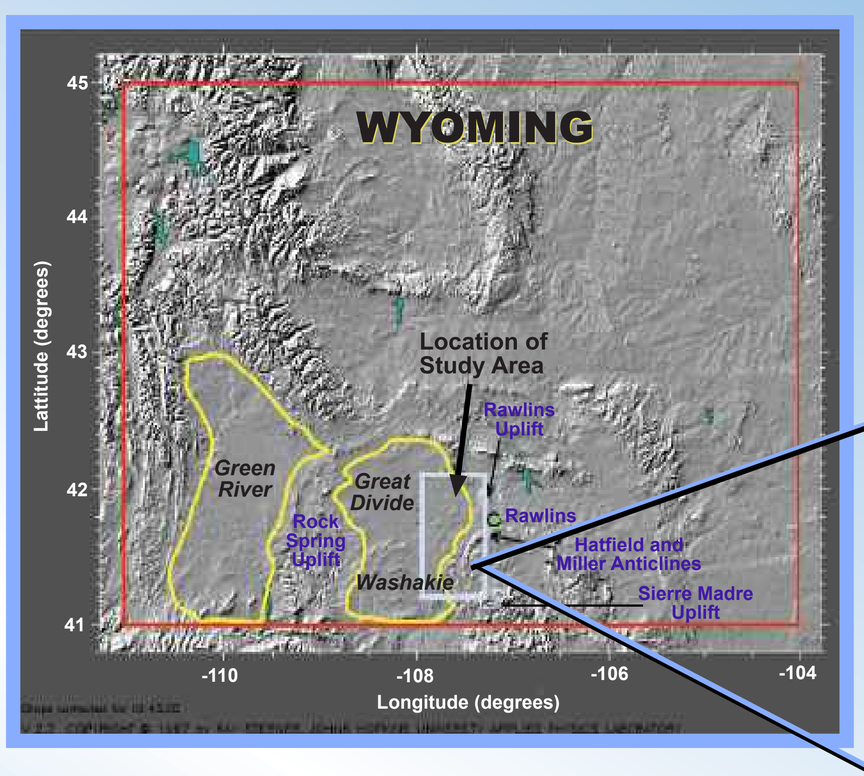
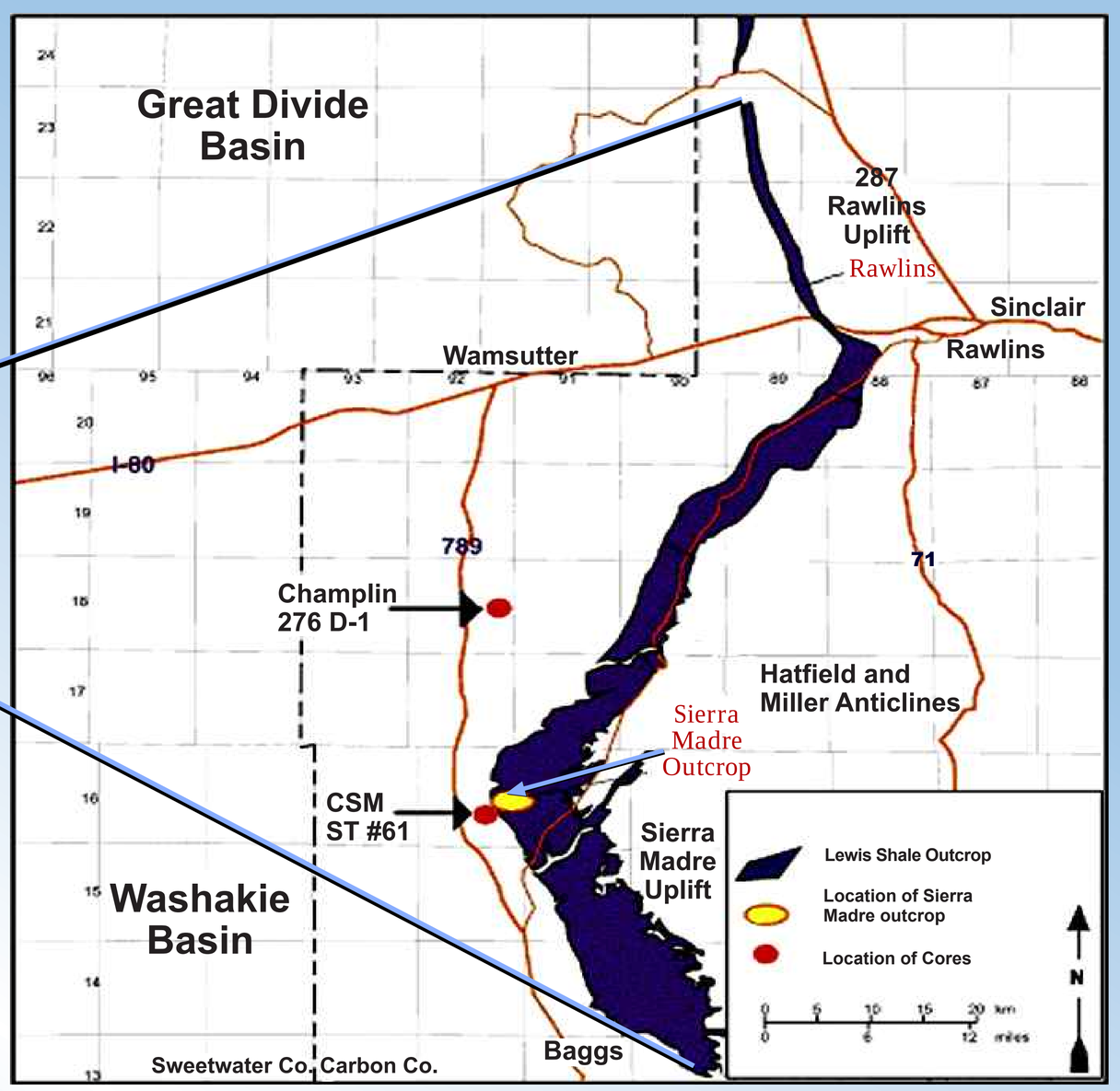
Introduction

The ultimate goal of this research is to develop sequence stratigraphic-based models for predicting seal occurrence and estimating top seal capacity for application in hydrocarbon exploration and risk analysis. Few systematic studies of seal character and shale sedimentology are available. Consequently, seals remain the least understood element of petroleum systems.

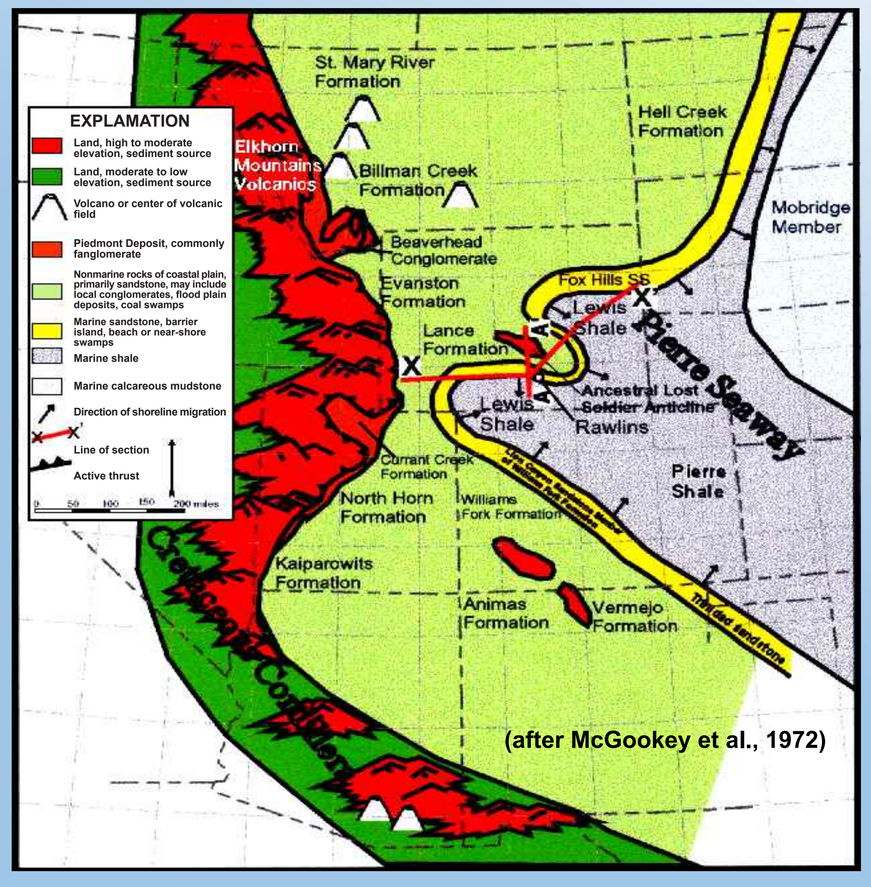
The Lewis Shale (Upper Cretaceous, Maastrichtian), which crops out along the eastern margins of the Great Divide and Washakie basins in south-central Wyoming, provides an interesting analog for understanding stratigraphic architecture of turbidite depositional systems. Previous outcrop and subsurface studies (e.g., Pyles & Slatt, 2000) established a high-frequency sequence stratigraphic framework for the Lewis Shale. Winton-Barnes et al. (2000) characterized sandstone lithotypes within the Lewis Shale, and Costeblanco-Torres (2003) completed a detailed study of shale lithotypes from Lewis Shale outcrops and cores. Almon et al. (2002) documented considerable variability in petrophysical properties of shales within the Lewis Shale.





The Lewis Shale is exposed intermittently along a 60-mile-long outcrop belt on the Rawlins-Sierra Madre uplift west of Cheyenne, Wyoming. Extensive subsurface data are provided by numerous producing fields west of the outcrop belt.

Paleogeographic map for Lower Maastrictian (approximately 69.4 Ma)



Upper Cretaceous stratigraphy south-central Wyoming.