



Homestake Mining Company Superfund Site Update

April 26, 2011





Presentation Outline

- Remedy System Evaluation (RSE)
Recommendations Update
- Human Health Risk Assessment –
Sampling Update
- Third Five-Year Review Status
- Grants Mineral Belt Five Year Plan Update



What is RSE?

The review includes an independent team of experts

- Recommendations from RSE are not intended to identify any deficiency in the remedial work but suggestions for improvement
- Reading and analyzing site documents
- Evaluating the conceptual site model
- Evaluating historical and current remedies
- Identifying cost savings opportunities
- Identifying protectiveness improvements
- Identifying opportunities to accelerate site completion
- Planning conference calls with all stakeholders
- Developing a targeted scope of work
- A 1-day site visit (for most sites)
- A draft and final draft report (20 to 40 pages)



RSE Summary

- Final Report in 2010 by USACE
- Transparent process
- 18 Recommendations
- EPA agrees with 14 recommendations and partially agrees with 1
- EPA disagrees with 3 recommendations
- EPA has requested NRC to direct Homestake to take action



RSE Summary

- All three agencies NRC, EPA and NMED agree that there is no health and safety concern associated with any recommendation
- HMC is in compliance with NRC license and all other permit conditions
- HMC has indicated willingness to evaluate some of the recommendations voluntarily
- RSE did not identify alternate remediation strategies for the HMC site
- RSE did not recommend changing the current pump and treat remediation strategy



RSE Recommendations

RSE Recommendation #1

The flushing of the tailings pile should be ended

EPA does not agree, because of demonstrated progress, however, EPA recommends pilot study to ensure rebound does not occur

RSE Recommendation #2

Simplification of the extraction and injection system and reduce dilution as a component of the remedy

EPA agrees that HMC consider this recommendation

RSE Recommendation #3

Further evaluate capture of contaminants west of the NW corner of Large Tailings Pile

EPA agrees that HMC consider evaluating the plume capture



RSE Recommendations

RSE Recommendation #4

Consider evaluating the mass loading in the vicinity of the former mill site

EPA does not agree since HMC has demonstrated clean up in this area

RSE Recommendation #5

Collect additional geochemical parameters beneath the large tailings pile

EPA agrees with this recommendation to evaluate long-term reducing conditions and rebound



RSE Recommendations

RSE Recommendation #6

If pilot tests successful implement full scale ground water treatment systems

EPA agrees with this recommendation and requests that HMC provide pilot study results

RSE Recommendation #7

Further investigate extent of plume in the chinle aquifer system

EPA does not agree since the chinle aquifers are well characterized



RSE Recommendations

RSE Recommendation #8

Assess EP-1 for potential leaks

EPA agrees and requests HMC assess leakage from EP-1

RSE Recommendation #9

Assure decommissioning of compromised well screens in the San Andreas aquifer

EPA agrees and requests HMC to complete this task as soon as possible



RSE Recommendations

RSE Recommendation #10

Consider construction of slurry wall to control migration of contaminants

EPA does not agree due to uncertainties associated with the success of the system at significant depths and assure protectiveness

RSE Recommendation #11

Relocation of tailings should not be considered further due to risks to the community

EPA agrees with this recommendation



RSE Recommendations

RSE Recommendation #12

Consider either pre-treatment or add RO capacity

EPA agrees with this recommendation

RSE Recommendation #13

Review spray equipment to optimize evaporation

EPA agrees with this recommendation

RSE Recommendation #14

Selection of the area of the additional pond based on evaporative capacity

The new evaporation pond EP-3 has been built and is in operation



RSE Recommendations

RSE Recommendation #15

Develop a comprehensive, regular, and objectives-based monitoring program

The EPA agrees with this, however, Homestake has a comprehensive monitoring plan that needs update

RSE Recommendation #16

Quantitative long-term monitoring optimization techniques are highly recommended

The EPA agrees with this and requests HMC to update the monitoring plans in the Corrective Action Plan (CAP)



RSE Recommendations

RSE Recommendation #17

Adjust air monitoring program to perform sampling of radon decay products to confirm equilibrium assumption

The EPA agrees with this and requests HMC to demonstrate the validity of equilibrium assumptions

RSE Recommendation #18

Though risks appear minimal with irrigation practice consider treatment via ion exchange prior to application

The EPA strongly recommends that HMC implement alternate treatment methods such as those that are currently pilot tested prior to irrigation



Sampling Update



Sampling Update

Radon Sampling- Indoor and outdoor

- Track Etch – long-term sampling
- Canister – short-term sampling

Areas Sampled

■ Homestake Site

■ Milan Area

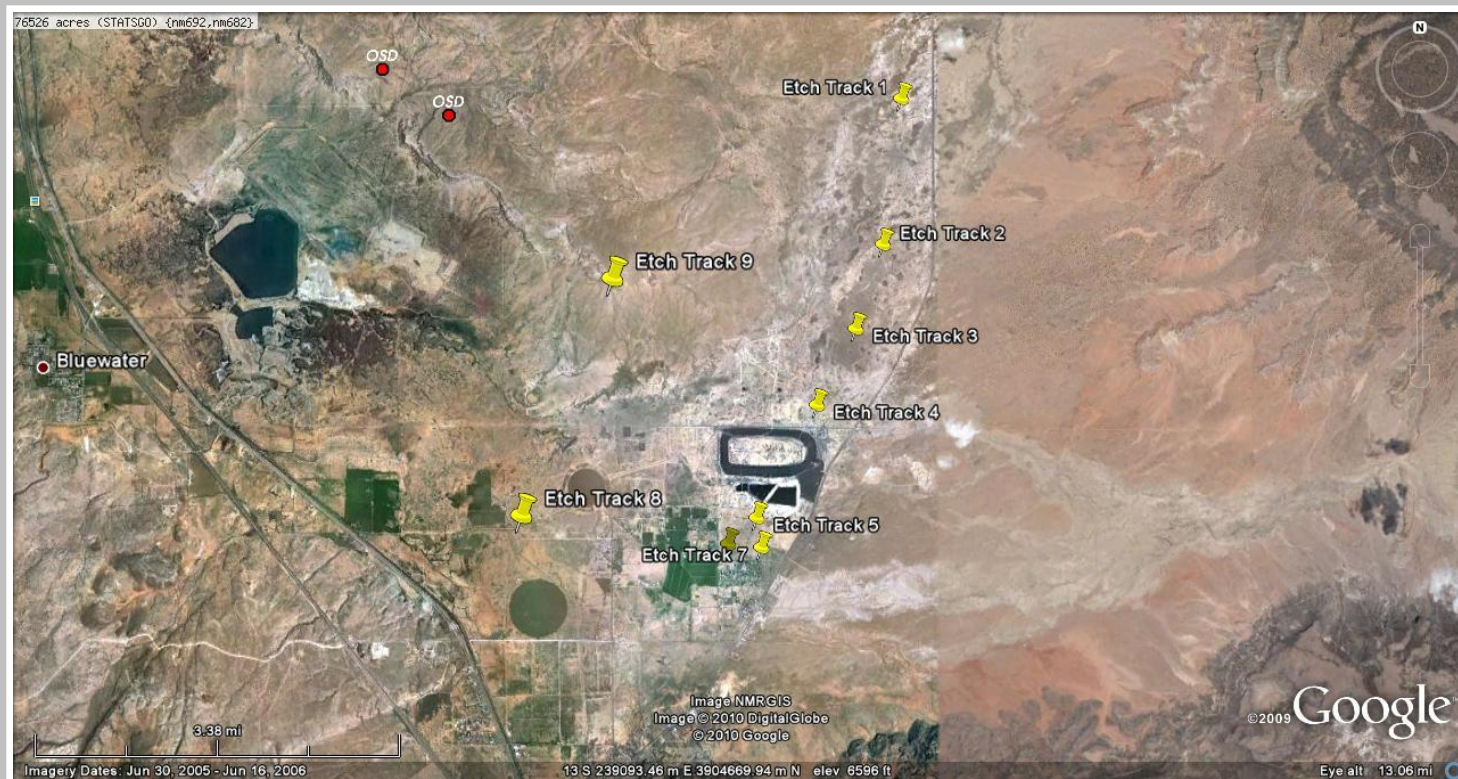
- 82 homes sampled in Murray Acres, Broadview Acres, Pleasant Valley Estate, Felice Acres and Valle Verde Estate

■ Bluewater Village Area

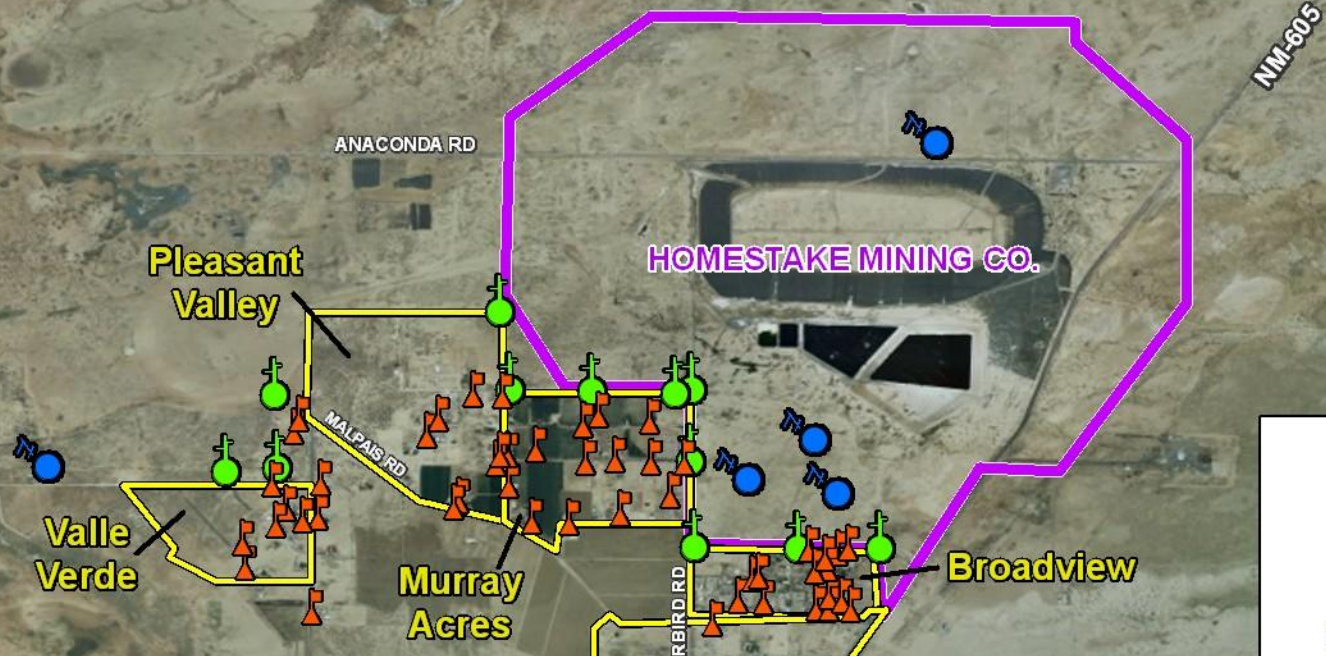
- 30 homes sampled in Bluewater Village to determine background radon levels

Radon Sampling on Homestake Site and Up-gradient Area

- 9 locations with track etch detectors
- Sampled every quarter for one year



CIBOLA COUNTY





Sampling Update

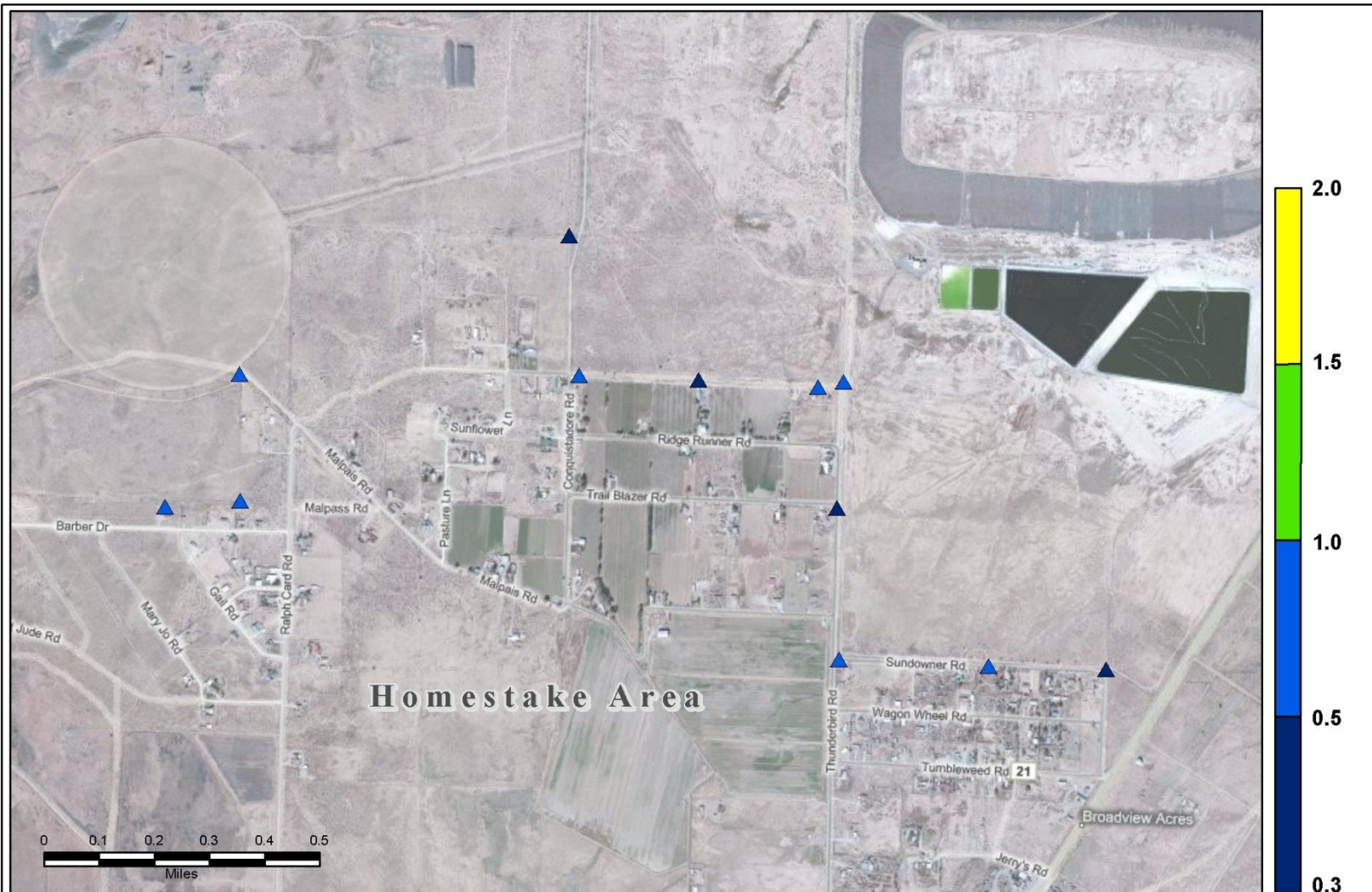
First Quarter Radon Results

■ Milan Area

- Outdoor radon levels are less than 1 pCi/l
- Indoor radon levels in approximately 10% of the homes exceed the EPA recommended guidance of 4 pCi/l
- Source is still unknown

■ Bluewater Village

- Outdoor radon levels lower than Milan Area
- Indoor radon levels in approximately 6% of the homes exceed EPA recommended guidance of 4 pCi/l



Quarterly Outdoor Radon Results (pCi/L)

Based on Long-Term Samples (Lowest Result)

Fenceline Monitoring Stations

Homestake Area, New Mexico

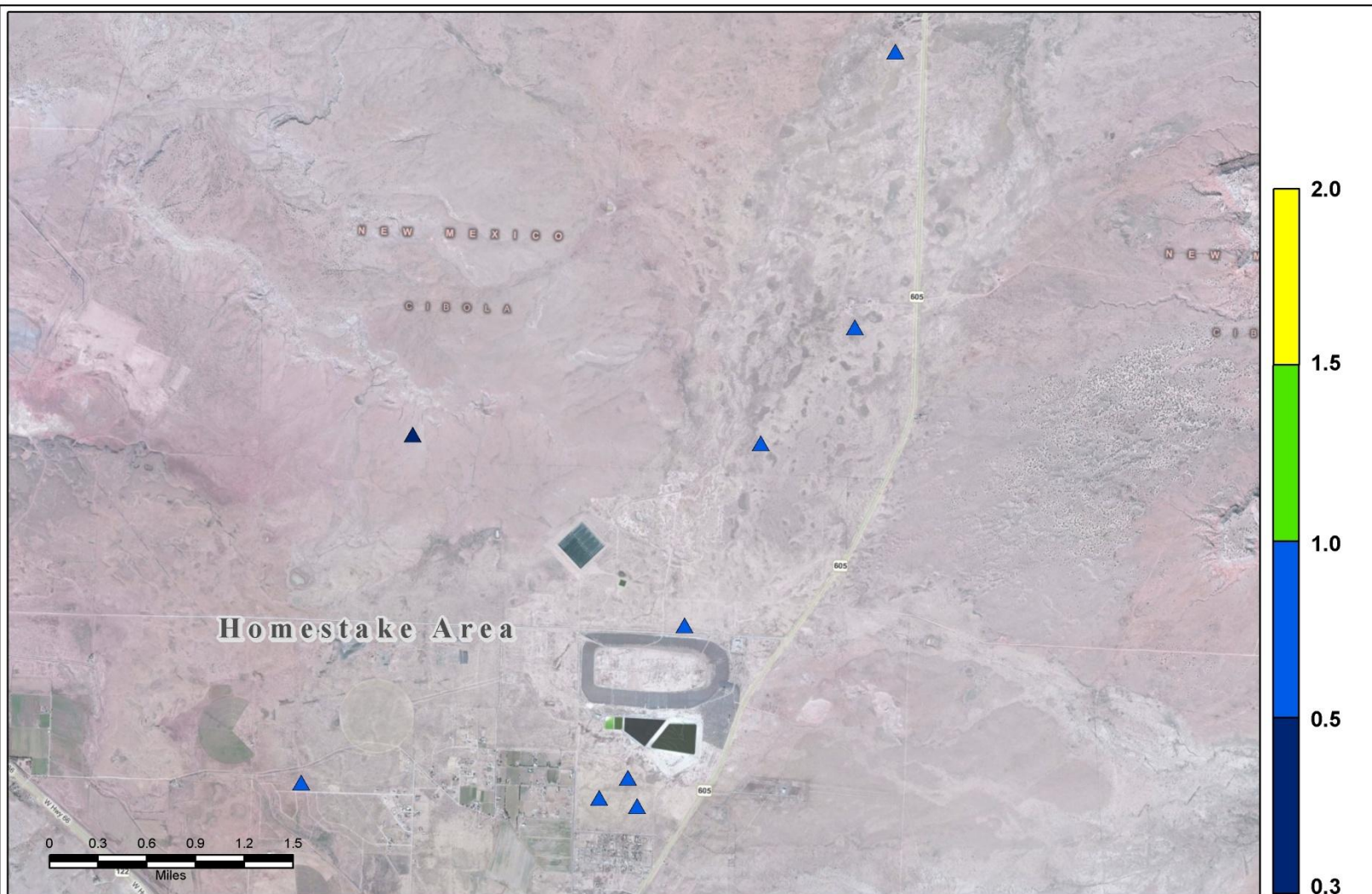
Radon sample data provided by EPA
Region 6 Superfund Division, dated
04/08/2011. Aerial provided by Bing.



EPA Region 6
Superfund Division
Map Created 4/19/2011



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Quarterly Outdoor Radon Results (pCi/L)

Based on Long-Term Samples (Average of Results)

HMC Monitoring Stations
Homestake Area, New Mexico

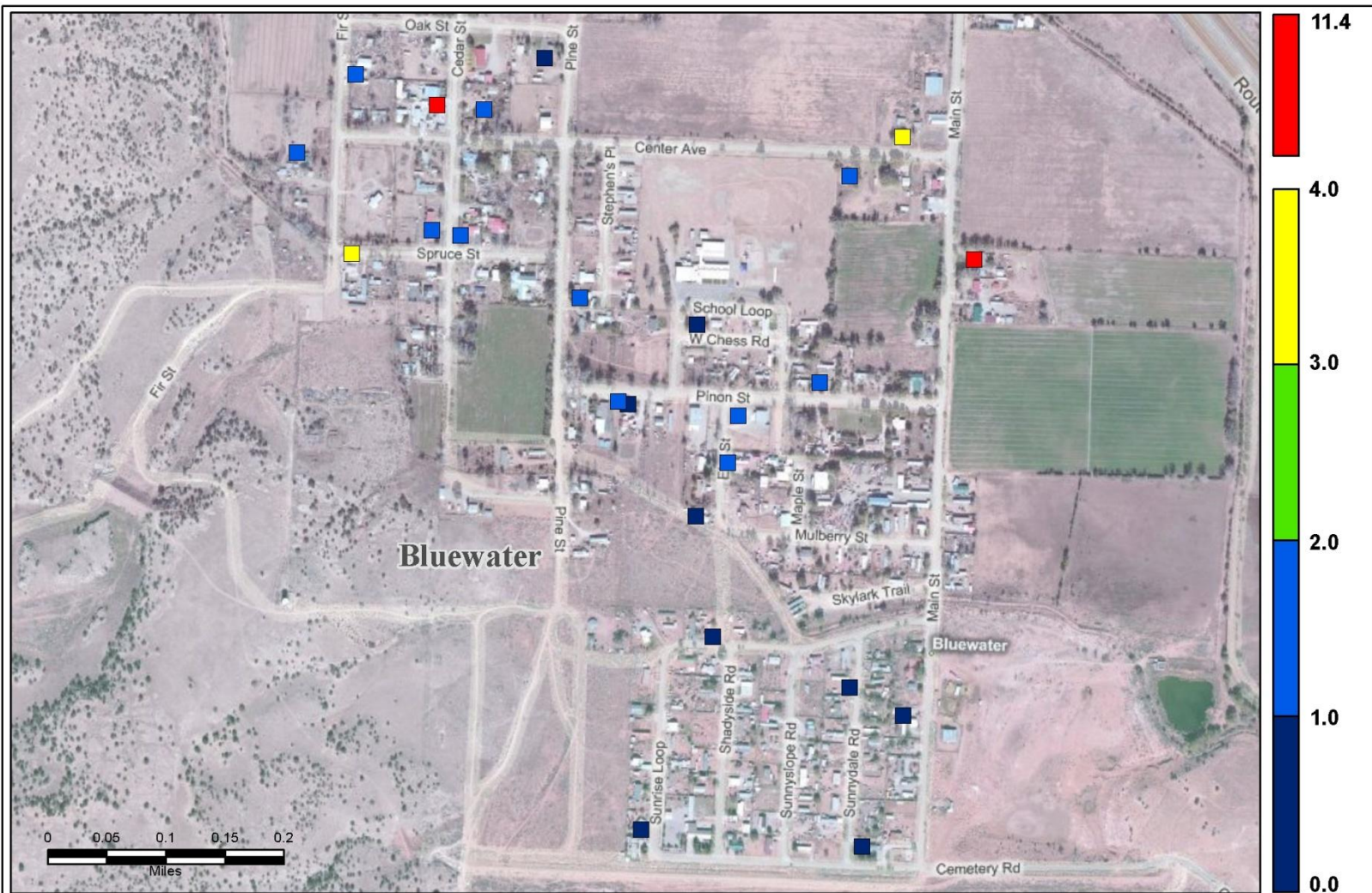
Results (pCi/L)



EPA Region 6
Superfund Division
Map Created 4/19/2011



Radon sample data provided by EPA
Region 6 Superfund Division, dated
04/08/2011. Aerial provided by Bing.



Quarterly Indoor Radon Results (pCi/L)

Based on Long-Term Samples

Bluewater, New Mexico

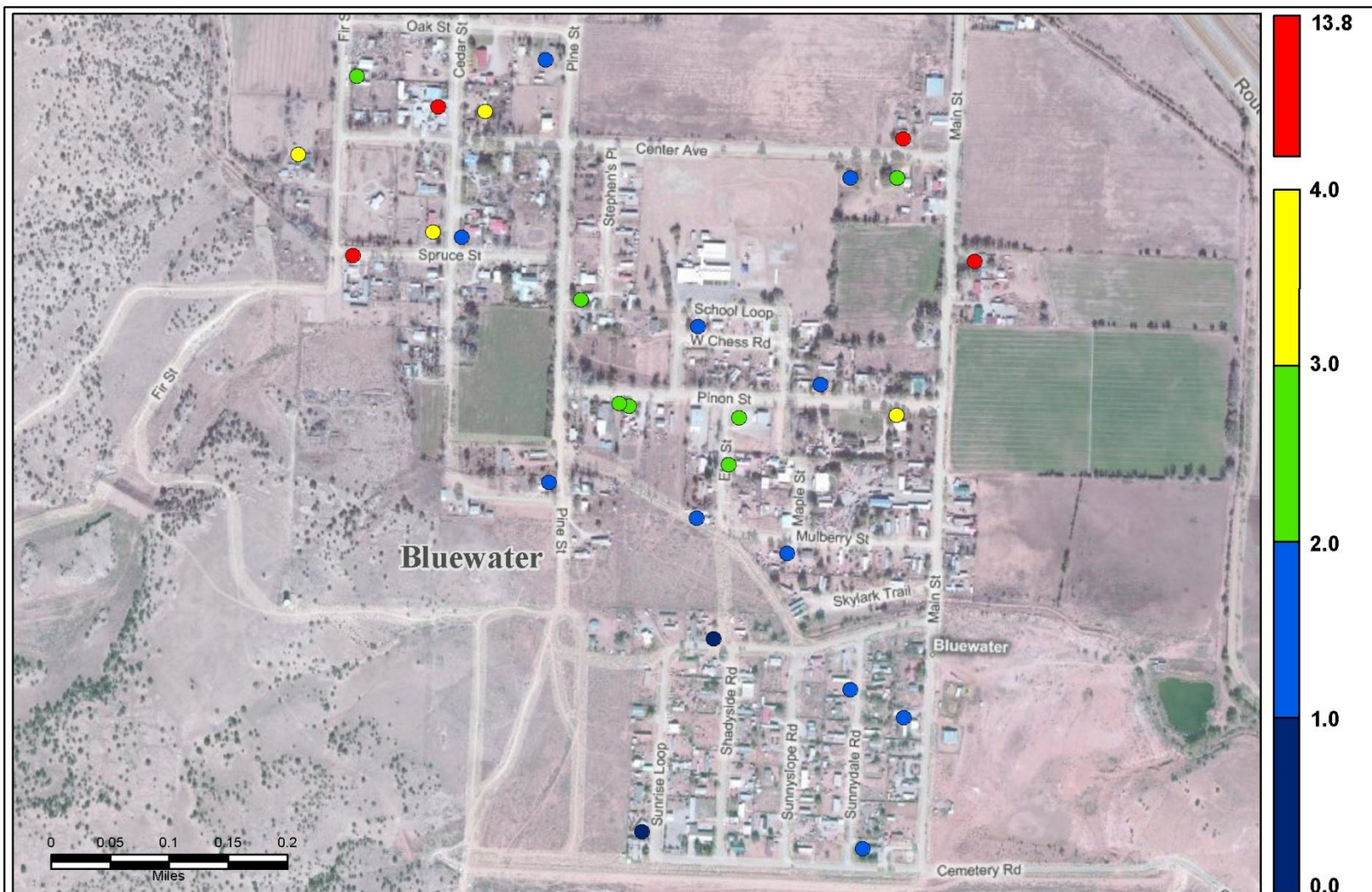
Results (pCi/L)



EPA Region 6
Superfund Division
Map Created 4/15/2011



Radon sample data provided by EPA
Region 6 Superfund Division, dated
04/08/2011. Aerial provided by Bing.



Short-Term Indoor Radon Results (pCi/L)

Based on Short-Term Samples (6 days)

Bluewater, New Mexico

Results (pCi/L)



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Superfund Division
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Radon sample data provided by EPA
Region 6 Superfund Division, dated
04/08/2011. Aerial provided by Bing.



Quarterly Outdoor Radon Results (pCi/L)

Results (pCi/L)

Based on Long-Term Samples

Bluewater, New Mexico

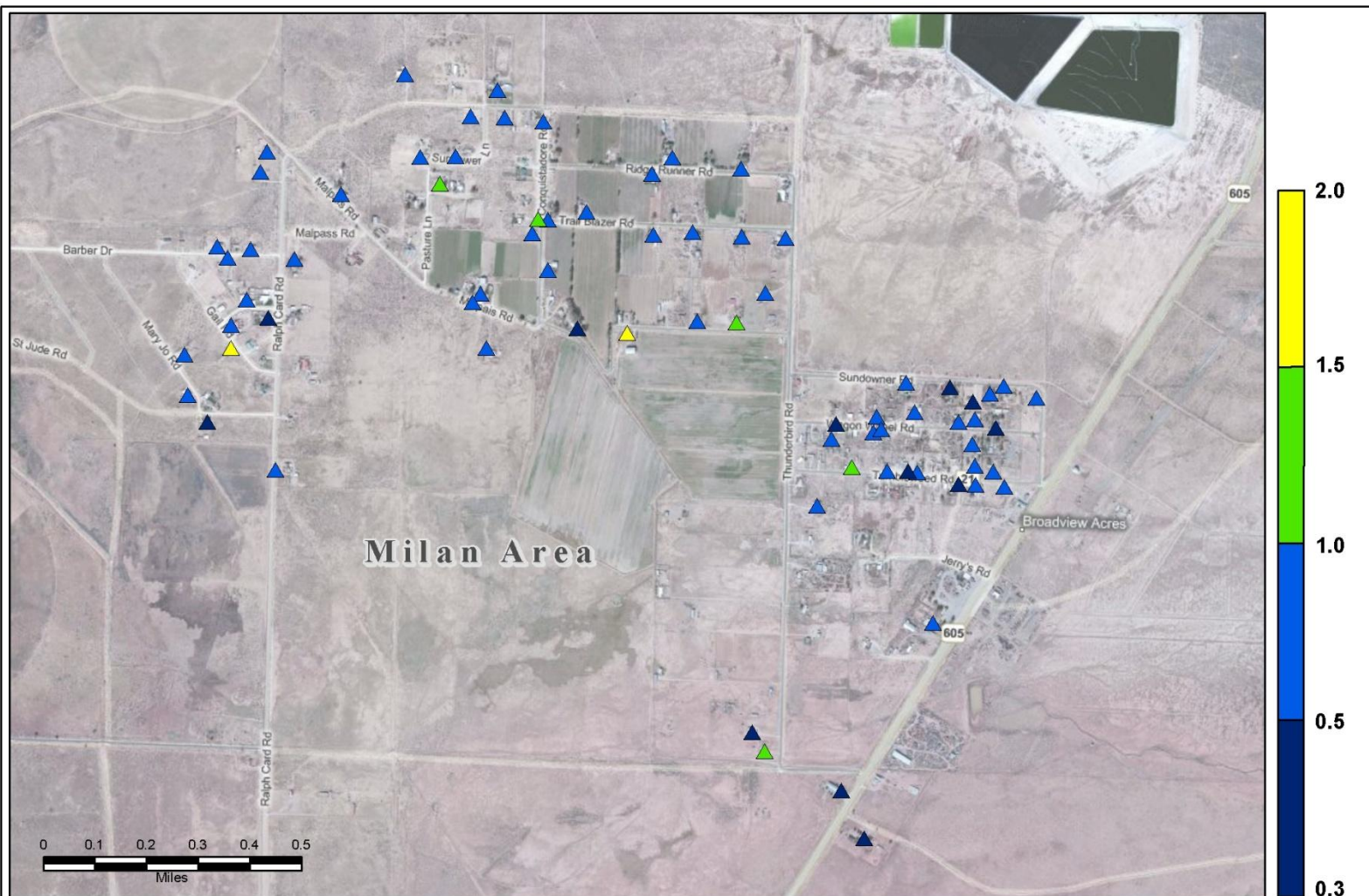


EPA Region 6
Superfund Division
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20110415ML04

Radon sample data provided by EPA
Region 6 Superfund Division, dated
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Quarterly Outdoor Radon Results (pCi/L)

Based on Long-Term Samples

Milan Area, New Mexico

Results (pCi/L)

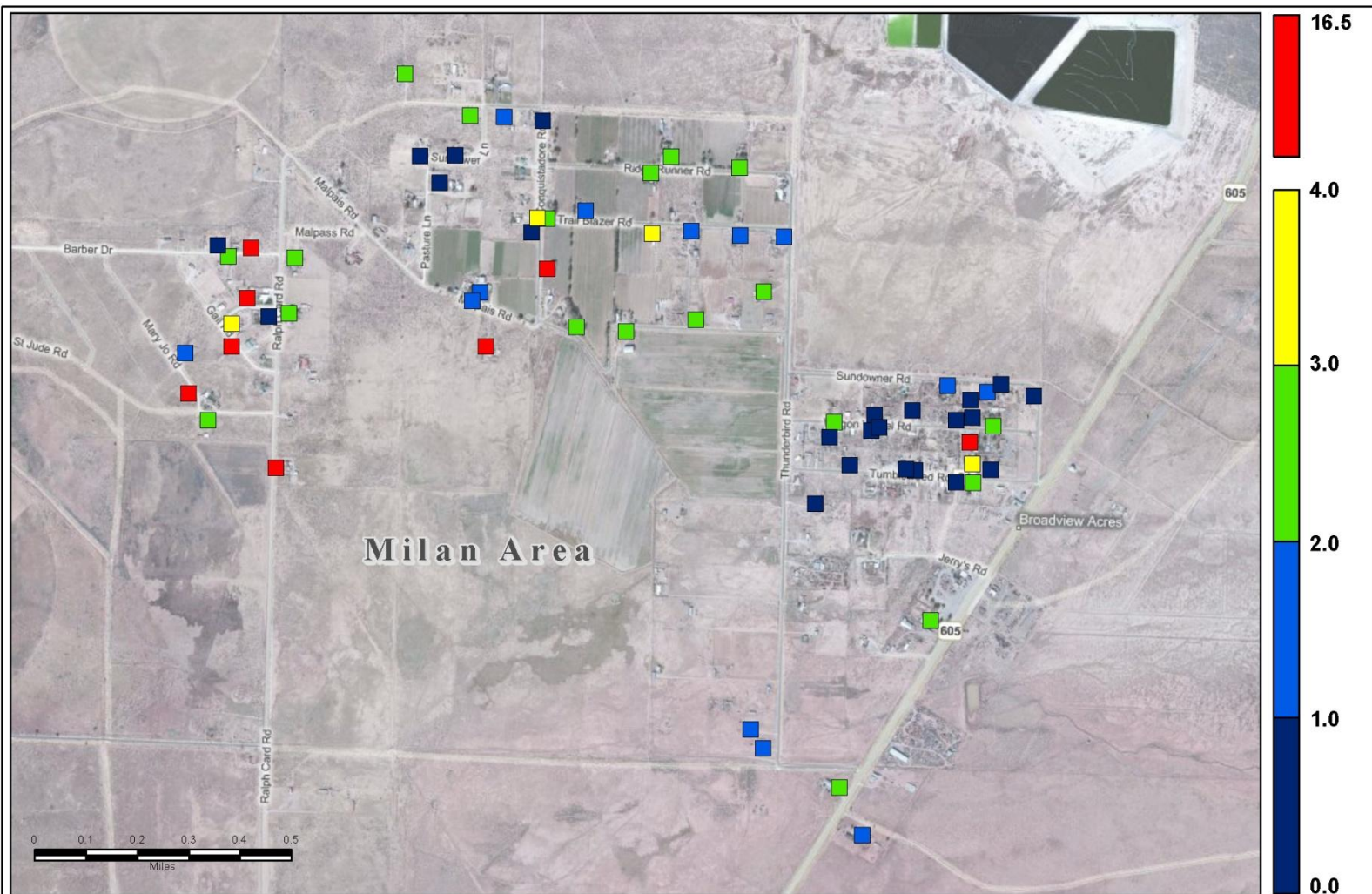


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Region 6 Superfund Division, dated
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Quarterly Indoor Radon Results (pCi/L)

Based on Long-Term Samples
Milan Area, New Mexico

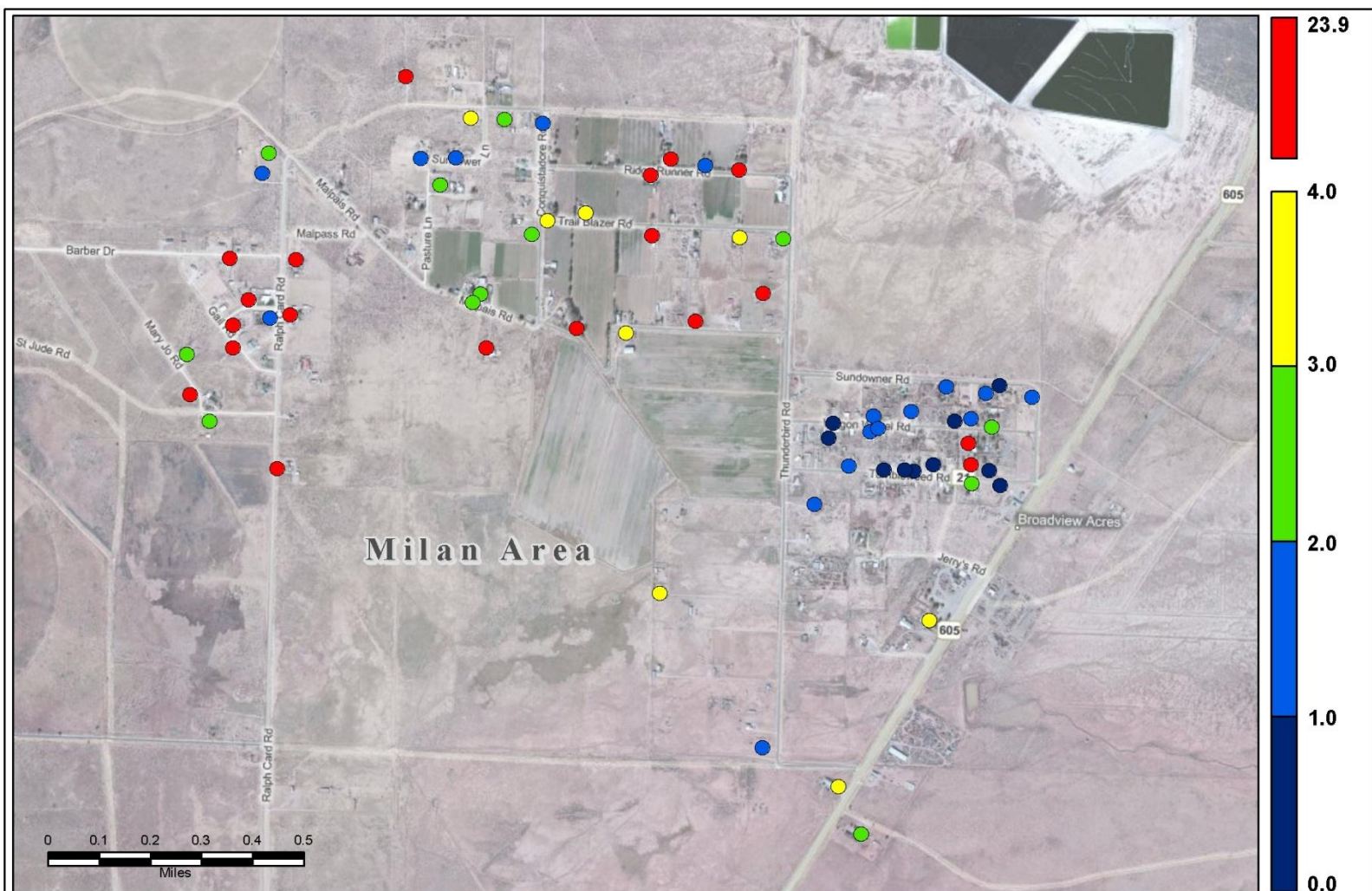
Results (pCi/L)



EPA Region 6
Superfund Division
Map Created 4/19/2011



Radon sample data provided by EPA
Region 6 Superfund Division, dated
04/08/2011. Aerial provided by Bing.



Short-Term Indoor Radon Results (pCi/L)

Based on Short-Term Samples (6 days)

Milan Area, New Mexico

Results (pCi/L)



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Radon sample data provided by EPA
Region 6 Superfund Division, dated
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What is Radon

- Radon is a colorless, tasteless and odorless gas.
- It is heavier than air
- Get trapped in lower levels of a house and build up to higher concentrations in air.
- Found all over the US, nearly 1 out of every 15 houses is estimated to have elevated radon levels.
- Comes from natural breakdown of Uranium.
- Found in most soil and can be found in ground water.
- Soil tend to be the major source for radon gas.
- Can be transported through the air if living close to a mine or mill site.



Health Risk from Exposure to Radon gas

- Radon is the second leading cause of lung cancer in the US after cigarette smoking.
- If you smoke and you are exposed to radon gas, your risk of developing lung cancer more than doubles.
- There is no known safe level of radon, but risk can be reduced.



What can you do about radon at your home

- The only way to know if you and your family are at risk from radon is to test for radon gas in your house.
- Test is simple, easy and not too costly.
- If your house has a radon problem, remember it can be fixed.
- Fixing your home reduce risk but does not completely eliminate it.

Descriptive Statistics for the Short Term Charcoal Canister Radon Data.

Location	# Monitors	Average	Minimum	Maximum
All Subdivisions	65	2.5±3.3	0.5	20.5
Broadview	22	1.2±2.0	0.5	9.25
Felice Acres	6	2.6±0.7	1.85	3.35
Murray Acres	13	4.3±1.8	1.8	9.1
Pleasant Valley	13	2.3±1.7	1.45	7.9
Valle Verde	10	4.9±3.6	1.7	13.8
Bluewater	24	2.25±2.7	0.6	13.8

Descriptive Statistics for the 90 days indoor Track-etch Detector Radon Data.

Location	# Monitors	Average	Minimum	Maximum
All Subdivisions	64	1.6±2.35	0.3	16.5
Broadview	21	0.7±1.45	0.3	6.5
Felice Acres	6	1.6±0.6	0.9	2.4
Murray Acres	13	2.2±0.8	1.1	4.1
Pleasant Valley	11	1.2±1.4	0.8	5.4
Valle Verde	12	2.8±1.9	0.4	6.6
Bluewater	24	1.35±2.3	0.3	11.4

Descriptive Statistics for the 90 days Outdoor Track-etch Detector Radon Data.

Location	# Monitors	Average	Minimum	Maximum
All Subdivisions	73	0.6±0.26	0.3	2.0
Broadview	25	0.5±0.16	0.3	0.9
Felice Acres	6	0.5±0.3	0.3	1.2
Murray Acres	15	0.6±0.27	0.4	1.5
Pleasant Valley	16	0.6±0.15	0.5	1.0
Valle Verde	10	0.6±0.47	0.3	2.0
Bluewater	25	0.3±0.2	0.3	1.1

Interpretation of Radon Results for your homes.

Results from both short term charcoal canisters and 90 days Track-etch indoor radon detectors

Both are ≥ 4 pCi/l

Mitigation is recommended. Fix your home.

One is > 4 pCi/l and the other is < 4 pCi/l

Mitigation not recommended. But consider fixing your home.

Both are < 4 pCi/l but > 2 pCi/l.

Mitigation not recommended.

Both are < 2 pCi/l

Sampling Update

- Soil sampling
 - All private properties sampled
 - Homestake site to be sampled
- Water sampling from private wells-completed
- Vegetation Sampling - completed
- Outdoor gamma survey - completed
- Indoor gamma survey (Nearly complete)
- Radiological scanning by ERGS completed
- Data Evaluation not started





Five-Year Review Schedule

- Notification – October 2010
- Review Start – November 2010
- Site Visit – December 2010/January 2011
- Draft to EPA – July 2011
- Final Report – September 2011



Q&A