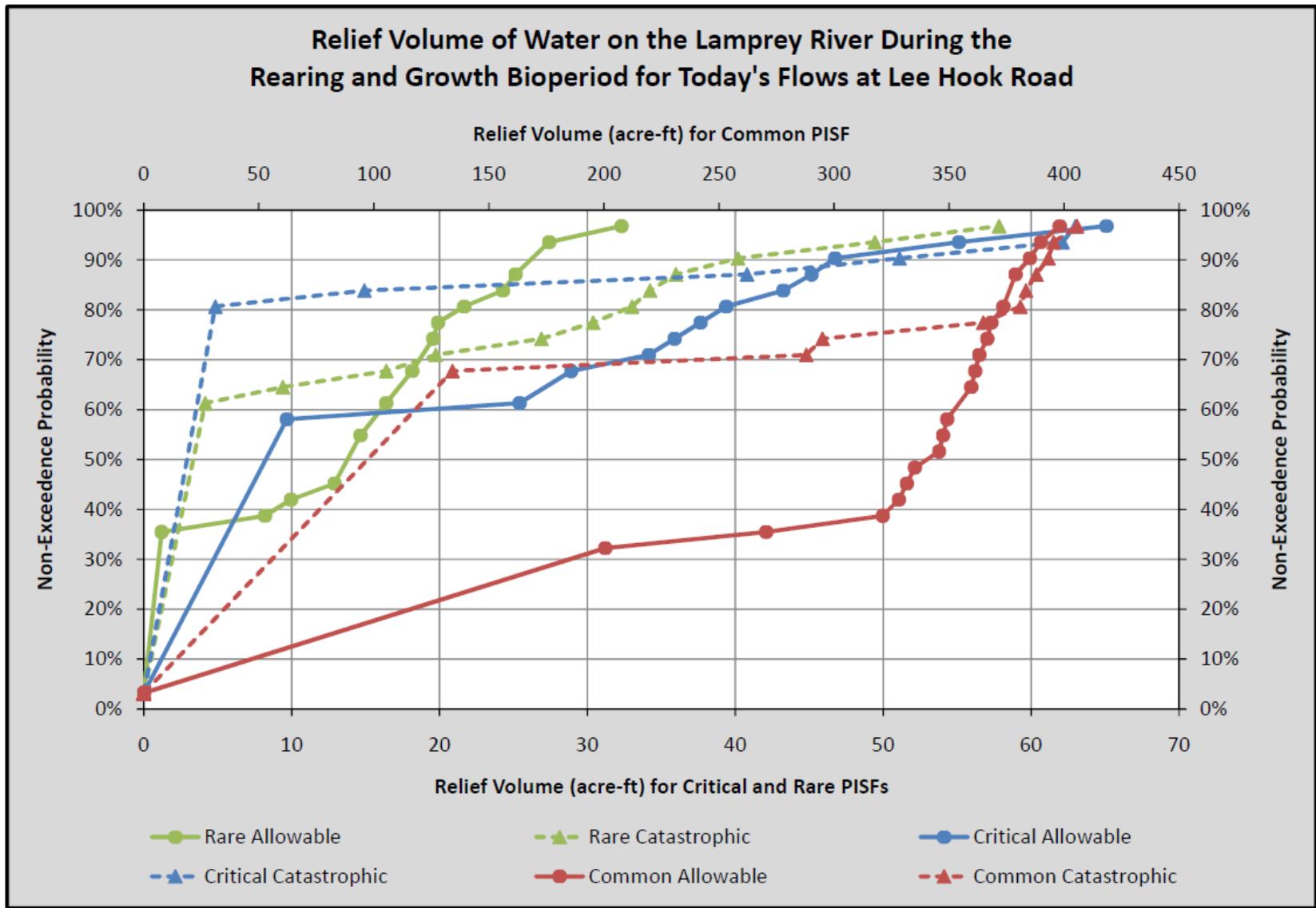
Figure

F.22. Relief Water Volume During Rearing and Growth Bioperiod For Today's Hydrology at Packers Falls.



Figure

F.23. Relief Water Volume During Rearing and Growth Bioperiod For Today's Hydrology at Wadleigh Falls.



Figure

F.24. Relief Water Volume During Rearing and Growth Bioperiod For Today's Hydrology at Lee Hook Road.

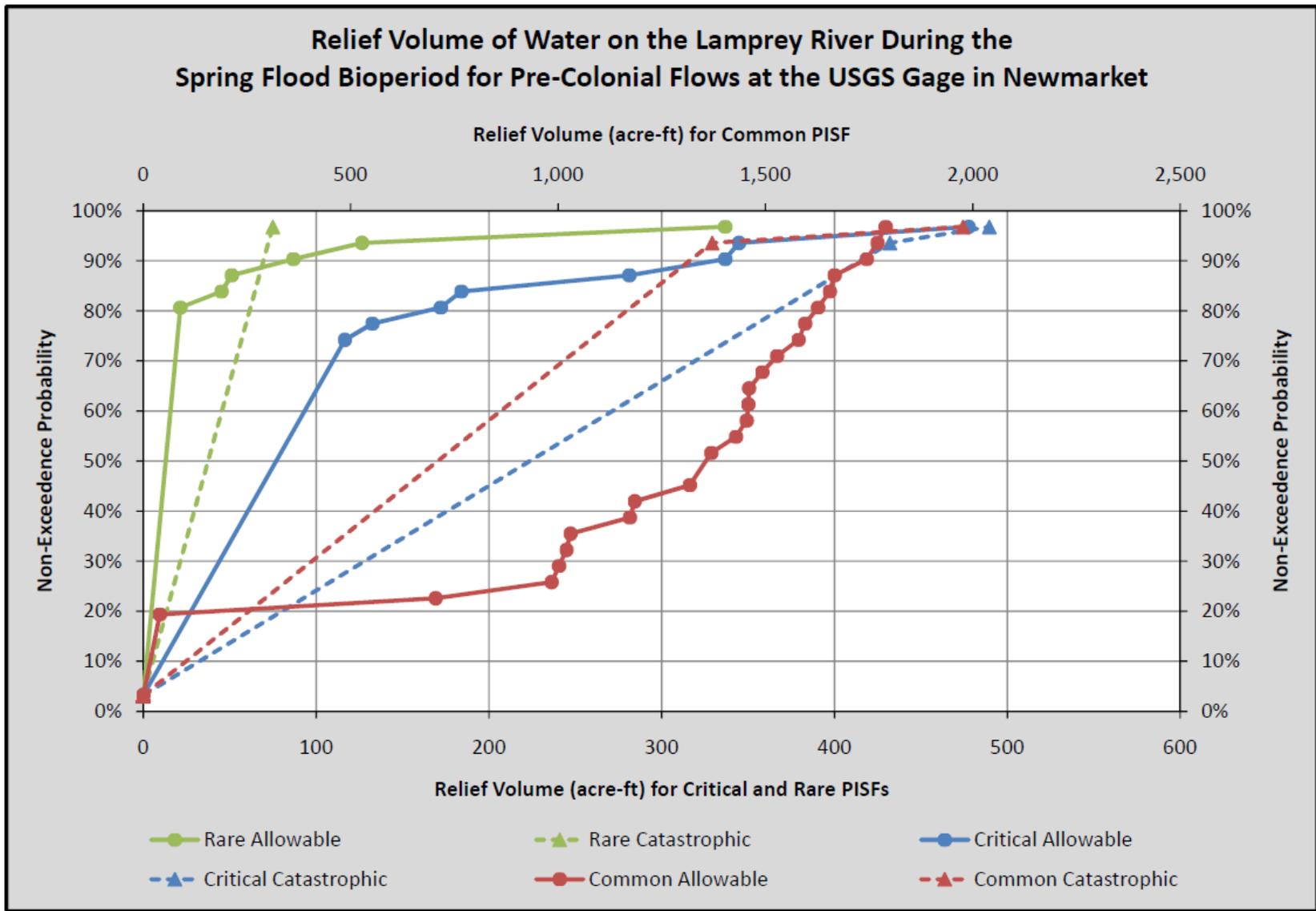
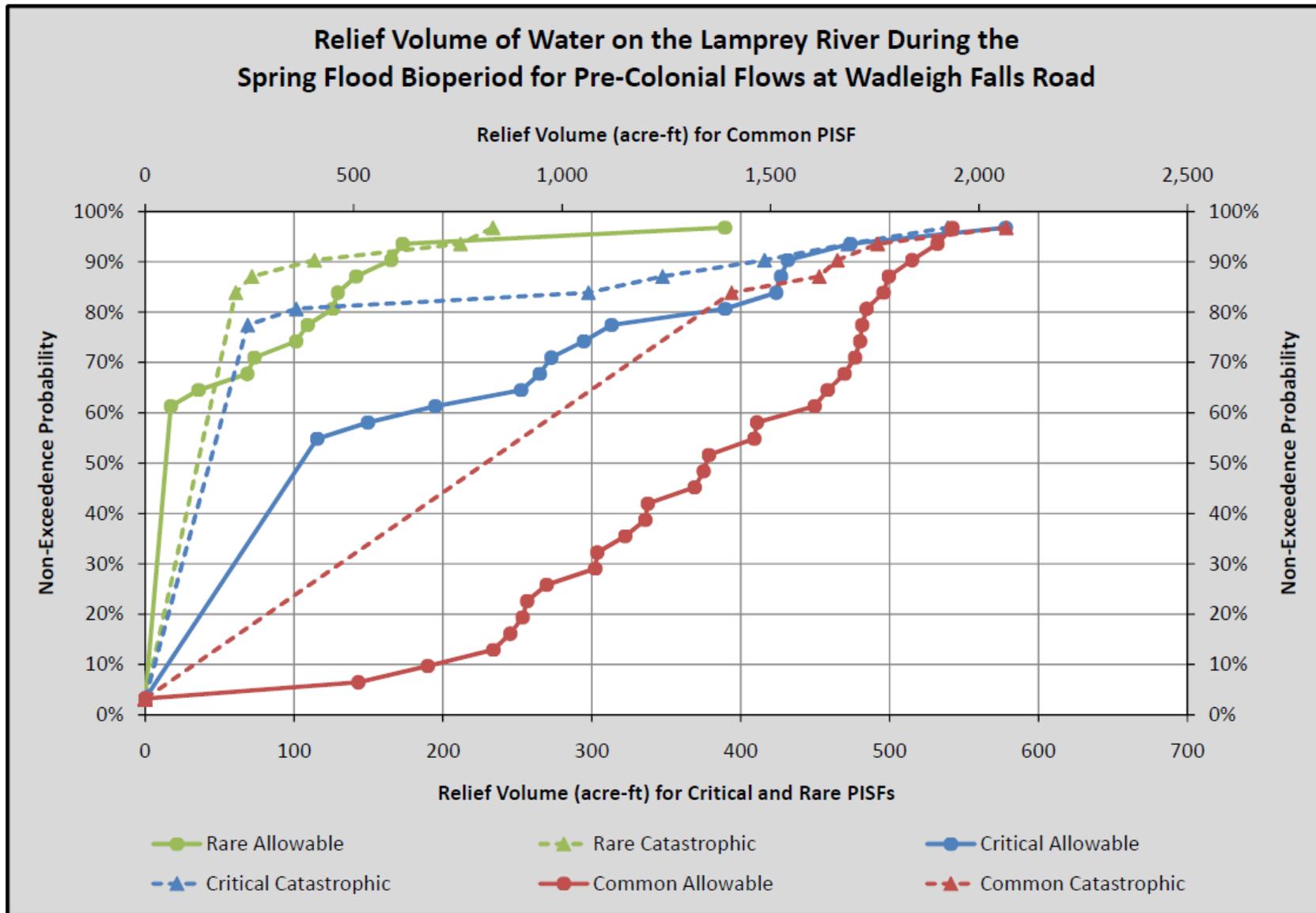


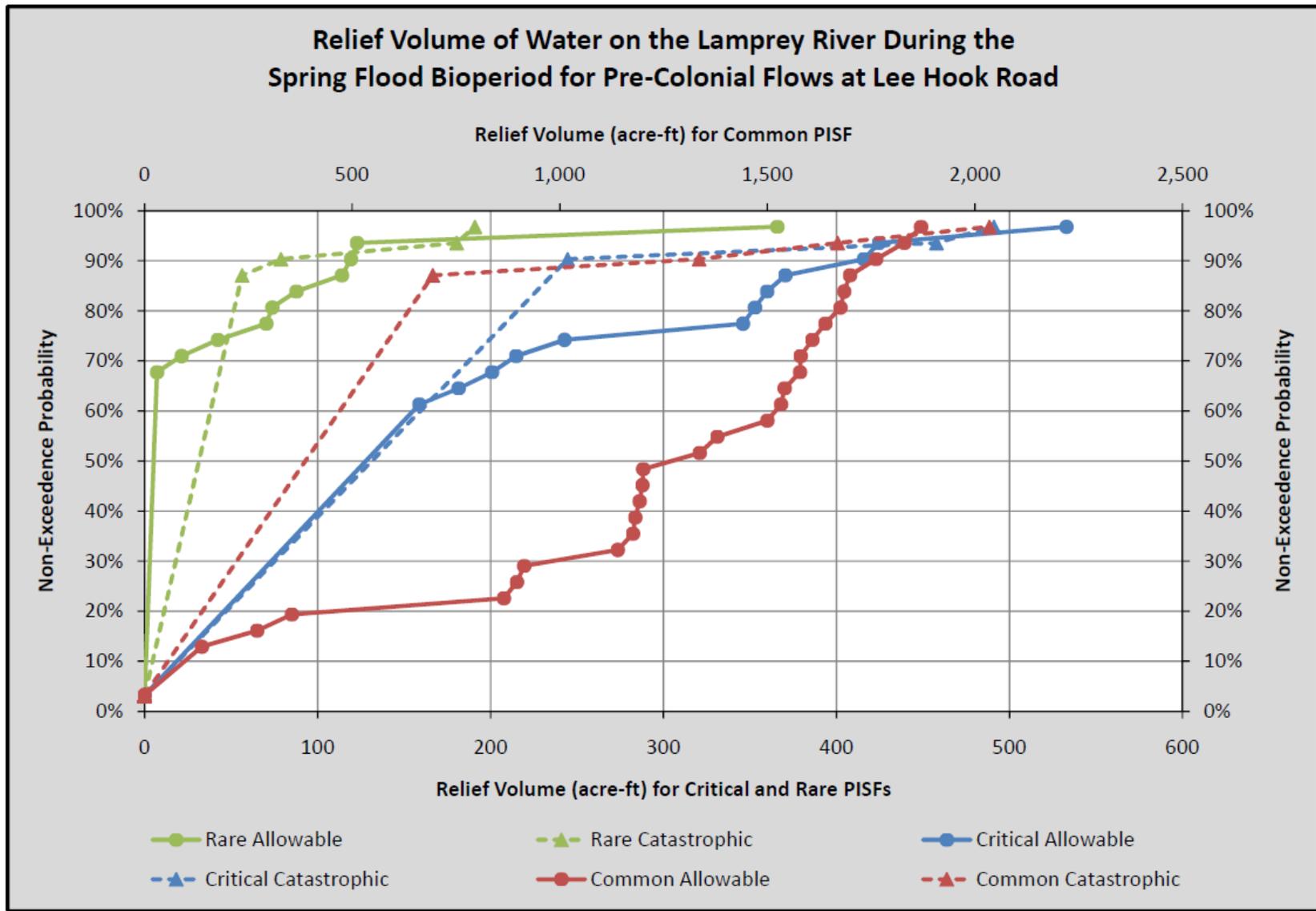
Figure F.25.

Relief Water Volume During Spring Flood Bioperiod For Naturalized Flows at Packers Falls.



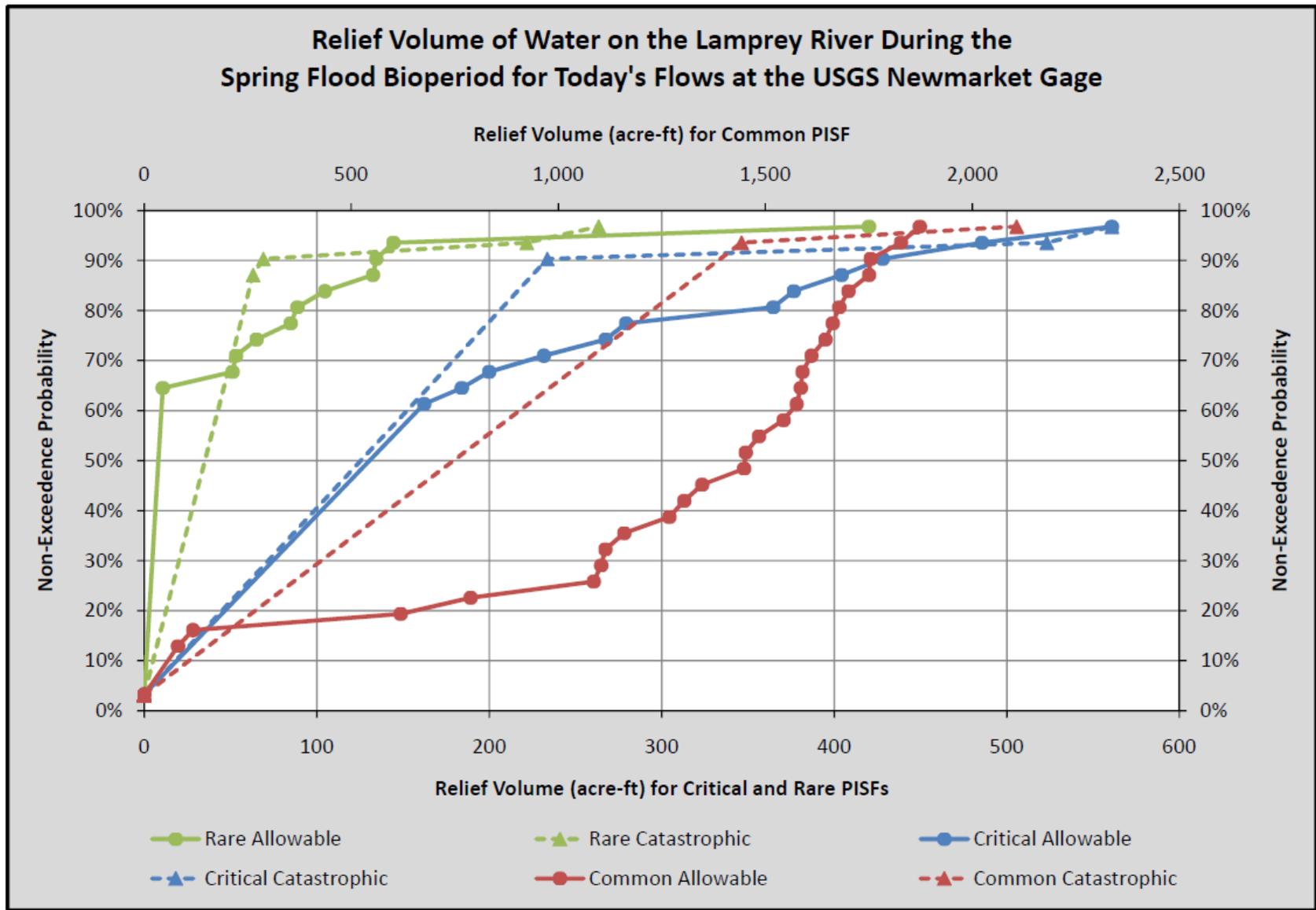
Figure

F.26. Relief Water Volume During Spring Flood Bioperiod For Naturalized Flows at Wadleigh Falls.



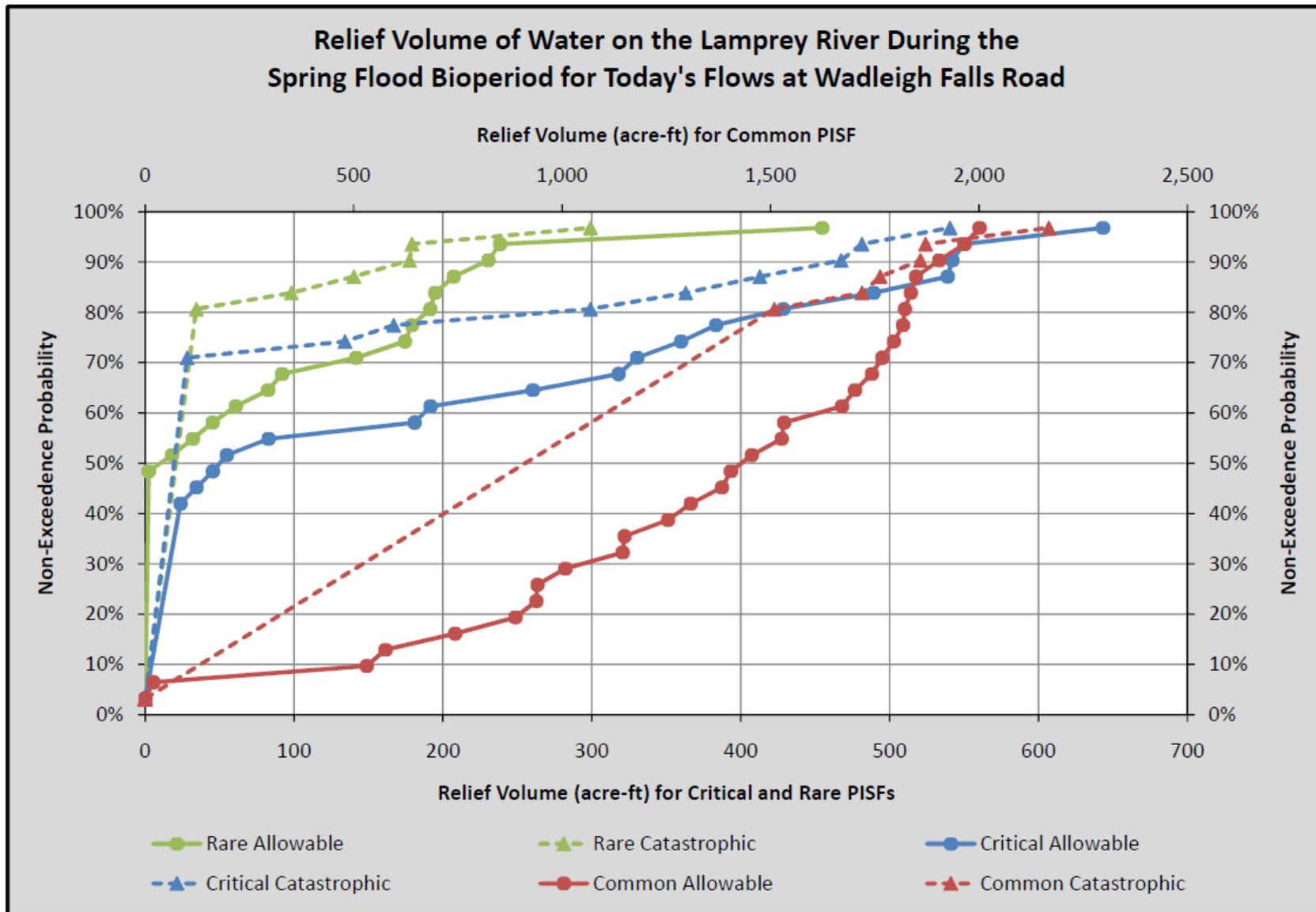
F.27. Relief Water Volume During Spring Flood Bioperiod For Naturalized Flows at Lee Hook Road.

Figure



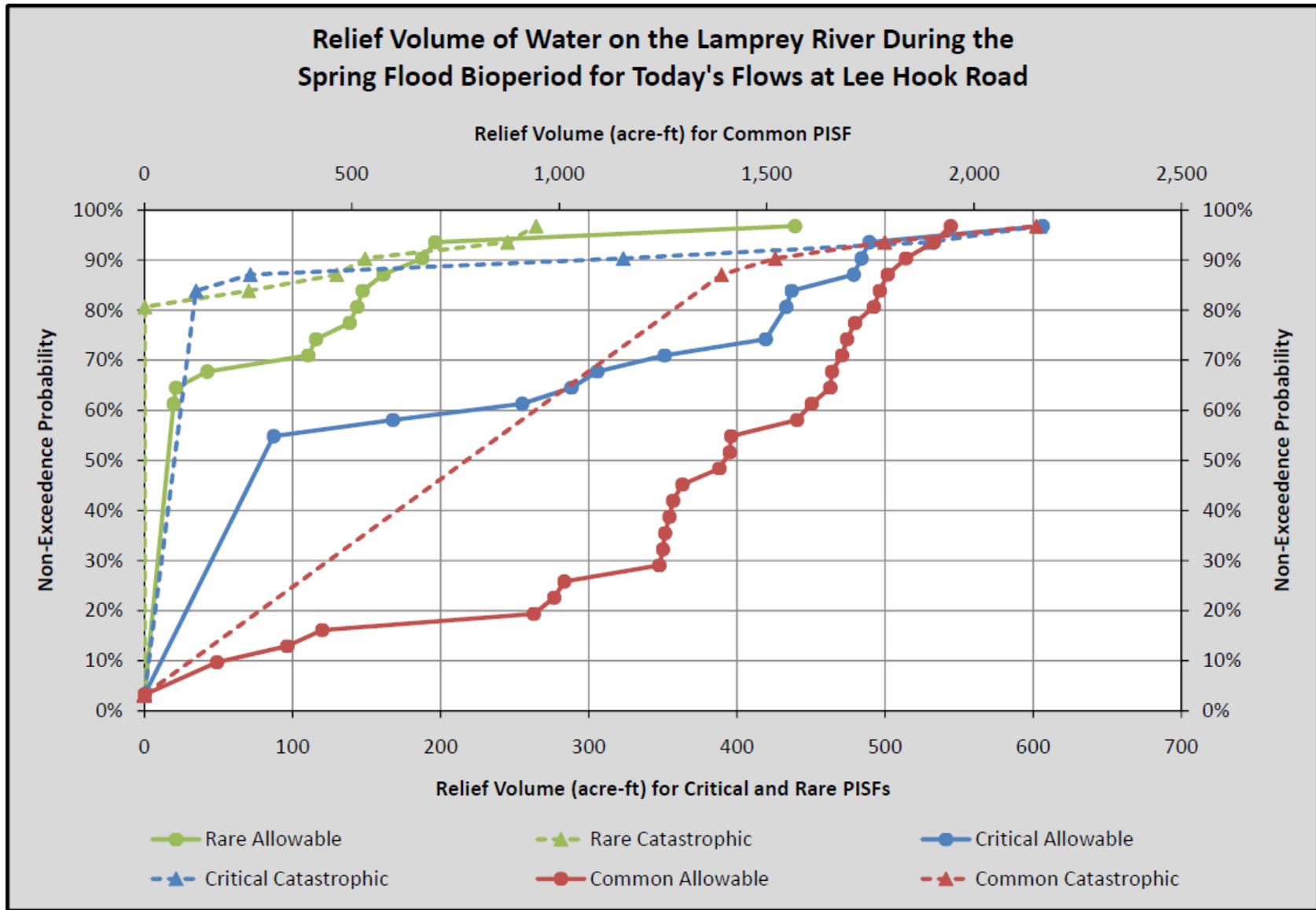
F.28. Relief Water Volume During Spring Flood Bioperiod For Today's Hydrology at Packers Falls.

Figure



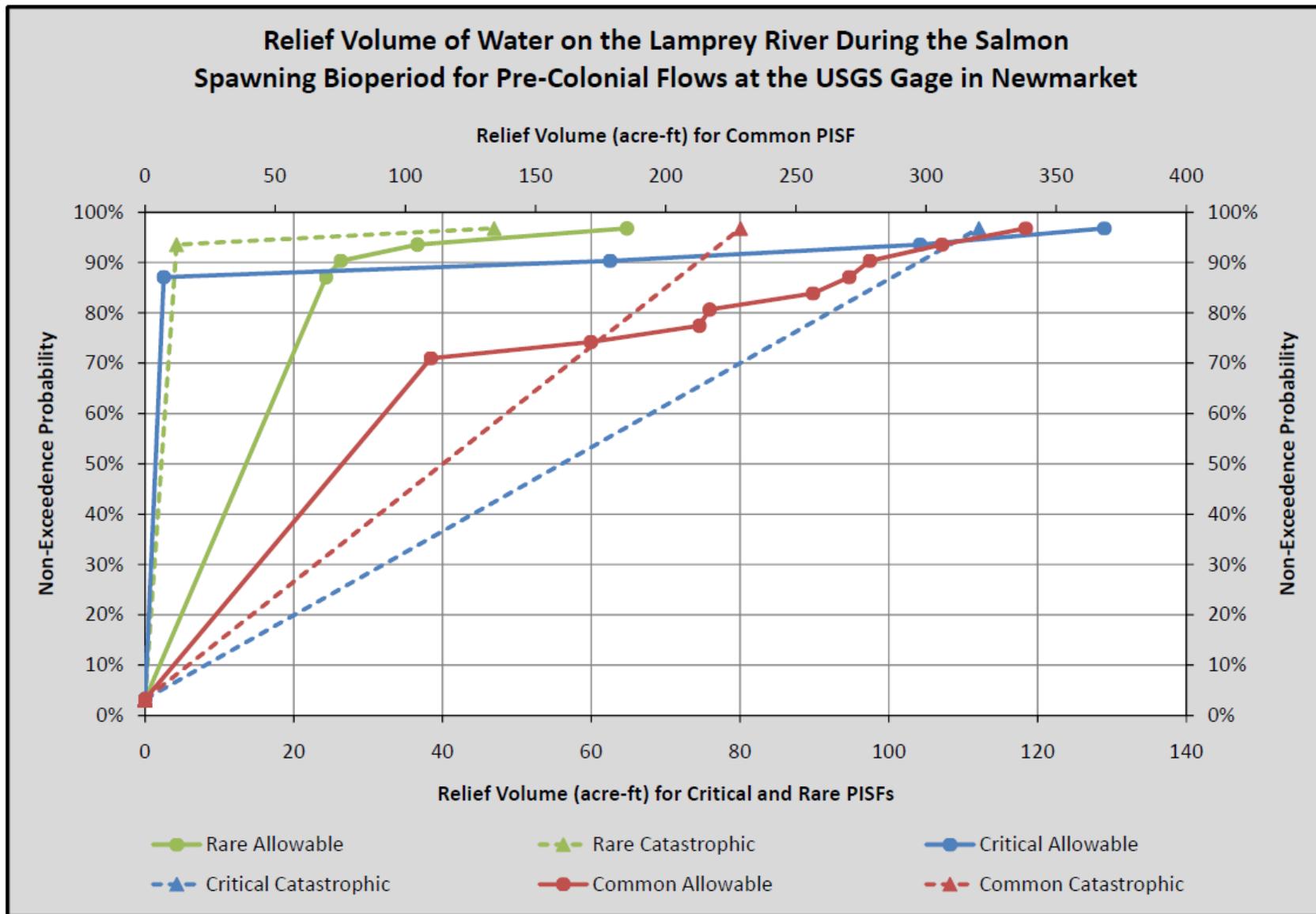
Figure

F.29. Relief Water Volume During Spring Flood Bioperiod For Today's Hydrology at Wadleigh Falls



F.30. Relief Water Volume During Spring Flood Bioperiod For Today's Hydrology at Lee Hook Road.

Figure



F.31. Relief Water Volume During Salmon Spawning Bioperiod For Naturalized Flows at Packers Falls.

Figure

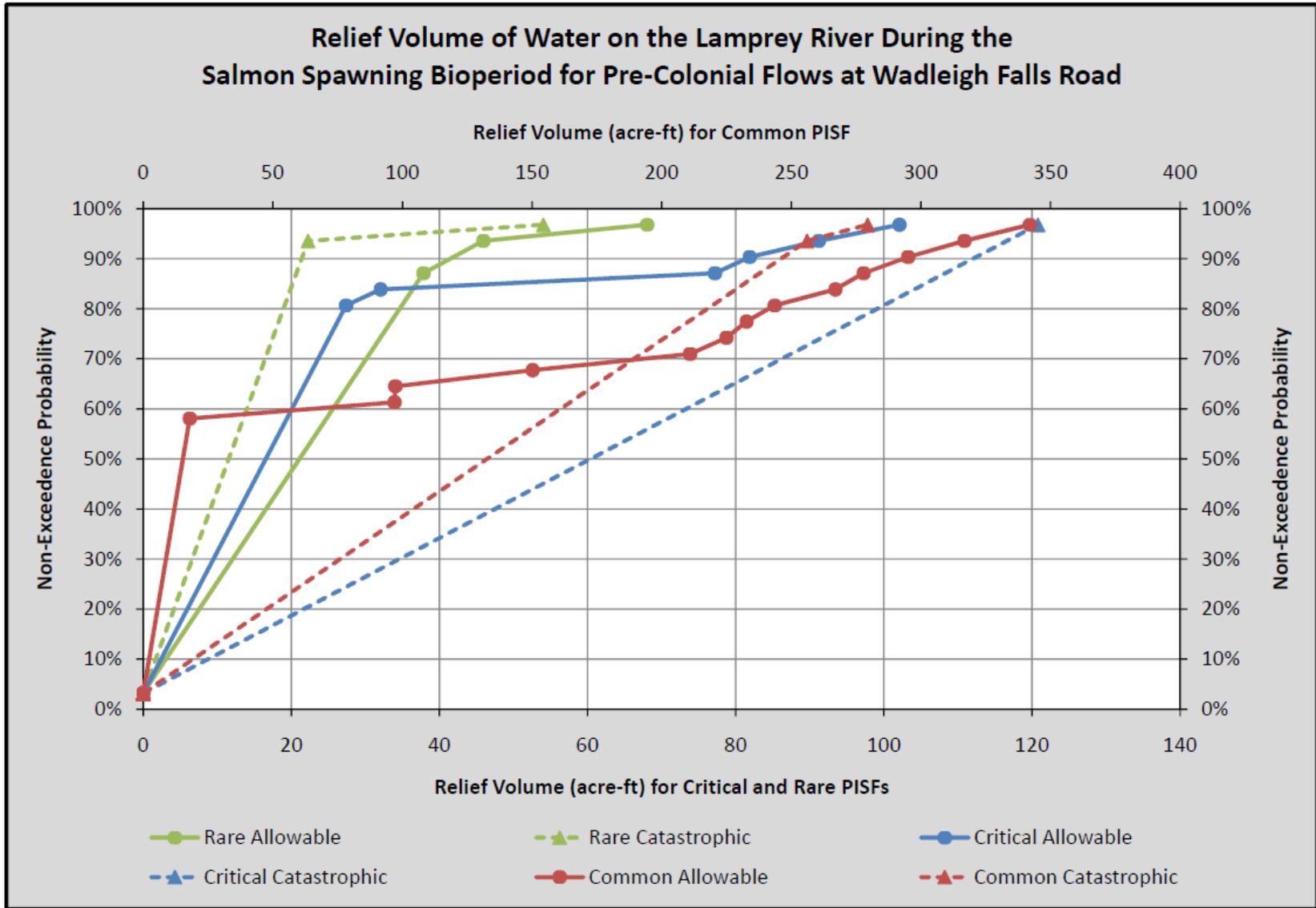
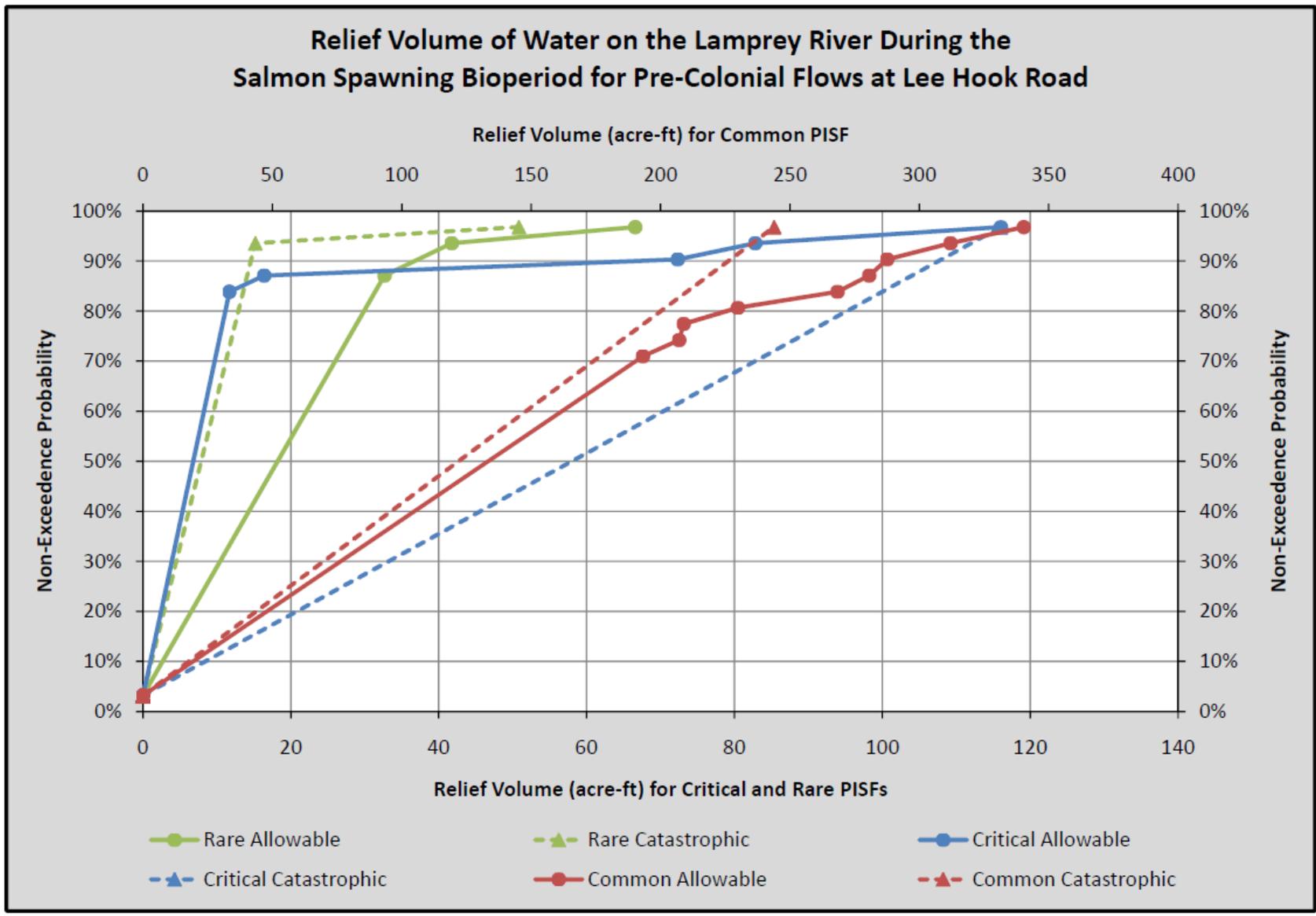


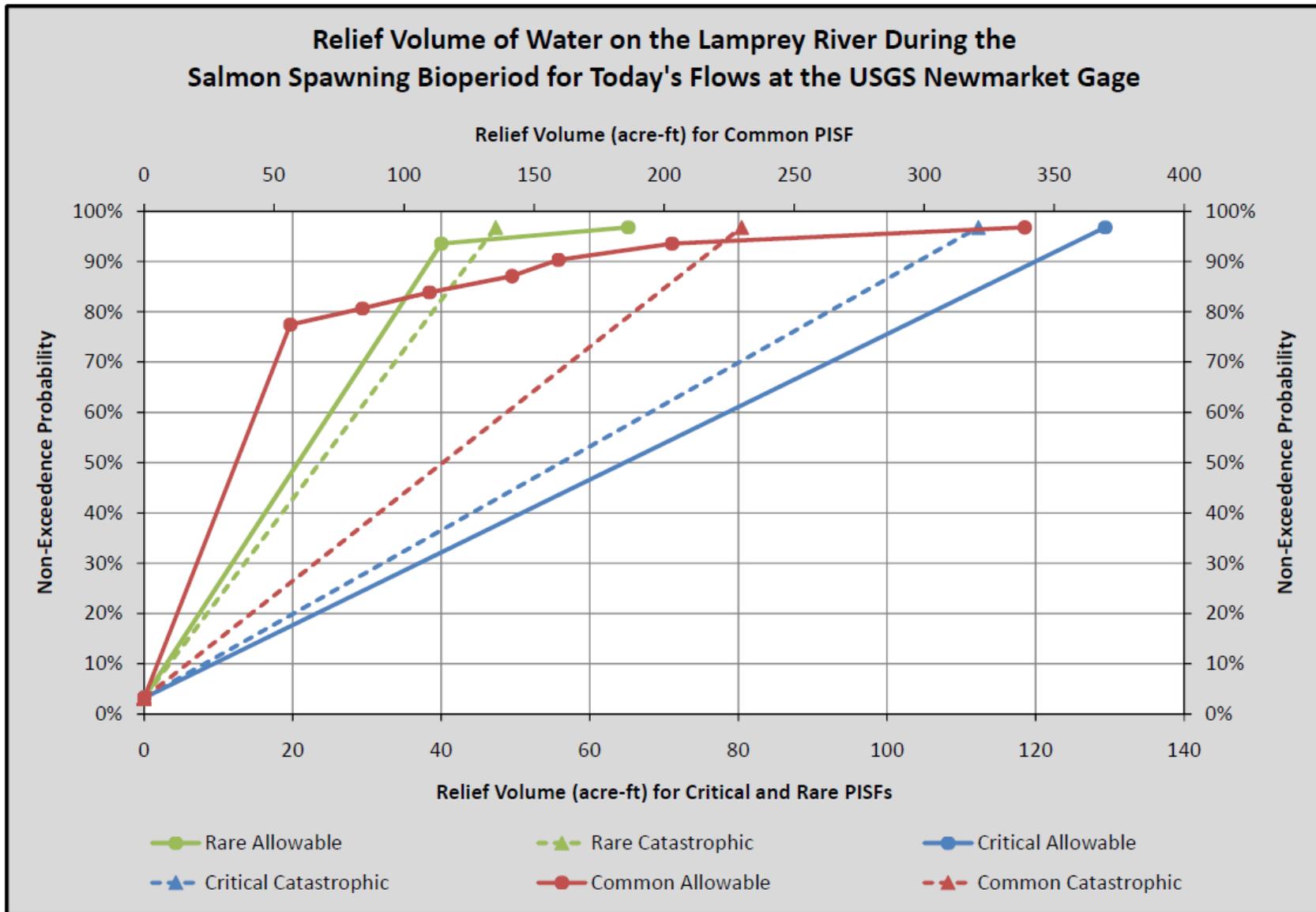
Figure F.32.

Relief Water Volume During Salmon Spawning Bioperiod For Naturalized Flows at Wadleigh Falls.



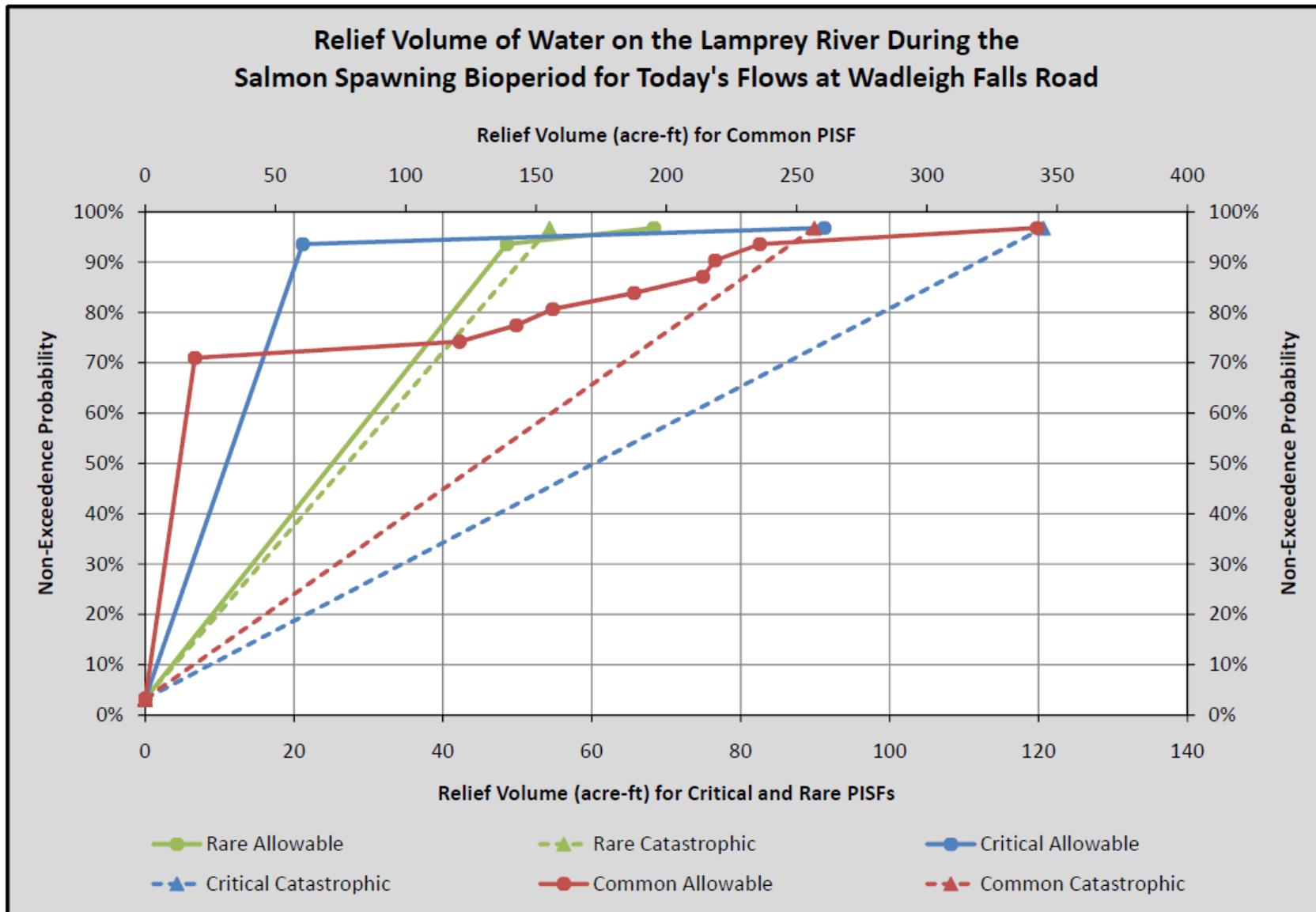
Figure

F.33. Relief Water Volume During Salmon Spawning Bioperiod For Naturalized Flows at Lee Hook Road.



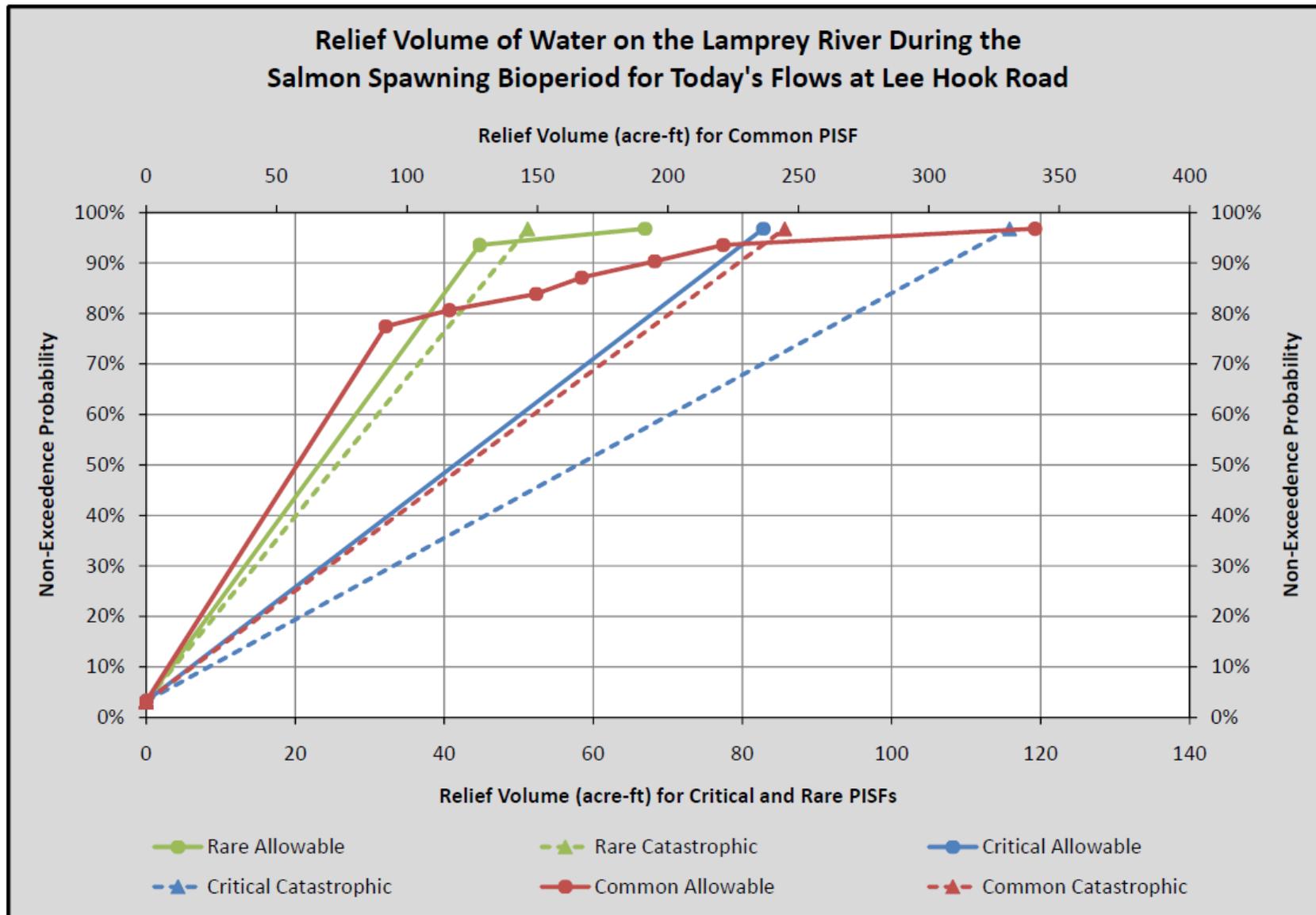
Figure

F.34. Relief Water Volume During Salmon Spawning Bioperiod For Today's Hydrology at Packers Falls.



Figure

F.35. Relief Water Volume During Salmon Spawning Bioperiod For Today's Hydrology at Wadleigh Falls.



F.36. Relief Water Volume During Salmon Spawning Bioperiod For Today's Hydrology at Lee Hook Road.

Figure