

# Salt Spill Reclamation

## SALT RECLAMATION SOLUTION FOR THE BAKKEN



DUALZORB is effective at removing ionic compounds such as salts from soil and water through its powerful ion exchange chemical reaction. The resultant chemical bond is strong and will not leach salts back into the environment. DUALZORB will also capture and bioremediate petroleum hydrocarbons that may have also been released. DUALZORB also has a high residual cation exchange capacity (CEC) which means it will continue to work should additional salt leach up through the soil or if there is a secondary release. DUALZORB is listed on the EPA's National Contingency Plan (NCP)<sup>†</sup> product schedule as a bioremediation agent. DUALZORB can be used on Federal land and left in the environment. LBI Renewable has teamed with an outstanding contractor to provide turn-key reclamation services.

Typical Case Study on the Reverse

### TURN-KEY SERVICES AVAILABLE

- **NATURALLY REDUCE SALINITY**

*DUALZORB* can reduce soil salinity over 87%.

- **RESTORE VEGETATION**

Land can be reseeded before the equipment leaves the site and can re-vegetate in weeks, depending on weather conditions.

- **ACHIEVE NDIC CLEAN-UP LEVELS**

*DUALZORB* can reduce soil salinity below NDIC recommended threshold the first time and not leach the salt back out.

- **EPA's NATIONAL CONTINGENCY PLAN (NCP)<sup>†</sup>**

*DUALZORB* is listed on the NCP Product Schedule as a bioremediation agent and can be used on Federal land.



MADE IN WYOMING

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<sup>†</sup> This listing does NOT mean that EPA approves, recommends, licenses, certifies, or authorizes the use of *DualZorb* on an oil discharge. This listing means only that data have been submitted to EPA as required by subpart J of the National Contingency Plan, 40 CFR Section 300.915. The data submitted exceeds the testing criteria for the bioremediation effectiveness test and therefore qualifies to be listed on the NCP product schedule.

# Production Water Release

## Bakken Formation, North Dakota

LBI was contracted to treat soil impacted by a salt water release at a crude oil production tank battery in North Dakota's Bakken Formation. Soil samples were collected in the root zone, 0 to 12" below the surface, from undisturbed native soil, soil within the release and post treated soil. Samples were submitted to an independent third party laboratory for analysis. The three samples were analyzed for electrical conductivity (EC), pH and exchangeable sodium percentage (ESP%) analysis. Electrical conductivity is a typical laboratory measure of salinity.

### RESULTS

The high ESP percentage and a pH less than 8.5, indicates that the native soils are saline-alkali soils, according to the United States Department of Agriculture's Handbook No. 60. After the spill, the soils were classified as a saline soil.

NDIC's Guide for Remediation of Salt/Hydrocarbon Impacted Soil established an EC clean-up objective of 4 dS/m. The DualZorb was able to treat the soil down to the NDIC recommended salt concentration.

	pH	EC	ESP %	Reduction %
<b>Native Soil</b>	8.0	34.5 dS/m	174	--
<b>Spill Impacted Soil</b>	7.7	24.5 dS/m	<0.01	--
<b>Treated Spill Soil</b>	7.7	4.23 dS/m	<0.01	87.7%

At a second test site, DualZorb was shown to increase the cation exchange capacity (CEC) of soil from 13.9 meq/100g to 31.6 meq/100g or 127.3% increase. The increased capacity is due to unused ion exchange capacity still in the DualZorb. Therefore, DualZorb will continue to work long after it has been applied and continue to mitigate future salt migration in the soil.