



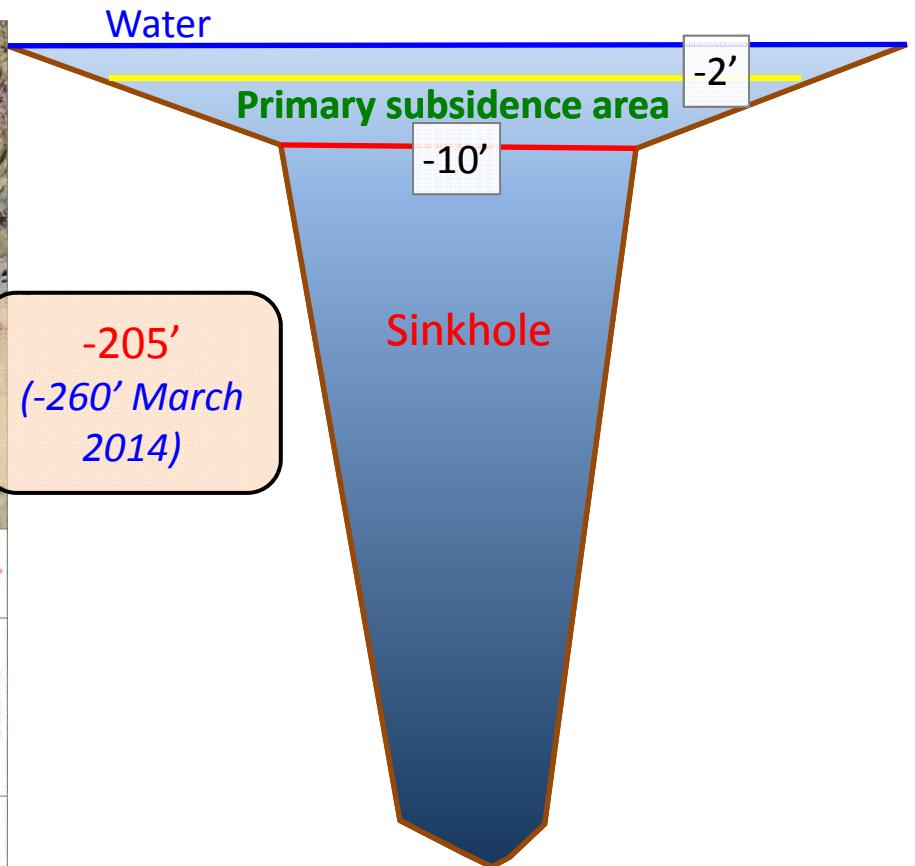
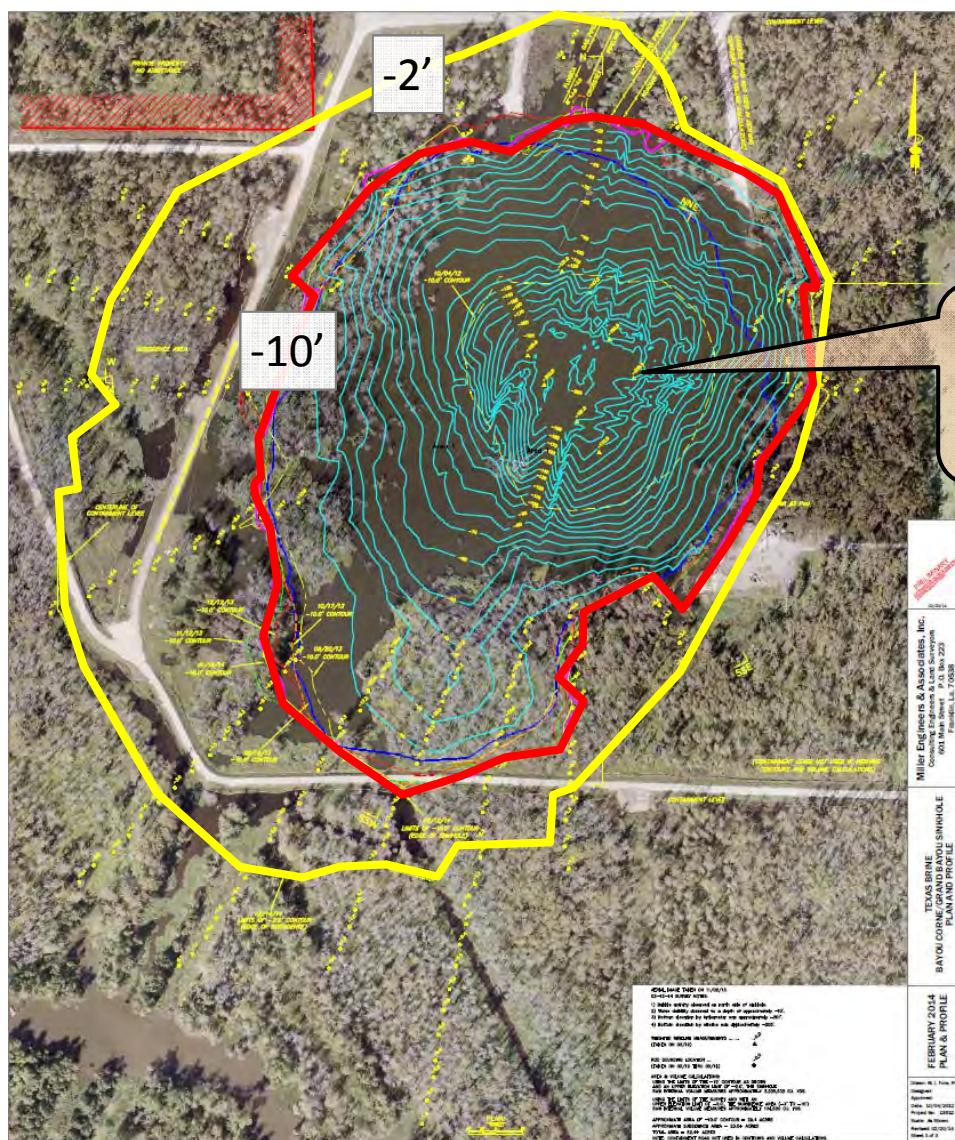
Public Briefing

Evacuation Order in Effect

585 days—1 year, 7 months, 8 days

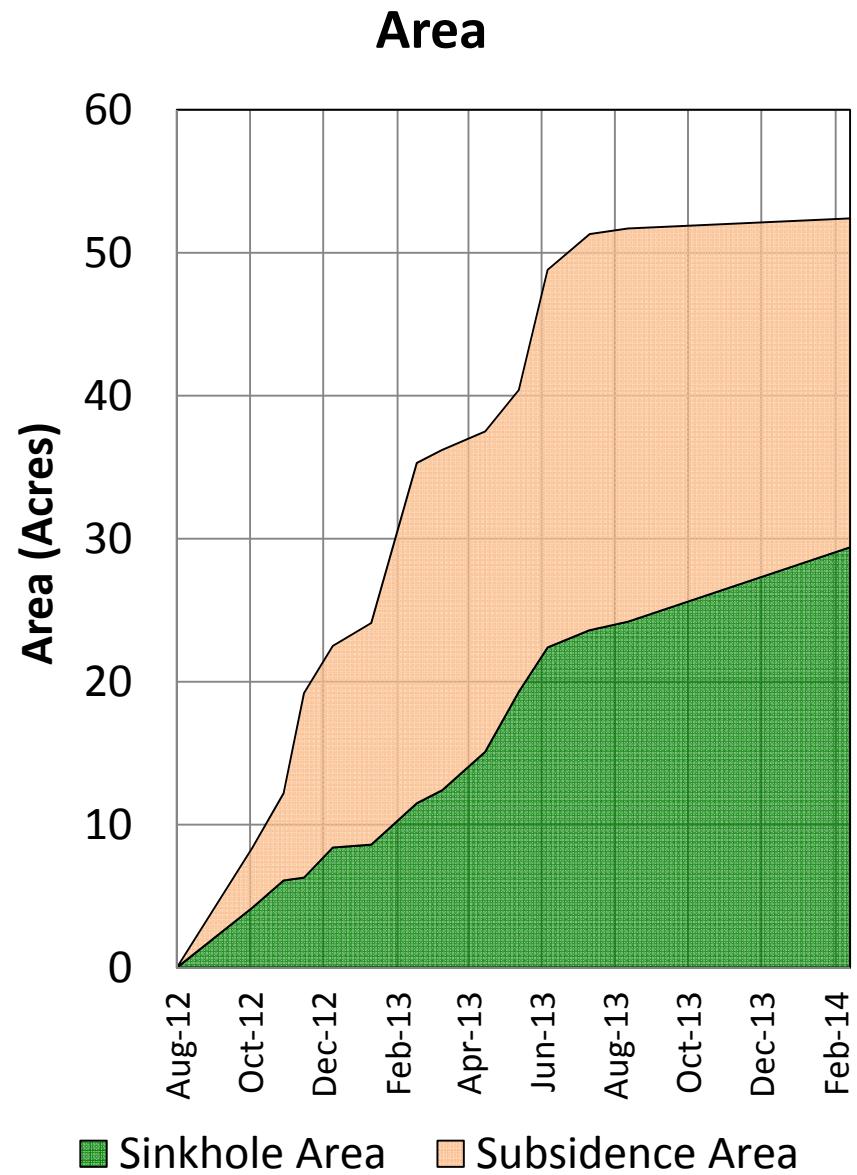
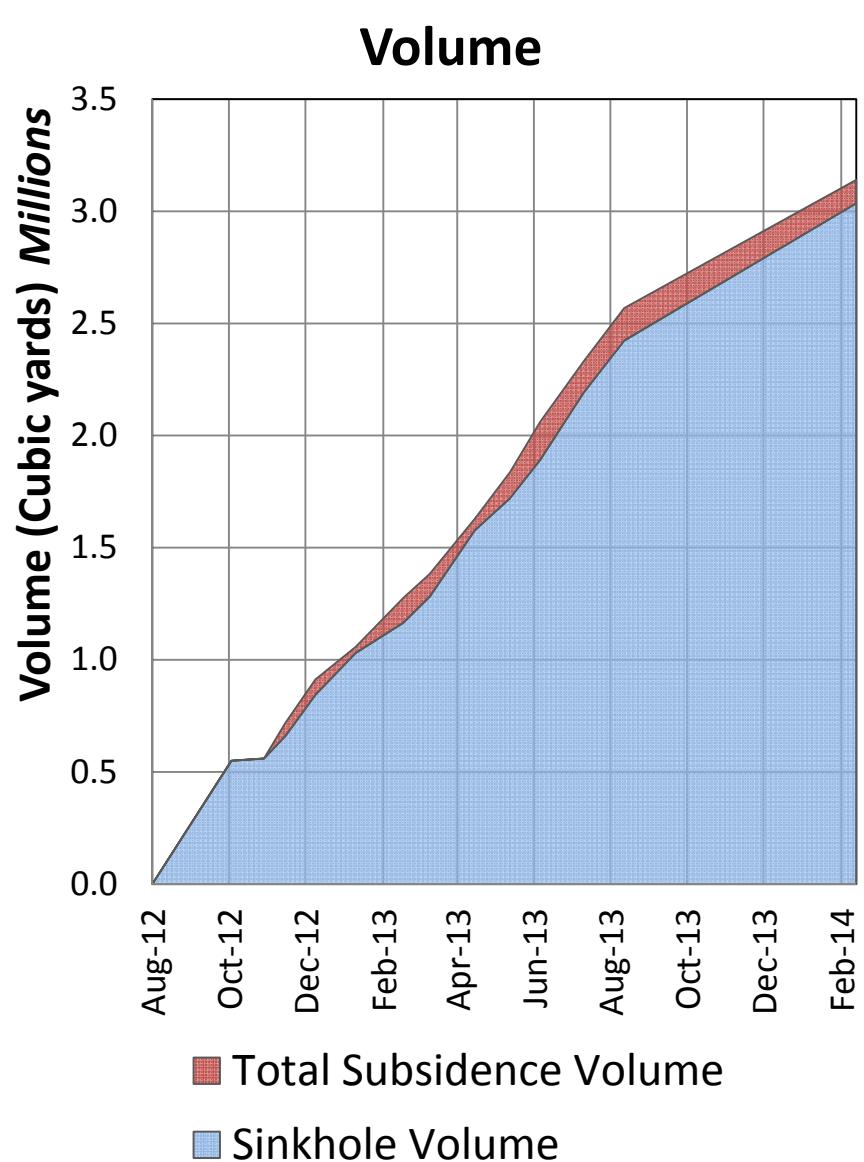
March 11, 2014

- Sinkhole and south berm
- Cavern conditions
- Seismic events
- Gas Conditions and Venting

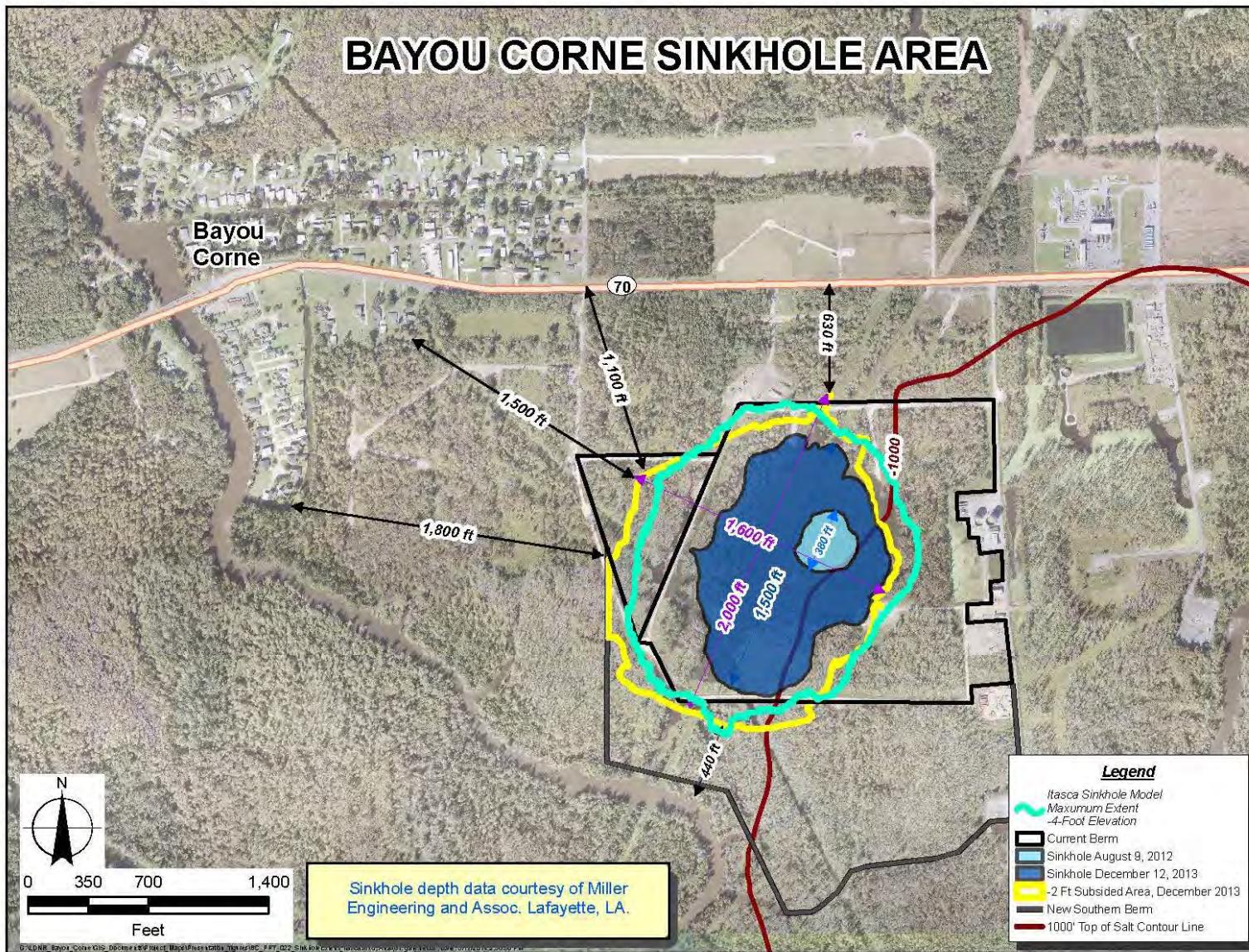


- Between -2 and -10-foot contour: **Primary Sinkhole Subsidence Area**
- Deeper than -10 feet: **Sinkhole**

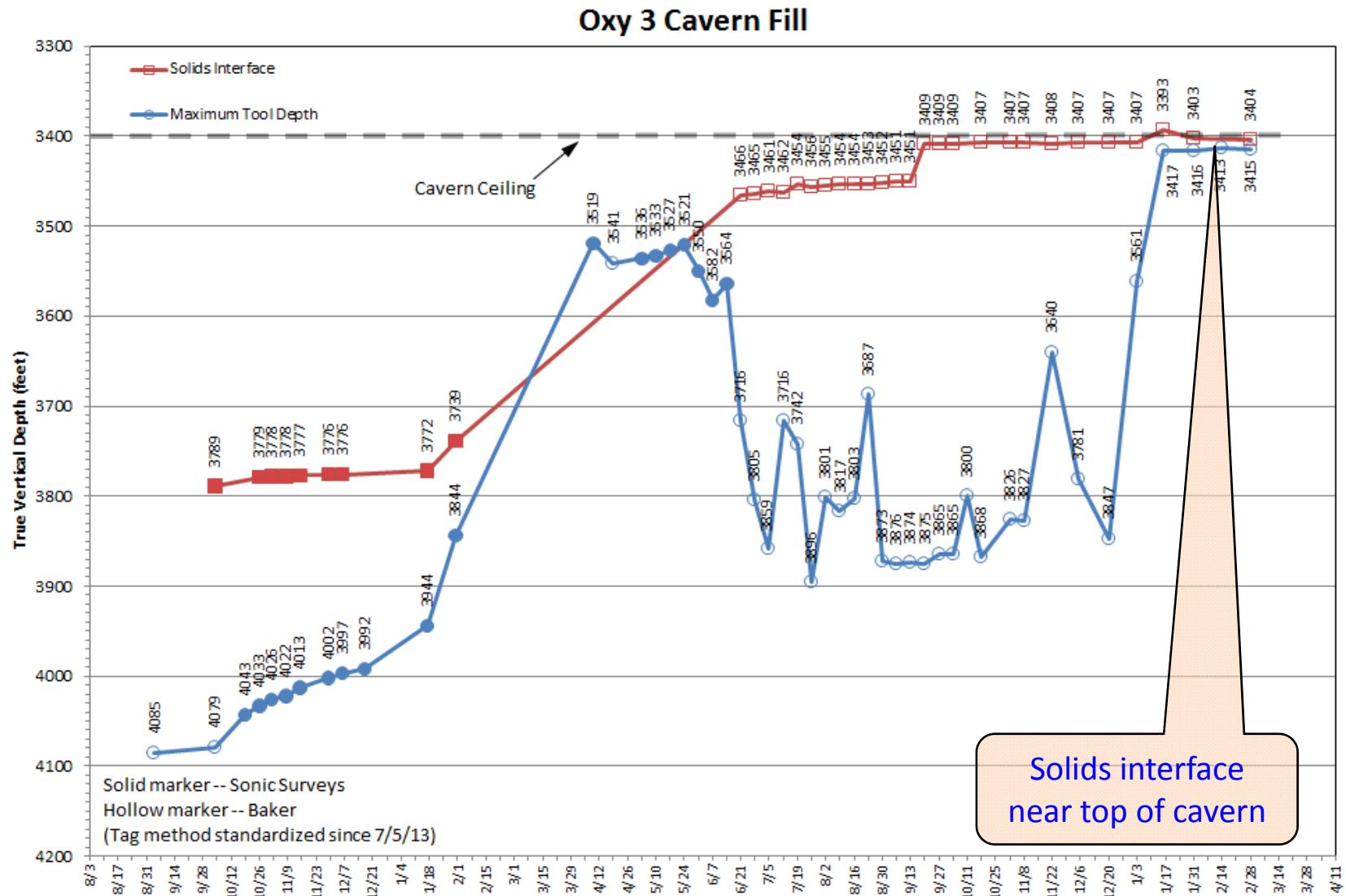
Sinkhole & Subsidence Area Volume and Area



Sinkhole and New South Berm Alignment

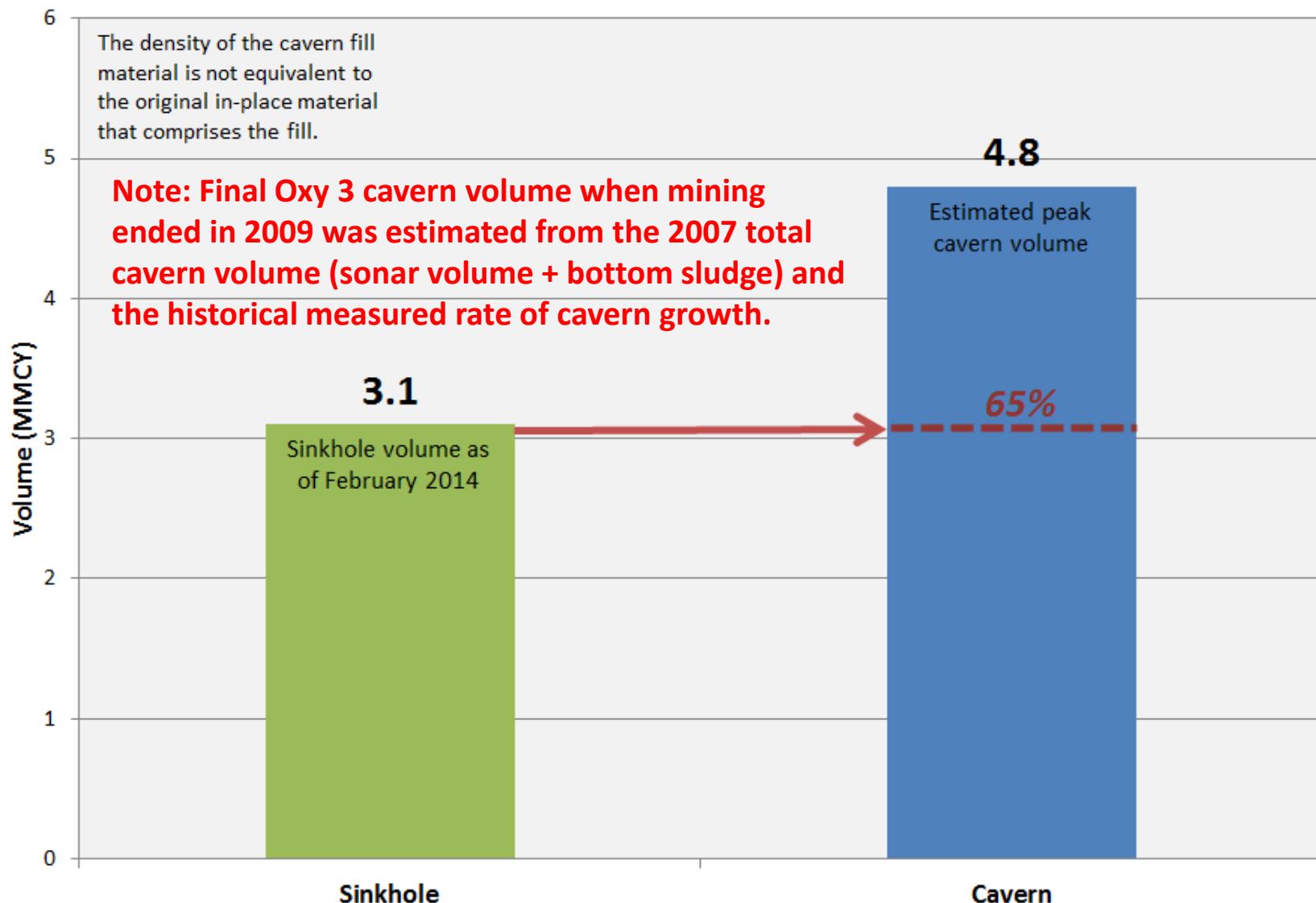


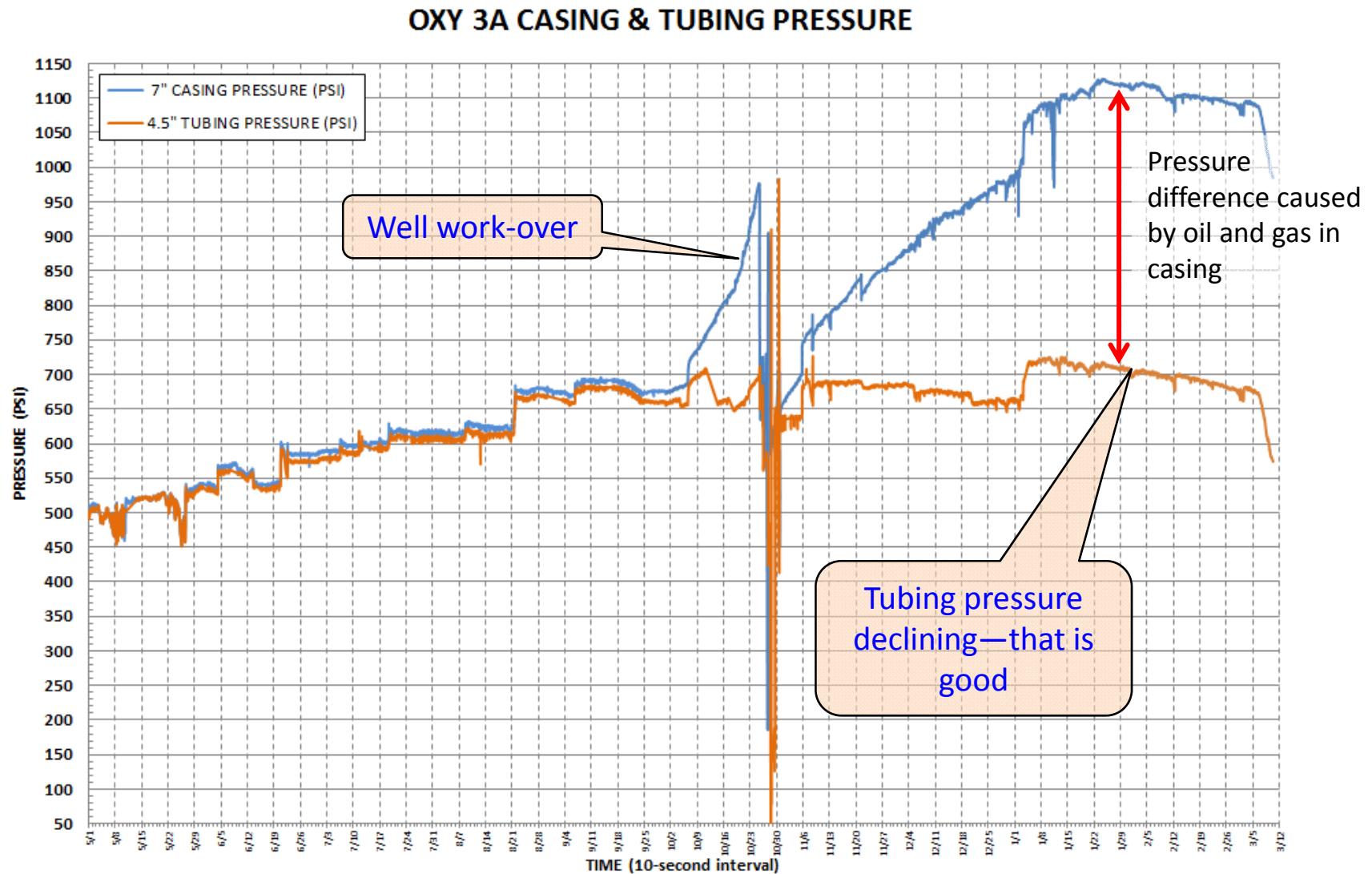
Oxy 3 Cavern Tag Data—Vertical Depth

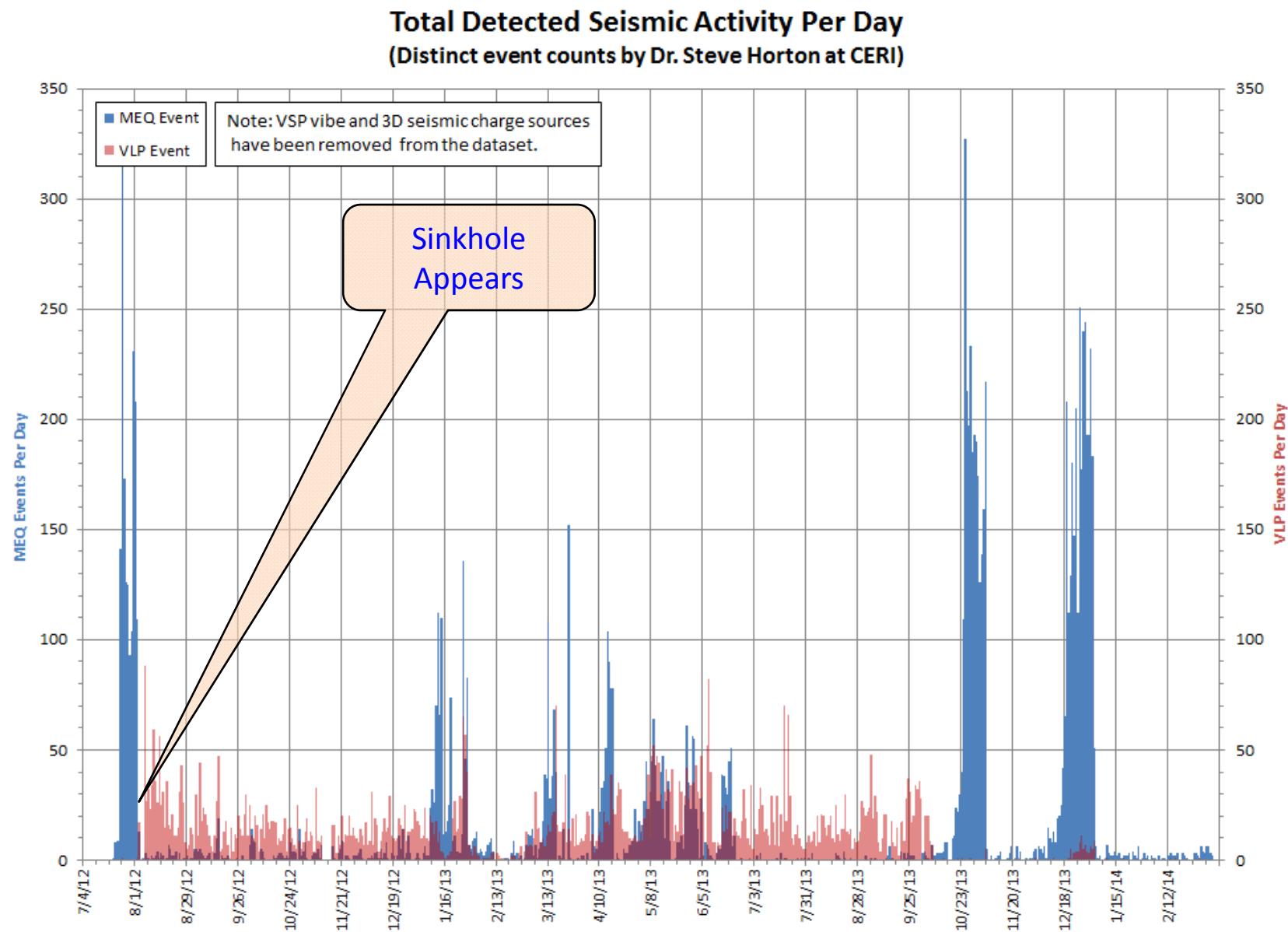


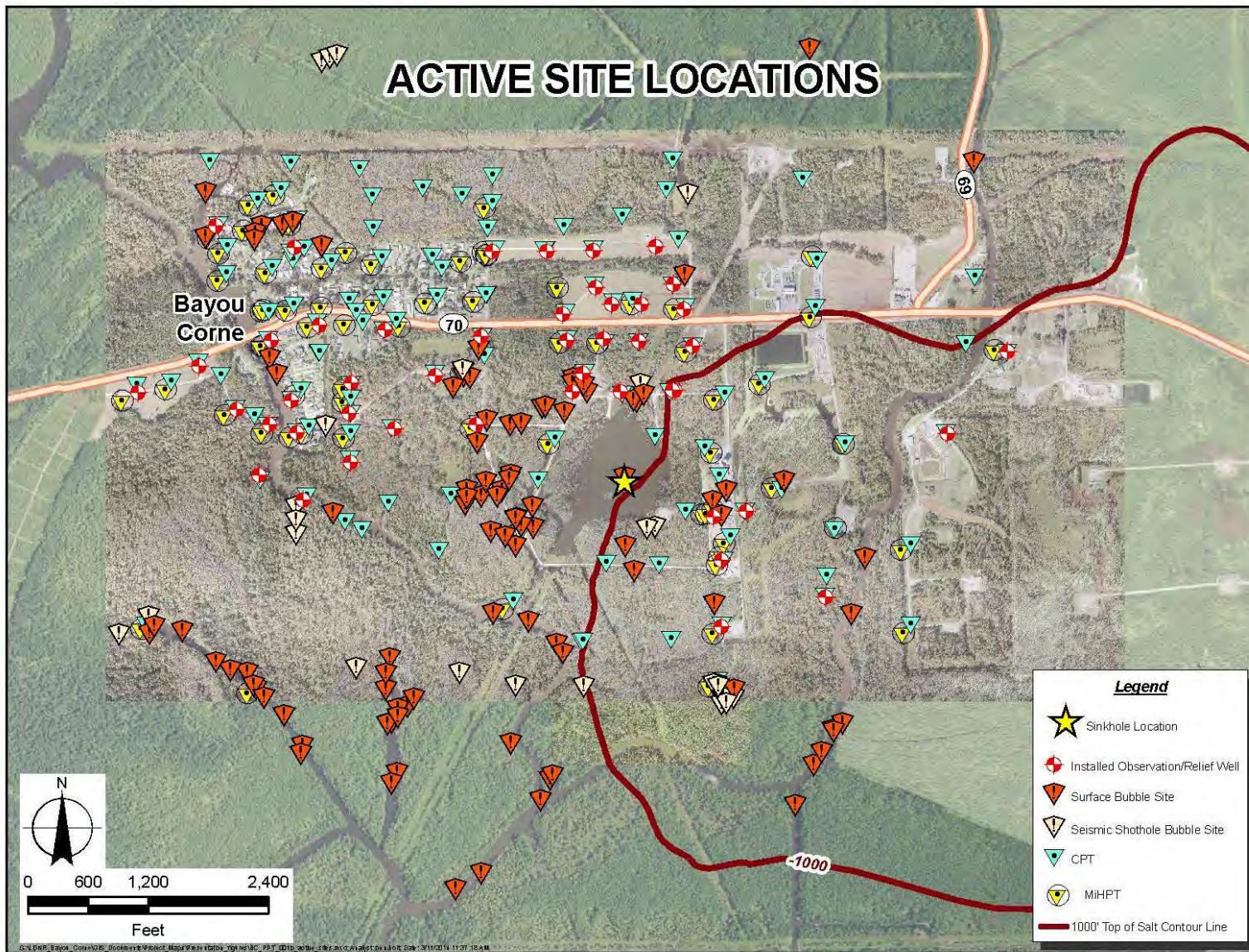
Sinkhole Volume Compared to Oxy 3 Cavern Volume

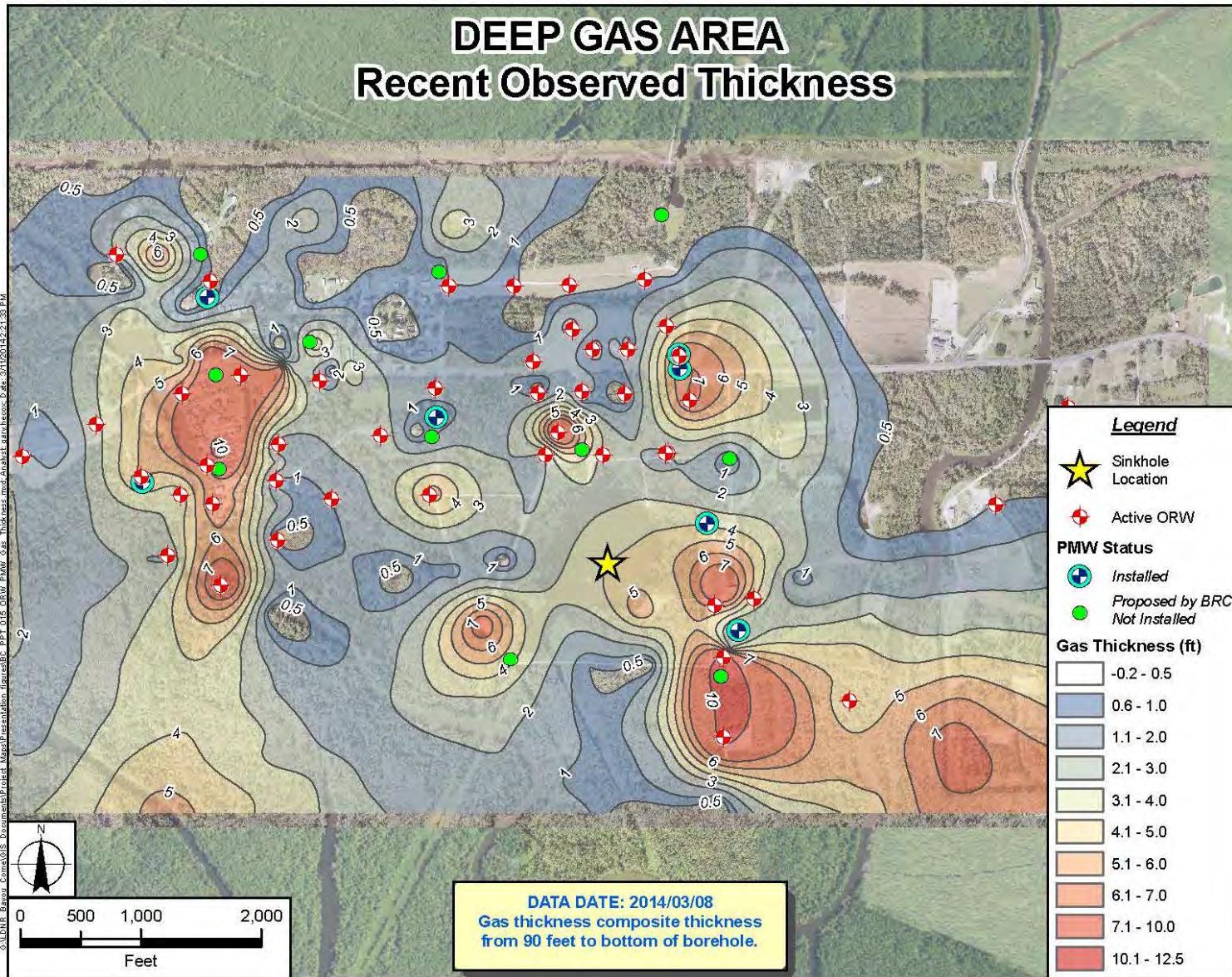
Total Sinkhole-Related Subsidence & Former Oxy 3 Cavern Size



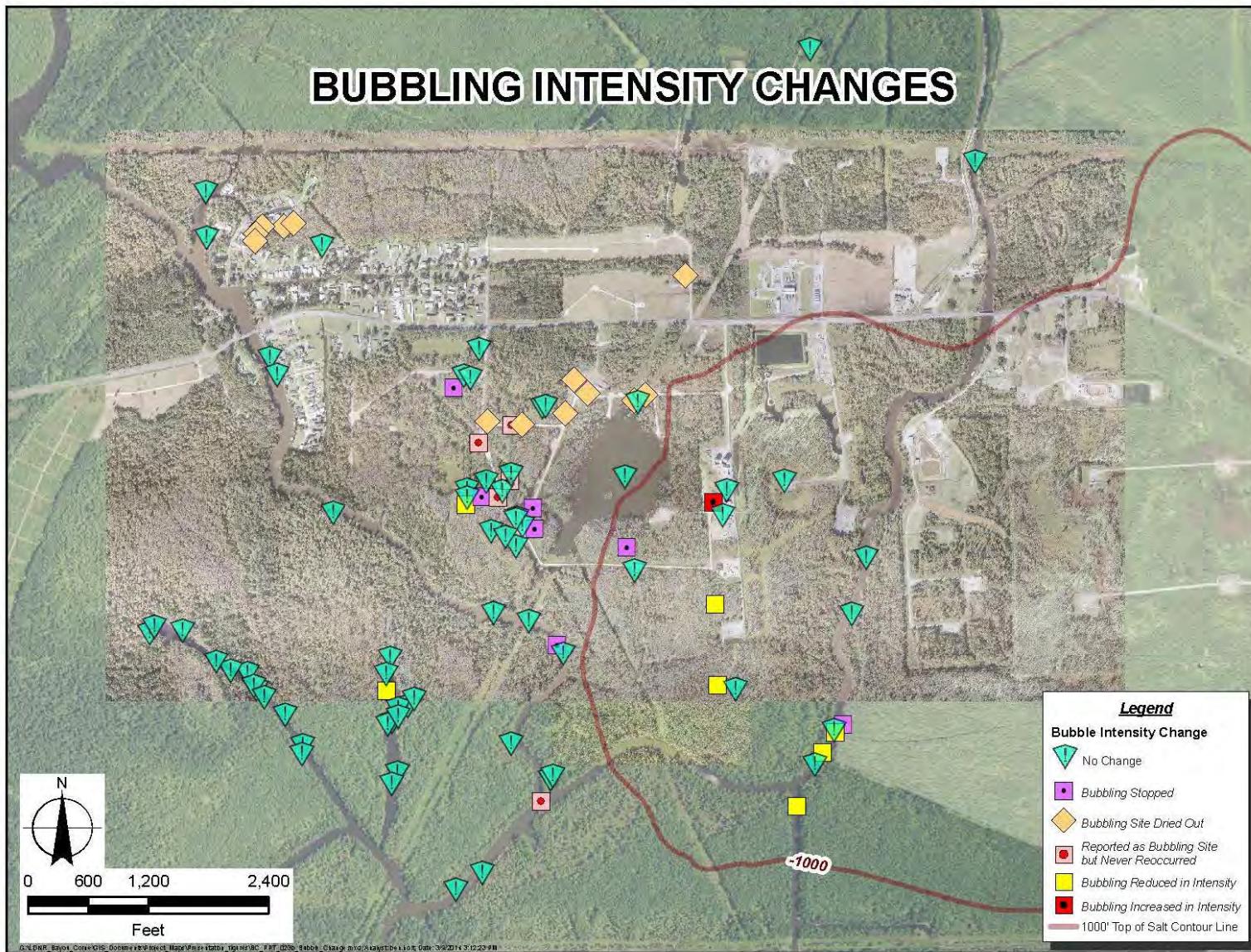


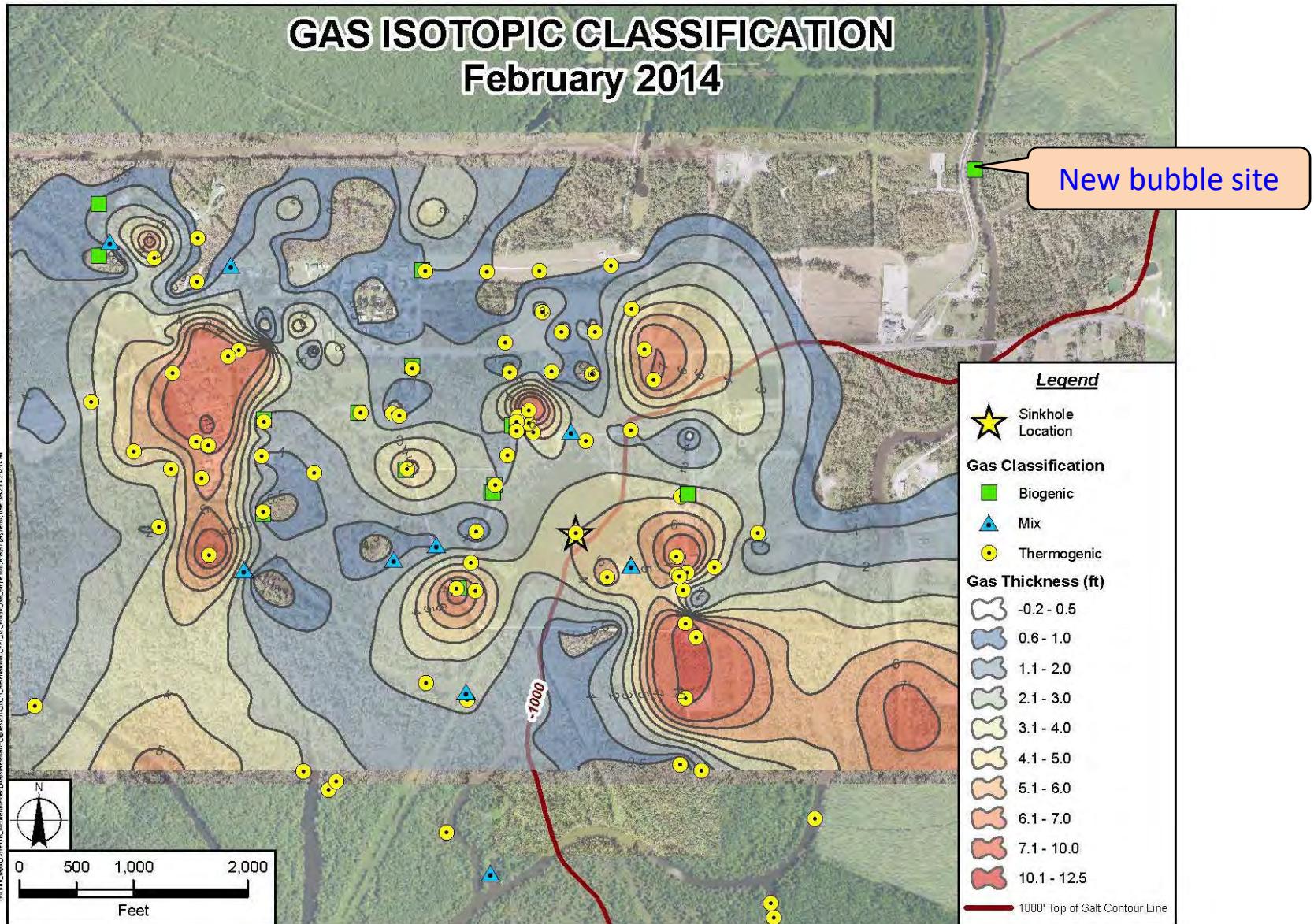


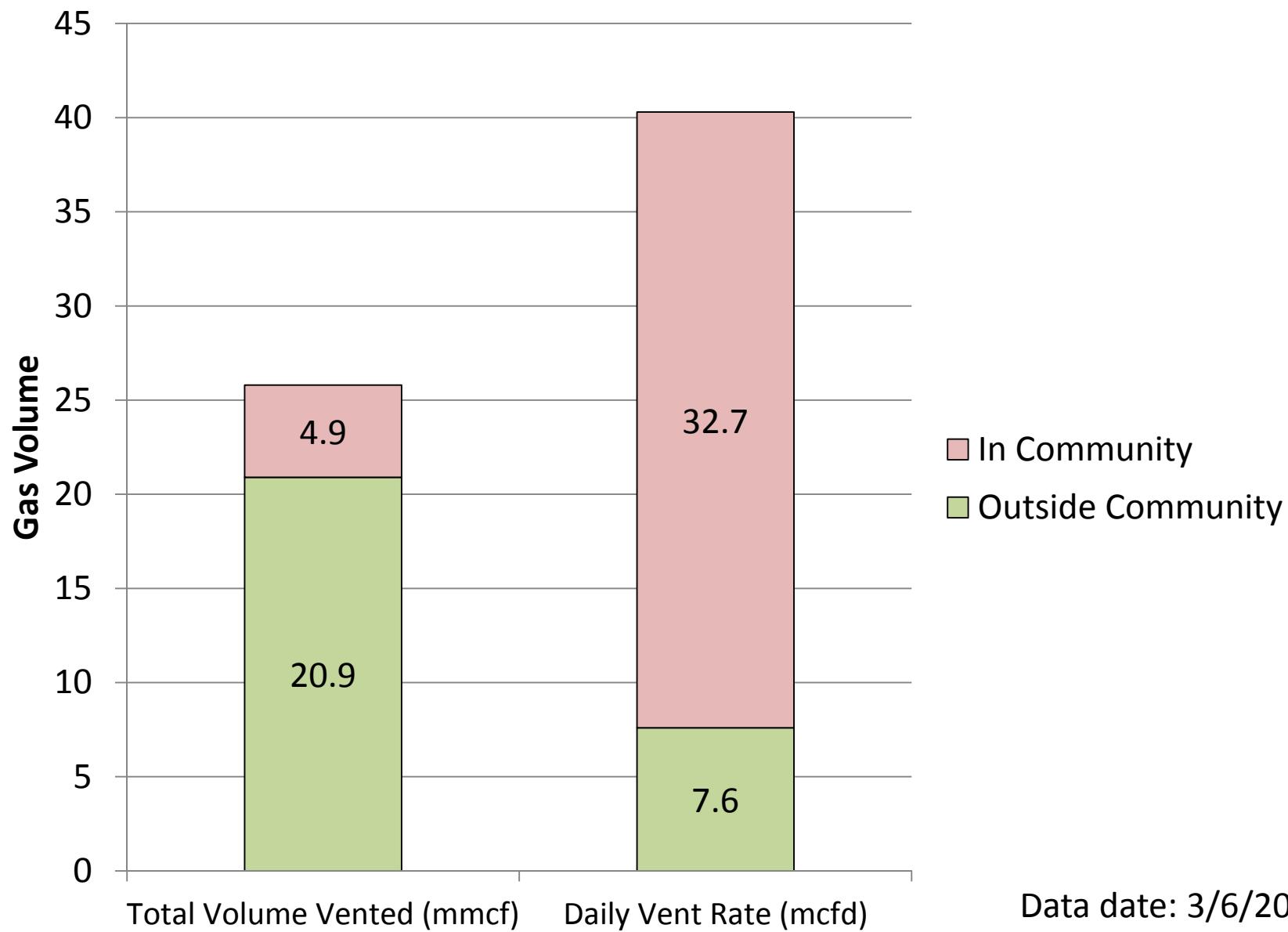




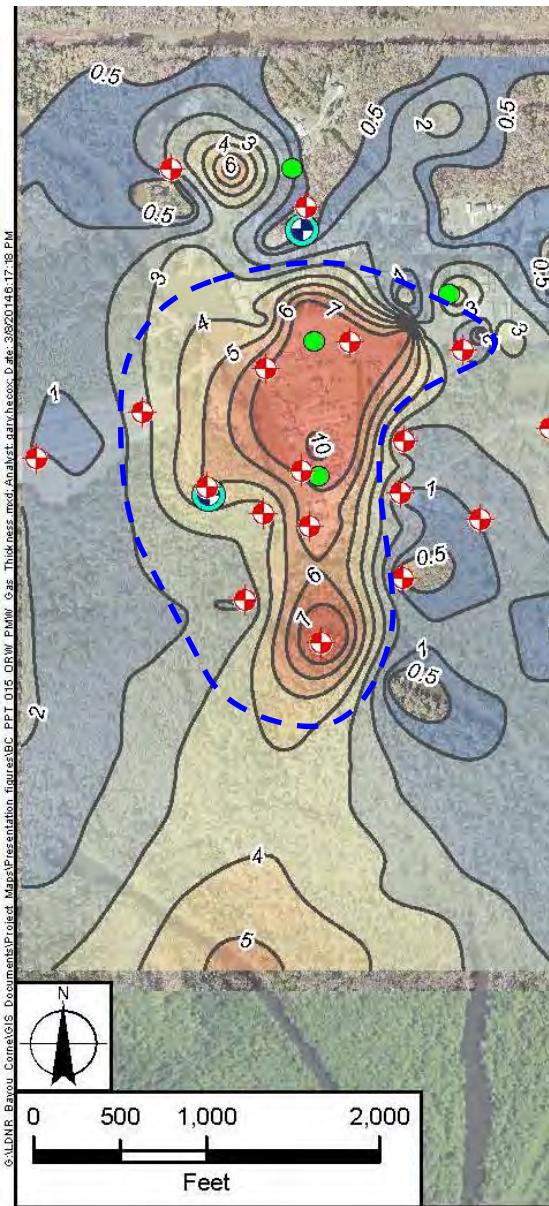
Bubble Site Intensity Changes (Oct 2012 to Jan 2014)







TBC Community Venting Program



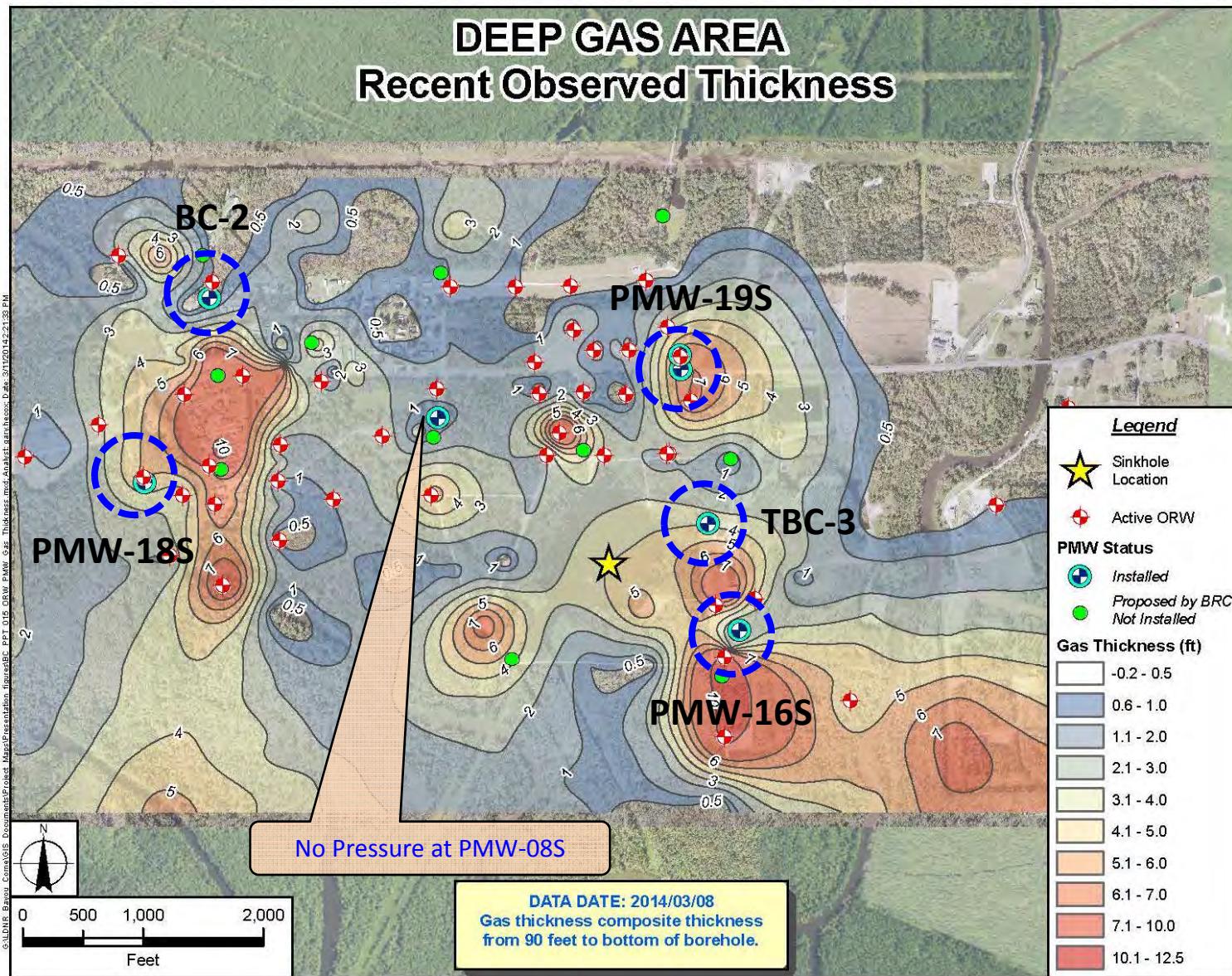
Well	Date	Flow Rate (mcf/d)	Cum. Flow (mcf)	FWHP (psig)
ORW-36	3/6/2014	10.4	2,353	47.5
ORW-37	3/6/2014	0.0	249	0.0
ORW-46	3/6/2014	1.5	525	45.0
ORW-49	3/6/2014	2.7	408	46.0
ORW-50	3/6/2014	7.8	923	44.0
ORW-52	3/6/2014	1.0	208	48.0
ORW-53	3/6/2014	0.2	79	37.0
ORW-55	3/6/2014	8.3	139	48.0
ORW-56	3/6/2014	0.5	23	46.5
ORW-58	3/6/2014	0.2	5	12.0
Total		32.7	4,911	--
Average		3.3	491	37.4

mcf/d Thousands cubic feet per day

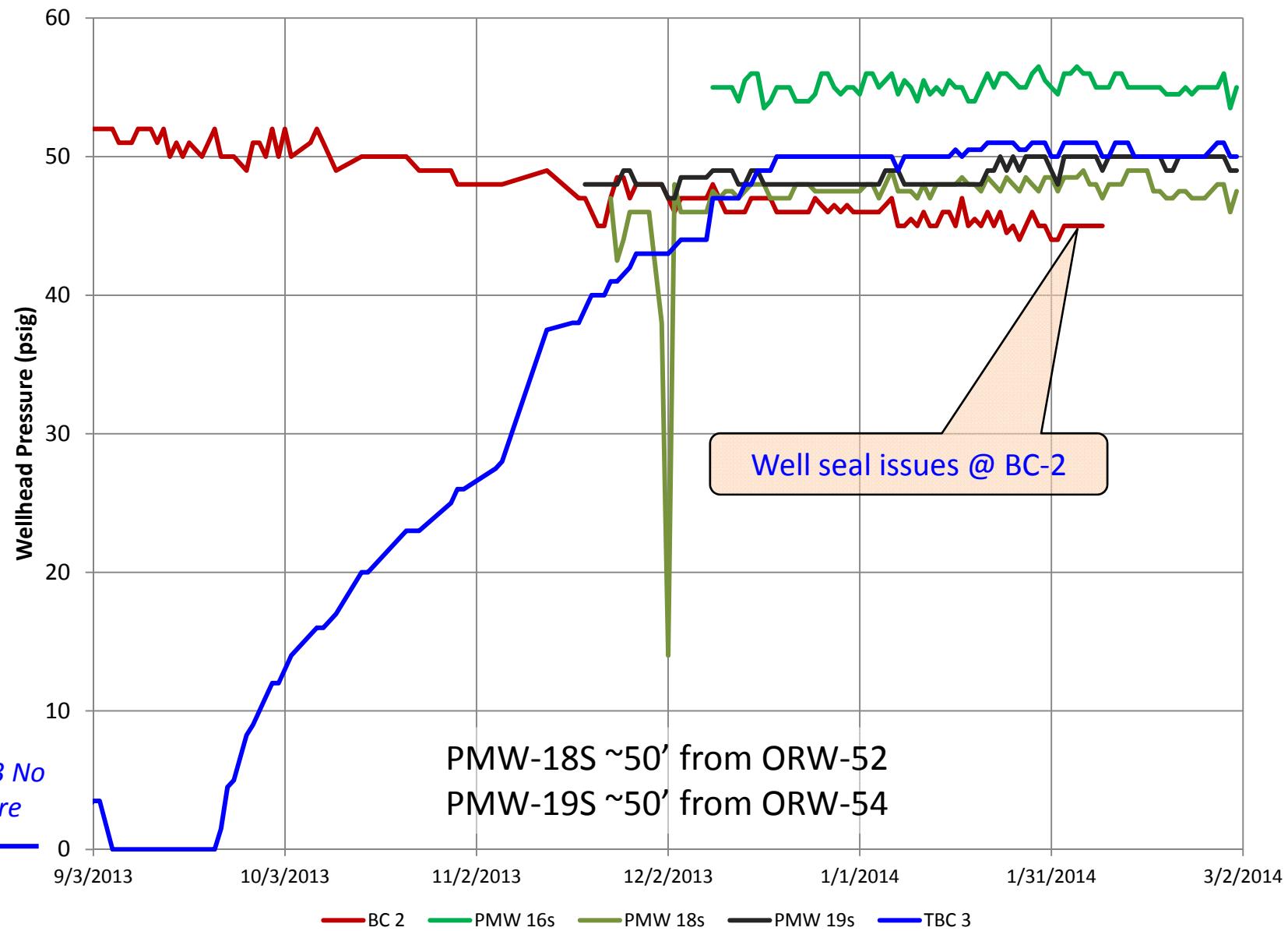
mcf Thousands cubic feet

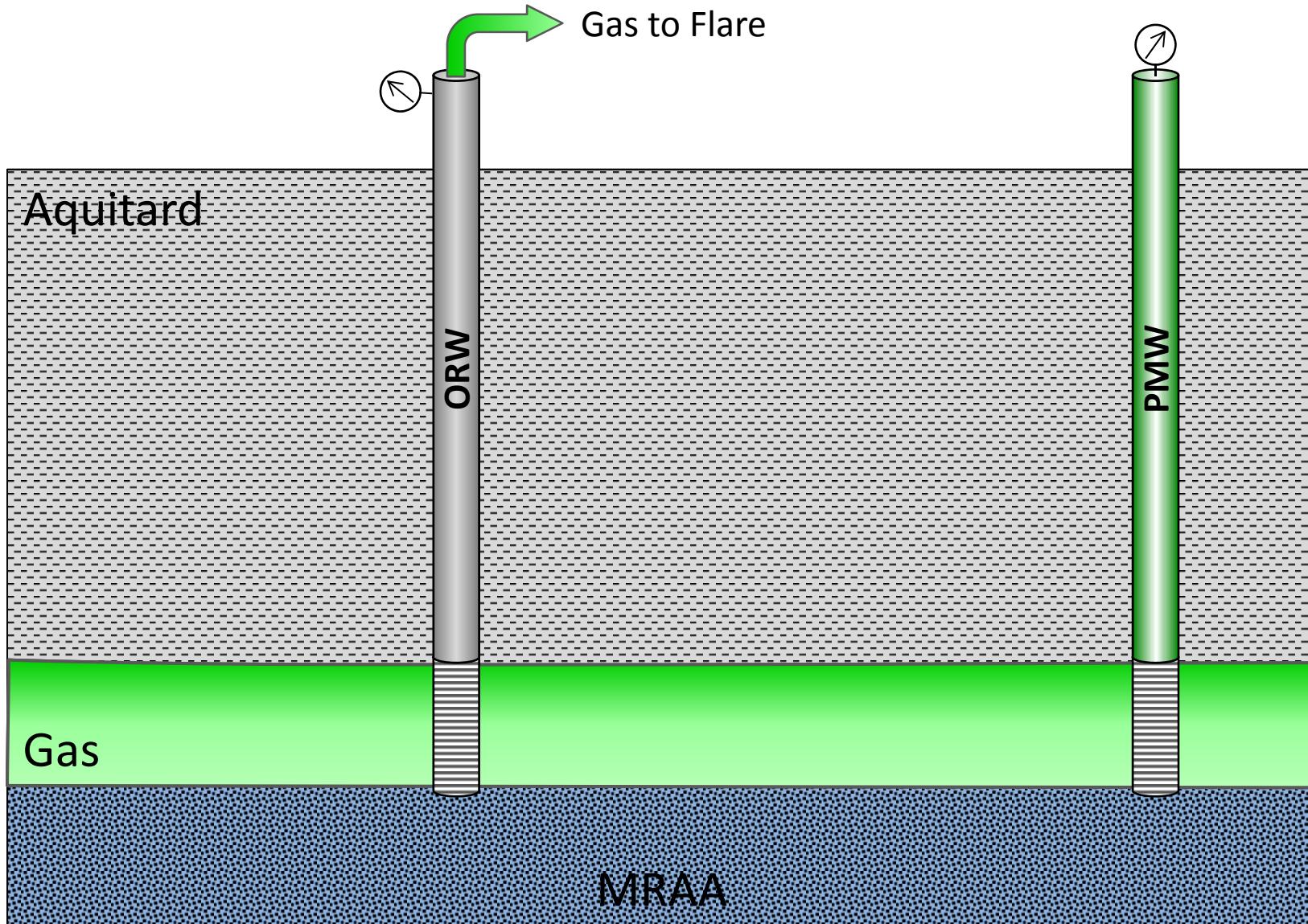
FWHP Flowing wellhead pressure

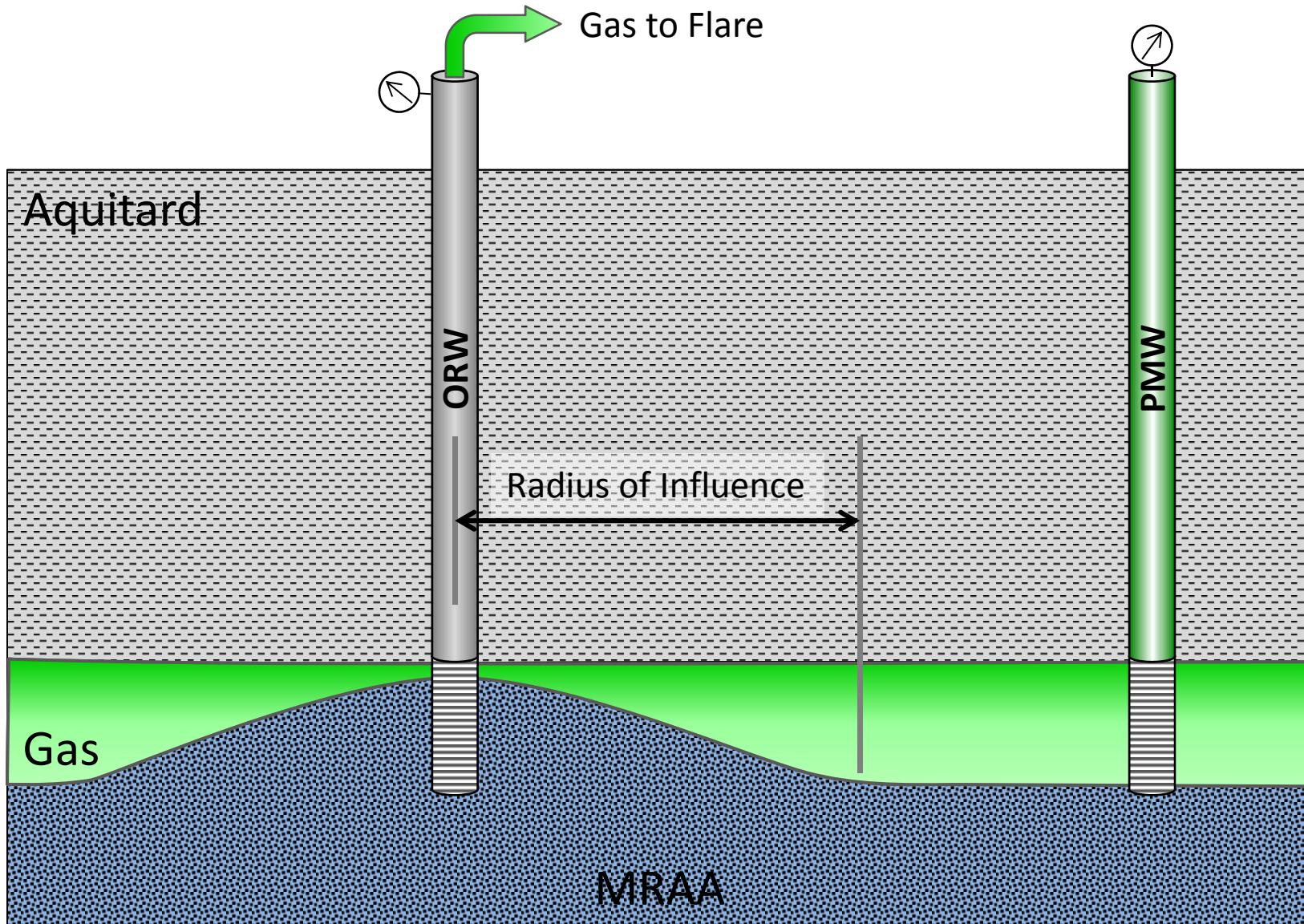
psig Pounds per square inch gauge



Pressure Monitoring Shut-in Wellhead Pressures







- Option 1—No dewatering
 - Have to mitigate gas using only the excess gas pressure (3-5 psig)
 - Keep wellhead pressure high to avoid “watering” out of well
 - Initially gas pressure high enough to avoid “water” out
 - As gas is removed, in the immediate vicinity of the vent well, the gas pressure can drop to MRAA water pressure and well fills with water
 - ROI (radius of gas removal) will be relatively small
 - Need more, closer-spaced vent wells
 - Longer time to mitigate gas
- Option 2—With Dewatering
 - Gas mitigation using 40 to 50 psig pressure drops
 - Water controlled in well with dewatering pumps
 - ROI relatively larger
 - Fewer vent wells
 - Shorter gas mitigation time

- Concerns raised about subsidence because of vent well dewatering
- Community Dewatering Tests including Subsidence Monitoring
 - ORW-38 test
 - 10 psi pressure drop
 - Pumping for one week
 - ORW-21 test being
 - Water pressure drop of 40-50 psi
 - Extensive monitoring for subsidence in vicinity of well

