

Produce Water Treatment

Produce water is generated from the oil field production of natural gas and oil wells. This water is a combination of water used in the drilling process, water from the well, and water used to inject into the well to increase production. Depending on the location of the well and the mineral strata of the well, the quality of the produce water varies considerably in mineral content, TDS, alkalinity, hardness, heavy metals (some radioactive), organics and residual oil contents. Having this abundance of contaminants makes the produce water difficult to treat in order for reuse or disposal.

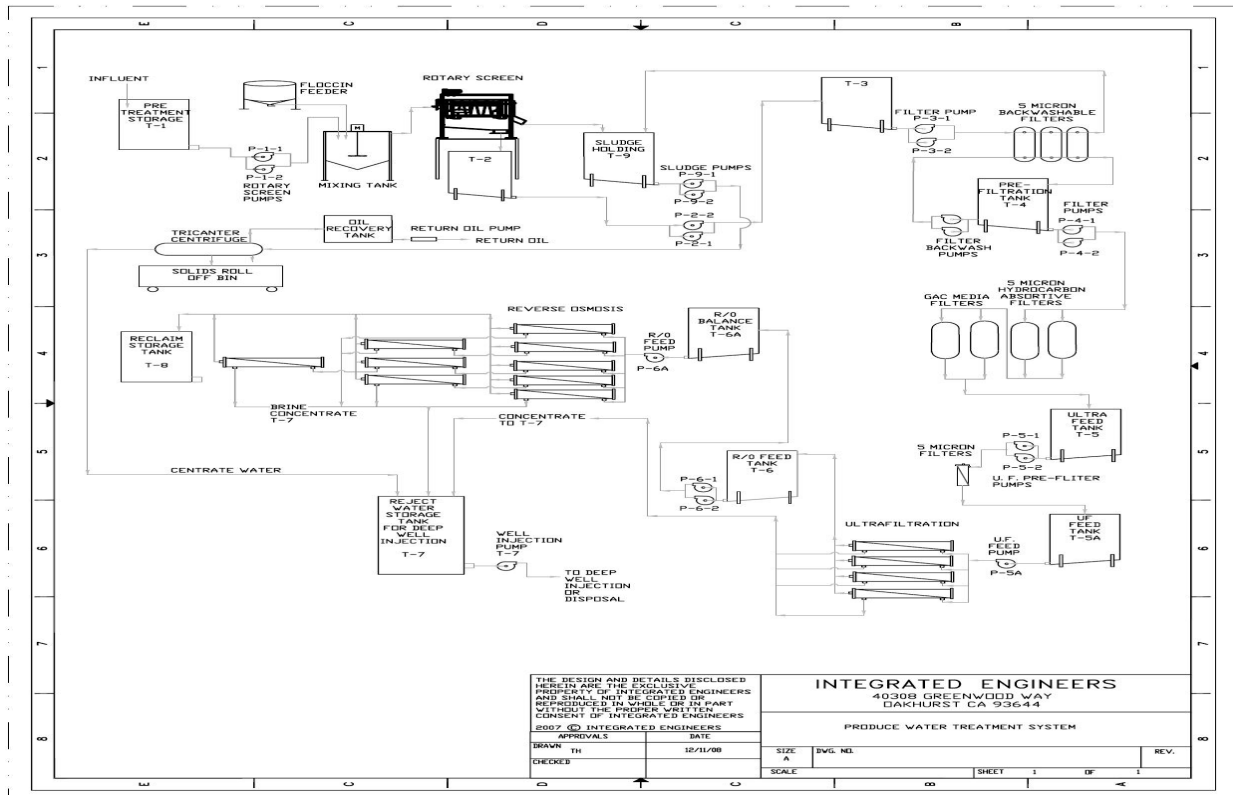
Typical well drilling operation will import water by truck and use it to drill the well(s). As the well is drilled and water used, the produced water becomes sufficiently contaminated so it can't be reused and must be treated. This water is usually stored in a local pre-excavated pit. Many states are requiring management plans to treat this produce water or have it hauled offsite for disposal when the wells are completed. Hauling the water into a well field operation and hauling produce water out and disposal is an expensive method. Deep well injection is viable but often has limitations on the gallons/day injected into the well, thereby limiting oil well drilling and production.

There is a method for treating this produce water for reuse water quality and minimizing the amount of water to be disposed or injected into deep wells. The process is to initially pretreat the produce water with the FloccinAgents™, use a rotary screen to remove the oily/sludge, prefilter, remove any residual soluble organics, then pump through membranes for removal of the dissolved solids. The reject water from these membrane processes is about 20% of the total flow and is a concentrated brine solution suitable for down hole deep well injection and it can also be hauled offsite for disposal. This greatly reduces the disposal costs, especially if there is a deep well injection well in close proximity.

Here is an example of produce water, treated and untreated from 2 different oil fields:



Produce water varies greatly from one location to the next and the Floccin 1105 has a good diversity to be able to handle fluctuations in organic and solids loading and still provide a good separation as shown. The oil/solids separation from the liquid is the 1st step in treating produce water(s). This is typically followed by a membrane process to consolidate the dissolved solids (TDS) from the water.



The US EPA has been taking steps to set the allowable discharge and disposal limits for produce water with final designations set for October 2009. Currently local states are setting these parameters on a case by case basis. Treatment costs vary depending on region and local enforcement.