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- Book: Personal Author Harrell FE Jr. Regression modeling strategies. New York (NY): Springer; 2001. Bailar JC III, Mosteller F, editors. Medical uses of statistics. 2<sup>nd</sup> Ed. Boston (MA): NEJM Books; 1992:449 p.
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- Technical Reports Tschantz BA, Moran B. Modeling of the hydrologic transport of mercury in the Upper East Fork Poplar Creek (UEFPC) watershed. Technical Report for Lockheed Martin Energy Systems: Bethesda, MD, September 2004.
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