Surfactant based soil washing and flushing is an emerging technology for Superfund site remediation in the United States. The presence of surfactants in the wastewater, however, poses challenging problems for subsequent biological or physical–chemical processes. The objective of this research is to evaluate the potential effects of selected surfactants on the biodegradation of chlorinated hydrocarbons in the wastewater from the Petro Processors (PPI) Superfund site north of Baton Rouge, LA. Results from this study showed that biodegradation of a real world waste containing a broad array of hazardous contaminants was significantly enhanced by the amendment of mineral nutrients and surfactants, especially a nonionic surfactant Witconol