

Radiological Monitoring Zion, Illinois

Cecil Settles, Section Head
Nuclear Facility Inspection Section
IEMA Bureau of Nuclear Facility Safety

IEMA Goals at Zion

- Independently monitor licensed activities at Zion
- Provide the earliest possible notice to the public of increases in radiation levels or releases of radioactive material

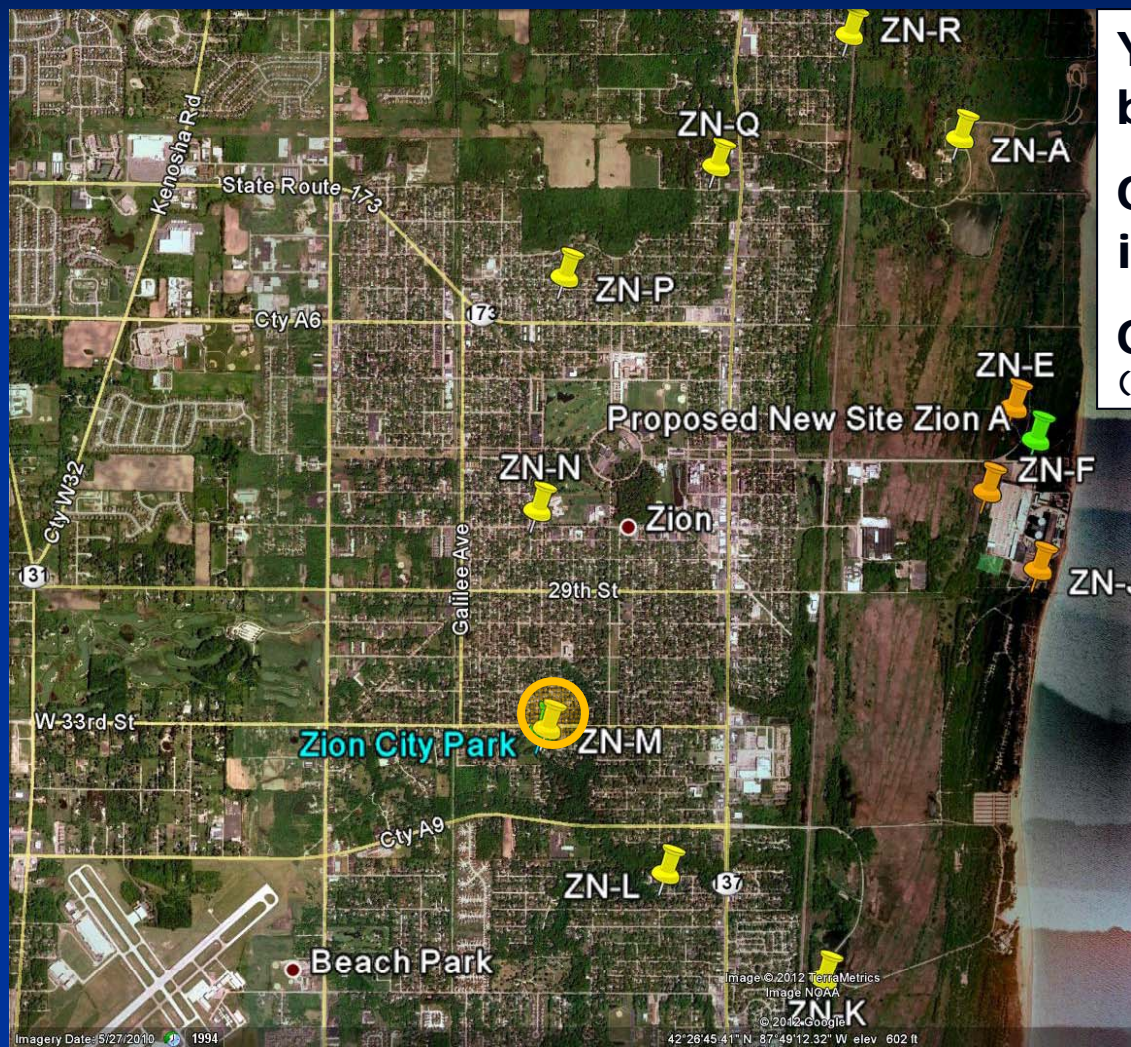
Monitoring Plan

- Monitor potential effluents and radiation levels at the Zion site
 - Move monitoring sites closer
 - Increase air monitoring sites during decommissioning
 - Upgrade data transmission technology
 - Upgrade radiation detection instruments

Gamma Detection Network

- The Gamma Detection Network (GDN) is a series of very sensitive radiation detection sensors around the plant (except for the lake)
- Existing units are A/C powered and data is transmitted via telephone lines to our computer centers in Springfield

Gamma Detection Network



Yellow – old sites to be reclaimed

Orange – new, installed sites

Green – future sites
(cask pad sites not shown – TBD)

Site Re-Positioning

- Currently, 8 older model installations still remain
 - All approximately 2 miles from the Zion site
 - These will be removed once the newer, closer sites are installed
- 3 newer design systems have been installed
 - These are at or near the fence line
 - North-West, West and South of the site
- 4 remain to be installed
 - One in town at the Gabriel Street park
 - (just west of existing site)
 - One at the Zion site entrance
 - Two at the Fuel Cask pad (to be built)

Data Transmission

- Our new GDN design uses Spread-Spectrum radio to transmit data
 - More reliable than telephone lines
 - Carries more system data
 - More economical

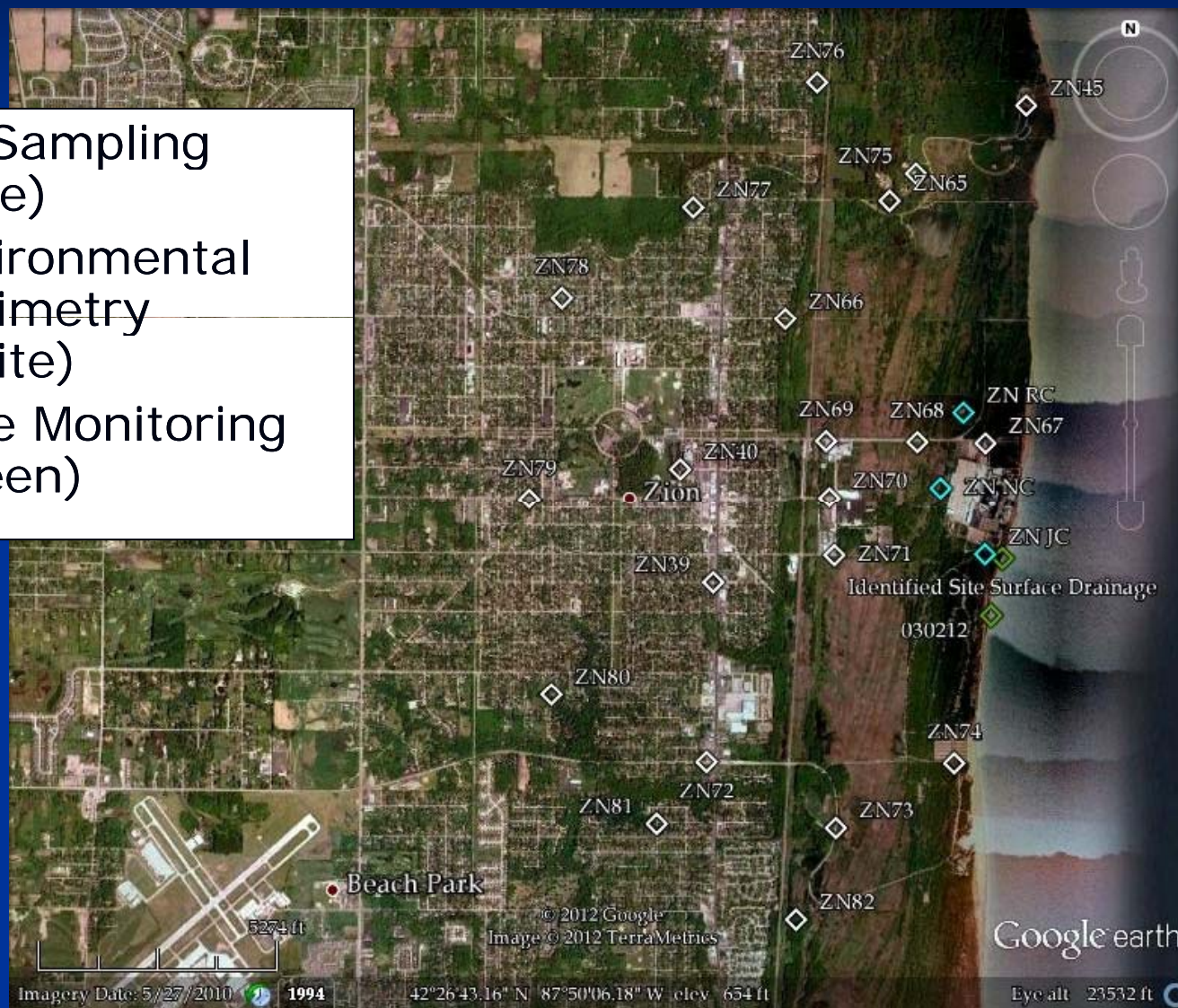
Upgraded Radiation Sensors



- Measure radiation levels from background to accident levels
 - Polled and controlled remotely
 - More system data available for evaluation
- (not all units have solar power)

Environmental Monitoring

- Air Sampling (blue)
- Environmental Dosimetry (white)
- Lake Monitoring (green)



Air Monitoring

- Air samplers are currently installed at the 3 newer, close-in sites
- An air sampler will be installed at the access gate site
- Air samples are collected weekly and analyzed for radioactive content in our radiochemistry laboratory

Environmental Dosimeters

- 20 environmental dosimeters around the site and in the city of Zion
- Measure long-term radiation exposure
- Exchanged and analyzed quarterly

Lake Water Sampling

- 2 sites have been identified to monitor drainage into Lake Michigan
- To be sampled Quarterly

IEMA

- IEMA will continue the radiation monitoring program at Zion
- IEMA Inspectors routinely evaluate project progress and are kept informed of Zion Solutions project schedules