

**CAPP/PTAC-ERAC SUMMARY FORMAT 2001 BUDGETING PROCESS**  
**PROJECT DESCRIPTION**

PROJECT TITLE: Chemical washing oil contaminated soil

A new ex-situ method for clean up oil contaminated soil has been developed. Preliminary (independent) estimates place the cost well below the cost of bioremediation. The new process has two stages.

### **Stage 1 Separation**

Soil is slurred with limited water, a base is added, and a limited quantity of radical initiator introduced. In some cases, limited amounts of co-solvent and/or external surfactant may be useful. The slurry is agitated by low energy ultrasound. *In situ* surfactant action is generated, and three phases separate. The outputs are a hydrocarbon phase for recycle, a clean mineral phase, and a limited amount of contaminated water requiring further treatment.

### **Stage 2 Water Treatment**

The limited quantity of water may be treated by any standard method to purify water, or the water produced may be a small enough quantity that disposal down a well is acceptable. In our studies, we have been developing a photocatalytic procedure for clean up and recycling of the water that has attractive preliminary economics.

The facilities required by this process could easily be constructed “on site” or brought to the site in a mobile unit. The method has been given the first phase testing with samples from important sites provided by some oil producers and environmental services companies. We are now initiating testing on hydrophobic soils.

Example results of treatment

| Sample              | % HC before treatment | % HC after treatment | Sample origin        |
|---------------------|-----------------------|----------------------|----------------------|
| Oil contam. Soil 1  | 18.8                  | 0.21                 | West Oil Field Env.  |
| Oil contam. Soil 2  | 0.31                  | 0.02                 | West Oil Field Env.  |
| Inv. mud 1          | 0.62                  | 0.06                 | ECL Env. Serv.       |
| Inv. mud 2          | 1.44                  | 0.15                 | ECL Env. Serv.       |
| Oil in soil         | 0.26                  | 0.08                 | EBA Engineer.        |
| Lube oil soil       | 0.63                  | 0.09                 | EBA Engineer.        |
| Oily drill cuttings | 7.8                   | 0.5                  | Newpark Dril. Fluids |