

Dated

7/8/2025

**Maximum Injection Volume Calculations**

Well Name: Messenger #1-26  
 API: 05-087-07760  
 UIC Facility #: 159091  
 Injection Formation: D Sand

$$\text{Injection Volume} = (\text{PI} \times r^2 \times h \times \rho) / 5.63$$

r = permitted radius = 1320 feet, 1/4-mile  
 h = injection formation height = 45 feet  
 ρ = injection formation porosity = 16%

**Injection Volume Limit (bbl) = 7,000,384 bbl**

$$\text{Injection Volume} = (\text{PI} \times r^2 \times h \times \rho) / 5.63$$

r = permitted radius = 1980 feet, 3/8-mile, per ECMC Rule 803.f.(4)  
 h = injection formation height = 45 feet  
 ρ = injection formation porosity = 16%

**Injection Volume Limit (bbl) = 15,750,863 bbl**

**Current Volume Injected (as of 3/2025) = 6,055,889 bbl**

Perf Top	Perf Btm	Net Feet
5621	5666	45

Formations	Top (ft)
Niobrara	4850
Fort Hays	5200
Carlile	5233
Greenhorn	5292
Bentonite	5528
D Sand	5620
J Sand	5708

**Operator requests an increased injection radius to 3/8-mile, permissible per ECMC Rule 803.f.(4). The increase to a 3/8-mile radius will increase the Maximum Injection Volume to 15,750,863 bbls. Impetro is requesting this increased Maximum Injection Volume.**