

Petromax Technologies, LLC

Case Study

Oil Production Free Water Knockout Vessel

Waste Handling Project

Our goal is to minimize the waste streams while eliminating or reducing work scopes for the client.



This is a major Southern California oil producer's free water knockout tank cleanout project. The 60 foot insulated horizontal vessel to be cleaned is shown at center rear, the pressure washer used for our Petromax application is center front with Petromax poly chemical drums staged to left of the pressure washer. The vacuum truck is staged left under the pipe rack and the white safety trailer staged at the right front portion of the picture.



Since the oily sand sludge is well above the manway at the start of the job the immediate area inside the tank must be cleared out first before entry is made. Petromax greatly aids this initial step in that the "conditioned sludge" mobilizes quickly for removal of the first 7 feet into the tank prior to entry.



This picture was taken inside the manway as the first 7 feet into the vessel entry area was cleared out. The oily sand sludge at the manway started at 6 feet high at the inlet end as the crew worked it's way back to the first weir screen. The 4 gallon per minute spray tip from the 3,000 psi pressure washer wand is shown buried into the sludge (to the right of the 6" suction hose centered in the picture) as part of our process to quickly mobilize the sludge for removal. On average the conditioned sludge, once removed from the vessel, contained roughly 20% of our product. As the cleaning crew moved further towards the vessel's outlet end the more oily the sand sludge became, thus easier for our Petromax formula to mobilize the sludge while suspending the solids.



This picture was taken from just outside the manway opening. Shows 6" vacuum extraction hose at center with a broom handle tapped on the end of the hose for moving around from the outside. The pressure washer wand is the narrow 3/8" pipe to the right of the extraction hose.



The first off loading of the sandy sludge taken from the immediate manway area contained very little free oil. The oil in this producer's reservoir is 13 gravity and asphaltic in nature. All Petromax conditioned loads will fully discharge from the vacuum truck throughout the job without sticking. Prior conventional methods always left at least $\frac{1}{4}$ of the discharging load in the vacuum truck as the sludge stuck to the trucks container bottom throughout such jobs.



Above: the entry crew is moving past the first of five weir screens inside the vessel to continue removing sludge at the outlet end of the vessel.



Although some water pockets remained inside the vessel after it was de-inventoried for cleaning, our product remained only 20% of the off loaded sludge. As you can see, this sludge contains more oil as we have created a much more pumpable or mobilized sludge for ease of handling. What little water-based formula will very quickly squeeze out (or decant) as the solids begin to settle. In this case, however, the fluidized sludge is immediately mixed with dry base material to make road base.



Above: the unloaded fluidized sludge shown in the last slide is shown here being mixed by a skip loader. Below: the load was completely mixed dry and piled in 30 minutes time.





After two days, the sludge removal portion of the job was complete. Conventional means of sludge removal would have taken several more days to remove the sludge. Petromax added value as seen in several areas of this waste handling project is detailed on the next slide.

Added Petromax Value To This Project

- A 70 bbl vacuum truck load of Petromax conditioned sludge contained roughly 10 bbls of water-based formula and 50 bbls of solids. This compares to conventional extraction loads containing roughly 45 bbls of water and 15 bbls of solids to be dumped each time which effectively triples the number of loads to move that same amount of solids as Petromax sludge conditioned loads.
- Petromax fluidized or conditioned sludge loads caused NO water to have to be treated for disposal by the client. This is significantly not the case for conventional methods of waste handling on such a project.
- The client saved significant man hours and equipment time at the dry mixing site not spent trying to mix extremely wet loads into a dry road base material. In addition, this project did not use over 200 tons of crusher-run new road base material that had been previously stacked at the job site as if a conventional cleaning project were to take place.
- The job finished several days sooner given the ability of our product to quickly mobilize the sludge and avoid sticking in hoses or secondary containment (the vacuum truck) and, of course, transporting less loads to the mixing road base site. The cleaning crew was able to work more effectively in a very confined area beneath each weir screen section because of our Petromax application.
- The client was able to immediately schedule additional vessel clean outs because our application enabled their mixing road base site to handle more sludge.
- A specialized Petromax concentrated formula was sold to the client by the gallon and used only as needed and directed by a Petromax technical person at the job site. The tech person responsibility is to optimize the Petromax application for the client while minimizing both the waste stream and work scope.
- Petromax Technologies guaranteed to save significant money for the client based on our performance or there would be no charge for our product or consulting services. After all inclusive work scope costs were accumulated by the client on this project, we had easily exceeded our goal.

Petromax Technologies, Inc.

A Solutions Oriented Company

Office: 530-990-2123 BRosengrant@gmail.com