

## Recent Projects

### Project 1

A tank battery had an accidental spill during the summer of 2016 causing produced water to flow off site contaminating a drainage ditch. A total of, approximately, 410 cubic yards of soil were contaminated with saltwater. Soil samples were collected and analyzed by Environmental Testing, Inc. /Oilab. Inc. for Total Soluble Salts (TSS), Electro-Conductivity (EC), and Chlorides (C). The initial sample with the highest level of contamination was as follows: 1) Total Soluble Salts 45,700 ppm 2) Conductivity 71,400 umhos/cm and 3) Chlorides 27,500 mg/kg. The site received, approximately, 3 inches of rainfall during the 88 days between the initial remediation and the sample date of 2/25/17. A second sample, taken on 2/25/17, was collected from the same area as the initial sample. Those results are as follows: 1) Total Soluble Salts 2,870 ppm 2) Conductivity 4,490 umhos/cm 3) Chlorides 1,020 mg/kg. These results equate to reductions of 93% in TSS, 93% in Conductivity, and 96% in Chlorides. These reductions will continue to improve. The product cost varies with the severity of the contamination. The project included a combination of a salt remediation product and organic liquid fertilizer and seed. These products were used to remediate the salt contamination and to promote germination of the seed to prove the site was remediated and regenerated the soil back to productive agricultural use. The site has germinated and been released by the Oklahoma Corporation Commission Inspector.

This project was remediated during the coldest part of the 2016 winter.

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## Project 2

This site was remediated on 12/2/16 and contained, approximately, 200 cubic yards of salt contaminated soil. The site received, approximately, 3" of rainfall during the 91 days of treatment. Soil samples were collected on 10/27/16, and analyzed by Environmental Testing Inc. / Oilab, Inc. for Total Soluble Salts (TSS), Conductivity (EC), and Chlorides (C). The initial sample with the highest level of contamination was as follows: 1) Total Soluble Salts 28,300 ppm 2) Conductivity 44,200 umhos/cm and 3) Chlorides 15,000 mg/kg. A second soil sample was collected from the same area as the initial soil sample on 2/25/17. Those test results are as follows: 1) Total Soluble Salts 1,960 ppm, 2) Conductivity 3,070 umhos/cm and 3) Chlorides 651 mg/kg. These reductions equate to a reduction of 93% for TSS, a 93% reduction for EC, and a 96% reduction for Chlorides. These reductions will continue to improve. These reductions mirror Project 1 because the well drilled in Project 2 was to the same formation as Project 1. So it is not surprising that the reductions were similar. The product cost will vary with the level of contamination. The project included a combination of a salt remediation product and organic liquid fertilizer and seed. These products were used to remediate the salt contamination and to promote the germination of seed to prove that the site was remediated and regenerated the soil back to productive agricultural use. The site has germinated and been released by the OCC Inspector.

This site, also, was remediated during the coldest part of the 2016 winter.

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