

**\*\*\*\*\* LIQUID SPILLS - VOLUME CALCULATIONS \*\*\*\*\***

Location of spill: cedar Canyon 28 CTB

Date of Spill: 10/17/2018

Site Soil Type: Caliche (Silt))

Average Daily Production: NA BBL Oil NA BBL Water

| <b>Total Area Calculations</b> |              |   |               |   |                       |                |
|--------------------------------|--------------|---|---------------|---|-----------------------|----------------|
| <b>Total Surface Area</b>      | <b>width</b> |   | <b>length</b> |   | <b>wet soil depth</b> | <b>oil (%)</b> |
| Rectangle Area #1              | 152 ft       | X | 152 ft        | X | 0 in                  | 100%           |
| Rectangle Area #2              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #3              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #4              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #5              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #6              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #7              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |
| Rectangle Area #8              | 0 ft         | X | 0 ft          | X | 0 in                  | 0%             |

Porosity 0.16 gal per gal

**Saturated Soil Volume Calculations:**

|                            |                       | <b><u>H2O</u></b> | <b><u>OIL</u></b> |                |
|----------------------------|-----------------------|-------------------|-------------------|----------------|
| Area #1                    | 22982.56 sq. ft.      | cu. ft.           | 383               | cu. ft.        |
| Area #2                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #3                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #4                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #5                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #6                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #7                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Area #8                    | 0 sq. ft.             | cu. ft.           |                   | cu. ft.        |
| Total Solid/Liquid Volume: | <b>22,983 sq. ft.</b> | <b>cu. ft.</b>    | <b>383</b>        | <b>cu. ft.</b> |

**Estimated Volumes Spilled**

|                     | <b><u>H2O</u></b> | <b><u>OIL</u></b> |     |
|---------------------|-------------------|-------------------|-----|
| Liquid in Soil:     | 0.0 BBL           | 10.9              | BBL |
| Liquid Recovered :  | 0.0 BBL           | 50.0              | BBL |
| Spill Liquid        | 0.0 BBL           | 60.9              | BBL |
| Total Spill Liquid: |                   | <b>60.9</b>       |     |

**Recovered Volumes**

Estimated oil recovered: **50.0 BBL**  
 Estimated water recovered: **0.0 BBL**

| <b><u>Soil Type</u></b> | <b><u>Porosity</u></b> |
|-------------------------|------------------------|
| Clay                    | 0.15                   |
| Peat                    | 0.40                   |
| Glacial Sediments       | 0.13                   |
| Sandy Clay              | 0.12                   |
| Silt                    | 0.16                   |
| Loess                   | 0.25                   |
| Fine Sand               | 0.16                   |
| Medium Sand             | 0.25                   |
| Coarse Sand             | 0.26                   |
| Gravely Sand            | 0.26                   |
| Fine Gravel             | 0.26                   |
| Medium Gravel           | 0.25                   |
| Coarse Gravel           | 0.18                   |
| Sandstone               | 0.25                   |
| Siltstone               | 0.18                   |
| Shale                   | 0.05                   |
| Limestone               | 0.13                   |
| Basalt                  | 0.19                   |
| Volcanic Tuff           | 0.20                   |
| Standing Liquids        |                        |