PROPOSED
EASTLAND QUEEN UNIT

TURKEY TRACK (7R-QN-GB-SA)

EDDY COUNTY, NM

BEACH EXPLORATION, INC.

VOLUMETRIC CALCULATIONS As of 9/1/06:

Original Oil in Place (OOIP)

$$OOIP = 7{,}758\ \phi\ (1\text{-}Sw)\ Ah / Boi$$

Where OOIP = STB

7,758 = STB / Ac-Ft

ϕ Ah = PV, Ac-Ft

Sw = Connate Water Saturation, Frac of PV

Boi = RB / STB

$$OOIP = 7{,}758\ (1\text{-}0.35)\ 1283.7 / 1.13$$

$$OOIP = 5{,}728.6\ MBO$$

Primary Recovery Factor (PRF)

$$PRF = \frac{733.9\ MBO}{5728.6\ MBO} \times 100 = 12.8\ \%\ of\ OOIP$$

Pore Volume (PV):

$$PV = \frac{NBoi}{1 - Sw}$$

$$PV = \frac{(5728.6)\ (1.13)}{(1 - 0.35)}$$

$$PV = 9{,}959\ MBBL$$

Current Oil Saturation:

$$So = \frac{(N - Np)\ Bo\ (1 - Sw)}{NBoi}$$

Where: So = Oil Saturation @ 9/1/2006, fraction of Pore Volume (PV)

N = OOIP, MSTB

Np = Cumulative Oil Production @ 9/1/2006, MSTB

Bo = Current Oil Formation Volume Factor, RB/STB

Sw = Connate Water Saturation, Fraction of PV

Boi = Initial Oil Formation Volume Factor, RB/STB

$$So = \frac{(5728.6 - 659.2)\ 1.05\ (1 - 0.35)}{(5728.6)\ (1.13)}$$

$$So = 0.53$$

Free Gas Volume (FGV)

$$FGV = (1 - So - Sw)\ PV$$

$$FGV = (1 - 0.53 - 0.35)\ (9{,}959\ MBBL)$$

$$FGV = 1195\ MBBL$$

Fill-up Time

$$Fill\text{-}up\ Time = \frac{FGV}{Injection\ Rate}$$

$$Fill\text{-}up\ Time = \frac{1{,}195{,}000\ BBL}{100\ BPD/well \times 13\ wells \times 30.4\ days/mo}$$

$$Fill\text{-}up\ Time = 30.2\ months$$

Theoretical Waterflood Recovery

$$Waterflood\ Recovery = \frac{7758\ \phi\ Ah\ (So - Sor)\ (Ev \times Ep)}{Bo}$$

Where: Sor = Residual Oil Saturation after Waterflood, 0.315
(Roswell Geological Society Symposium)

Ev = Volumetric sweep efficiency, 0.5 (empirical)

Ep = Injection efficiency, 0.75 (geometric factor)

$$Waterflood\ Recovery = \frac{7758\ (1283.7)\ (0.53 - 0.315)\ (0.5 \times 0.75)}{1.05}$$

$$Waterflood\ Recovery = 765\ MBO$$

Oil Conservation Division
Case No. ____
Exhibit No. 19