

Groundwater Conditions in Residential Roxana, Illinois

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Illinois Environmental Protection Agency

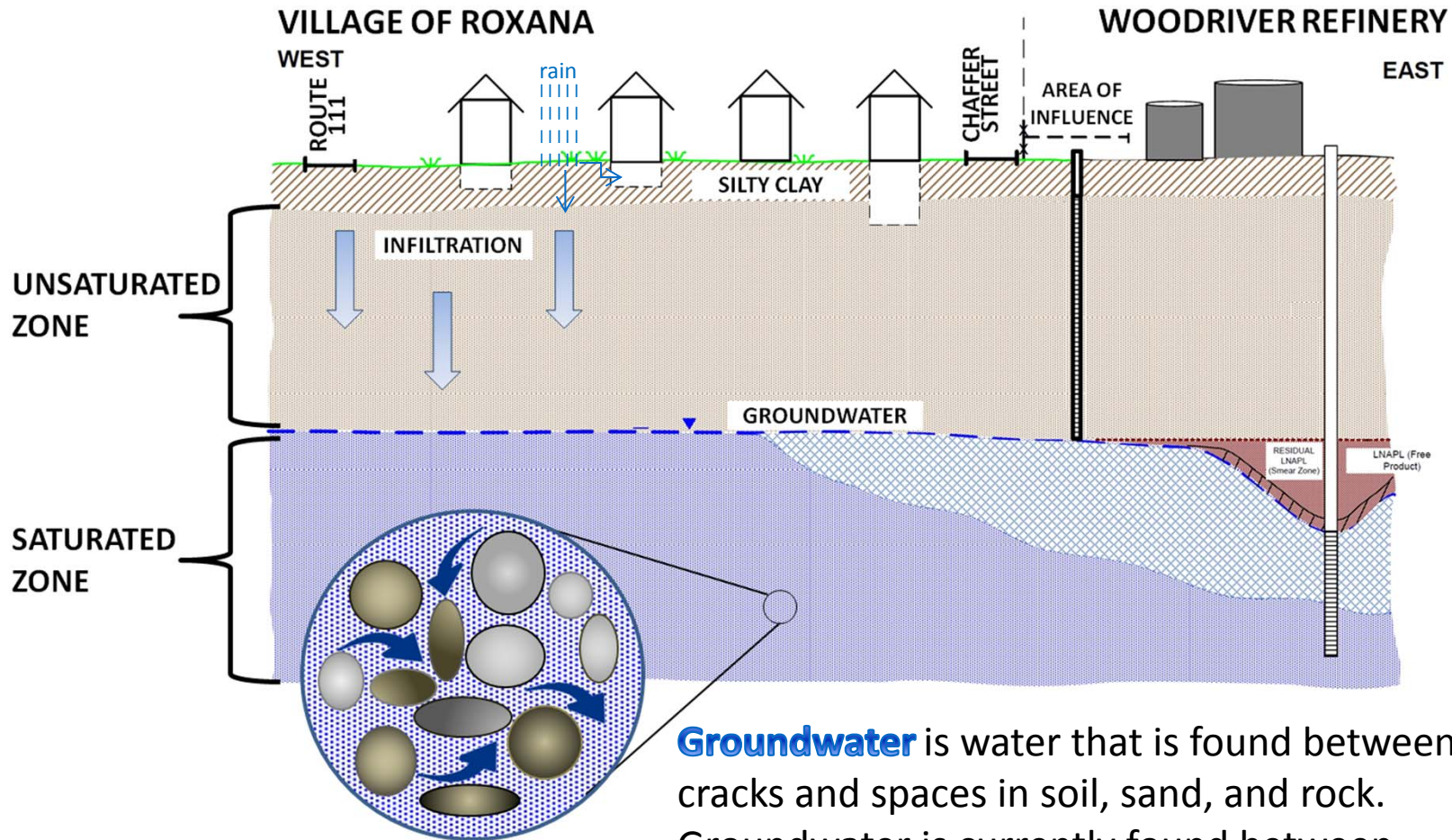
Bureau of Land

Permits Section

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Groundwater Defined

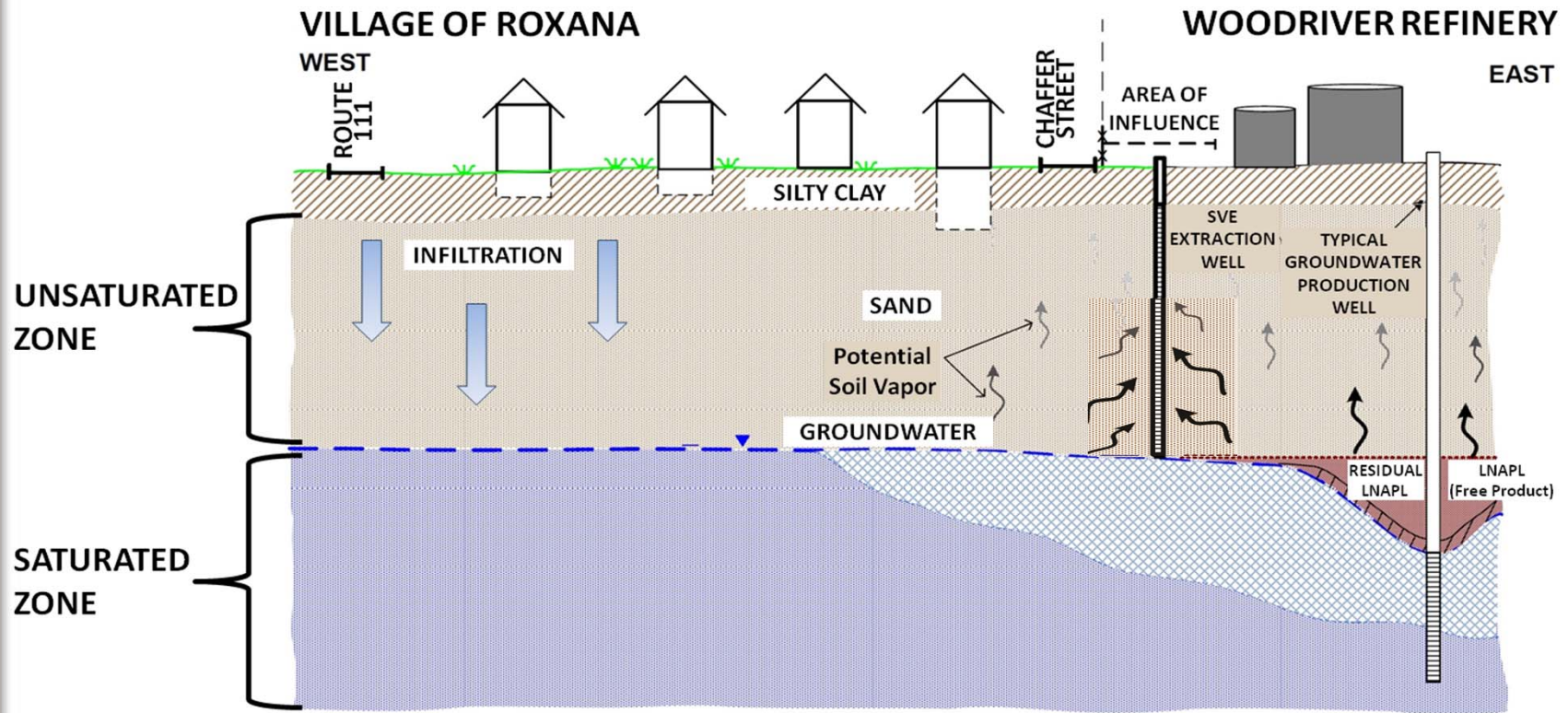


Groundwater is water that is found between the cracks and spaces in soil, sand, and rock. Groundwater is currently found between 40 feet to 150 feet below the ground surface in this area.

Graphic created by URS and modified for this presentation

What about water in my basement? Water in a basement is from rainfall. The soils can't absorb the water fast enough in such a short time and it may seep into a basement. The groundwater surface is about 40 feet below the ground surface.

Free Product and Dissolved Groundwater Contamination



Free Product measured in Roxana is a result of historically released petroleum products and has been measured in 3 groundwater monitoring wells in Roxana. These products are lighter than groundwater so they will typically be found near the top of the groundwater.

Dissolved Groundwater Contamination is found in the zone around the release areas. In Roxana, we primarily see a groundwater plume, not free product.

Roxana Community Water Supply

What about my drinking water?

WOOD RIVER REFINERY IN RELATION TO ROXANA COMMUNITY WATER SUPPLY



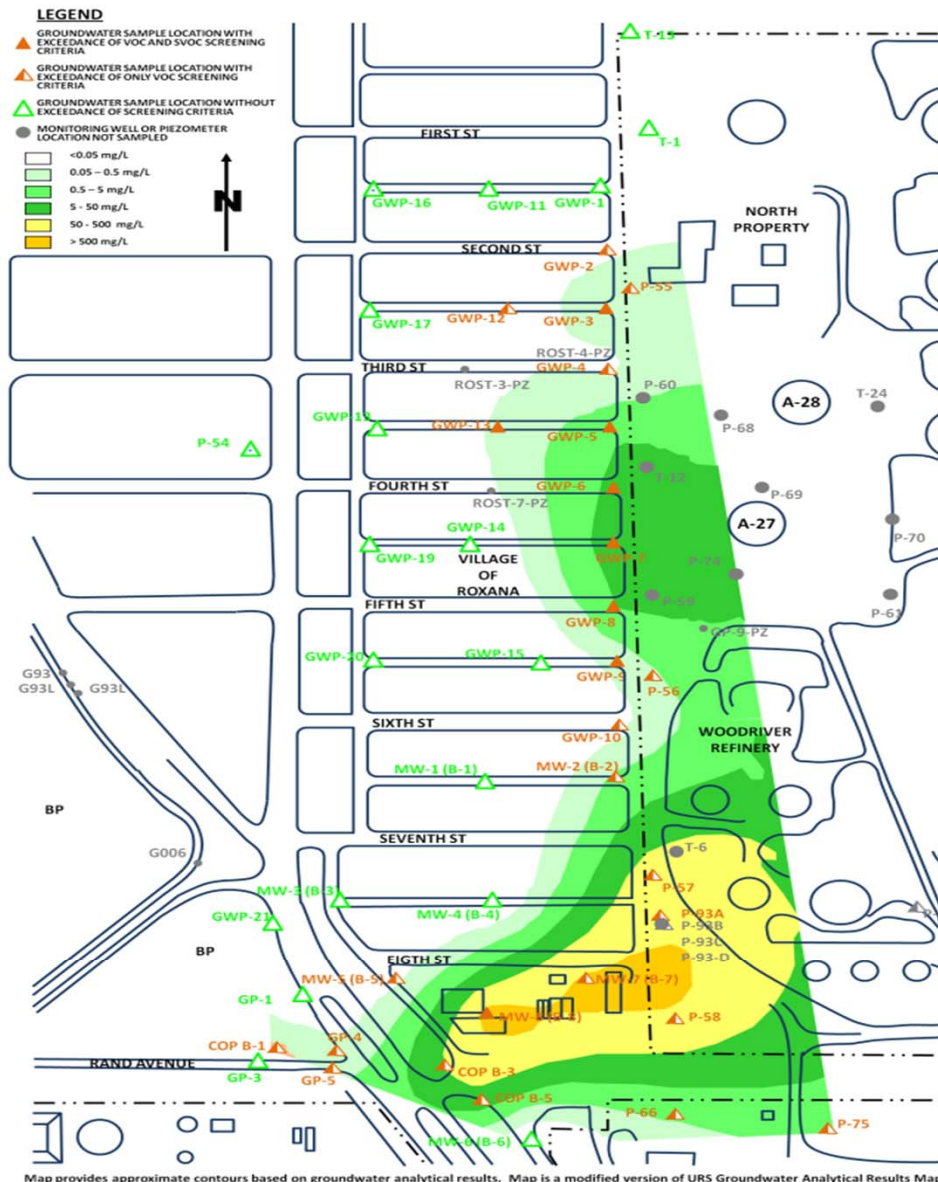
This graphic was
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Illinois EPA

Public water supply

- Pumped from deep wells.
- Routine testing; no petroleum hydrocarbons.
- Water is treated and piped through shallow pipes under pressure to homes, so contaminants can't enter these pipes.

Water Well Survey

No private water supply wells are within 2500 feet of the Study Area.



The graphic was created by **URS** and has been modified for purposes of this presentation.

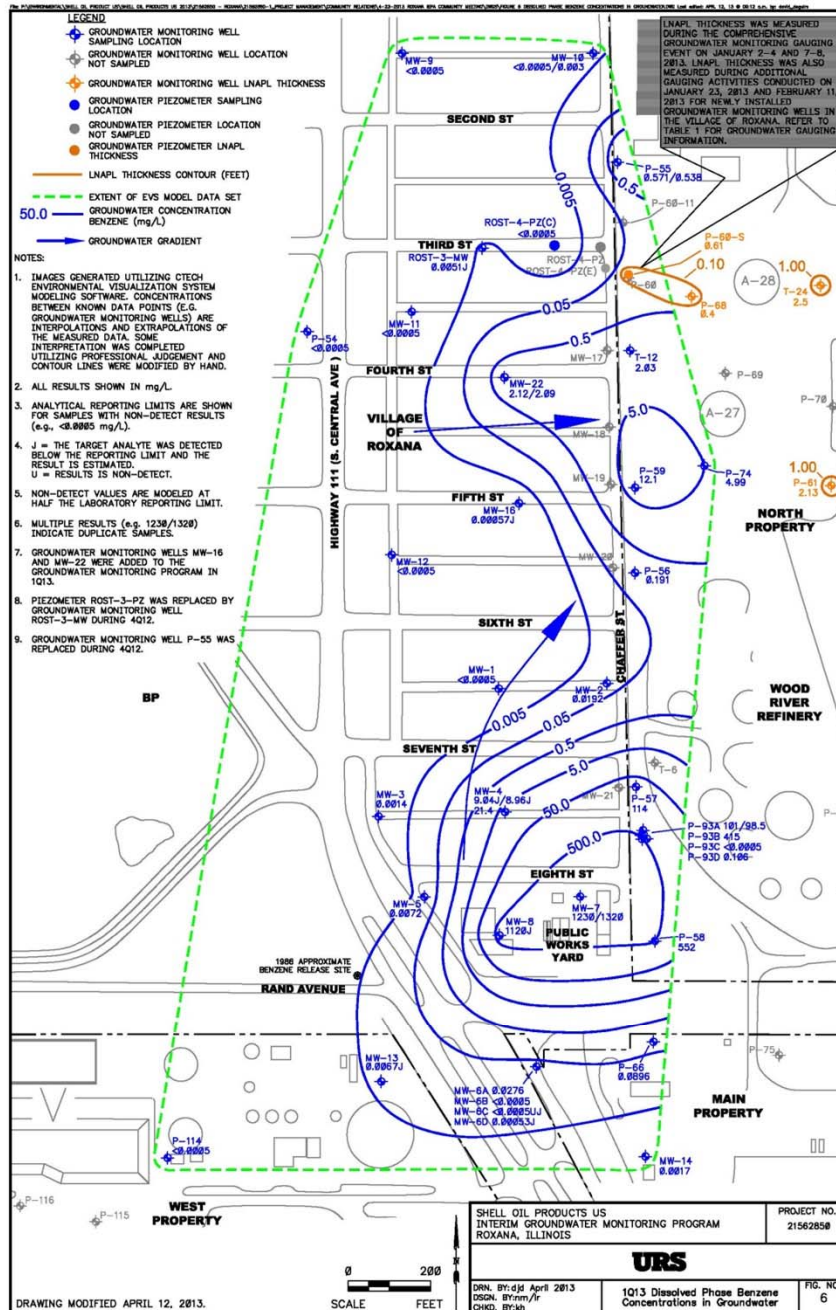
Initial Groundwater Conditions

Two different sources of contamination have been found in these investigations. The benzene plume is in the south, and a mixed hydrocarbon plume is farther north.

Monitoring wells are gauged weekly or monthly and chemical concentrations are measured quarterly.

Can I trust the results?

- IEPA requires USEPA approved methods and certified laboratories be used to analyze samples.
- An IEPA inspector has been present weekly observing activities.
- IEPA has split samples with Shell and results were similar. Ongoing monitoring results and trends are also consistent.



Groundwater & Product Conditions

Blue contours represent the extent of groundwater contamination

Has free product been measured in any wells?

The monitoring wells in Roxana have been measured routinely for groundwater elevations and possible free product. A limited amount of product has been found intermittently in 3 wells near 3rd and Chaffer.

How much free product has been detected?

When detected, the wells are bailed to remove product. This approach is used because of the small amount of product. The bailing occurs at that measuring event until product is no longer detected. The wells are measured again each week and the process is repeated if needed.

How deep is the product? The product is at or near the groundwater surface, which is approximately 40 feet below the ground surface.

● = Location where Free Product detected

General Approach

The investigations are needed to determine the concentrations, boundaries and depth of the contamination. The extent of contamination has to be understood.

A thorough investigation is required to select the best clean-up methods. The IEPA uses the results of investigations and monitoring when deciding whether a clean-up strategy can be approved.

Potential for exposure to the public is always examined.

- The Public Water Supply has no petroleum hydrocarbons and located several miles from the Study Area
- There are no private drinking wells within 2,500 feet of the Study Area
- The potential vapors that can be emitted from contaminated groundwater and free product are being monitored and addressed.

Future Activities

Continued Groundwater Pumping, Monitoring, and Free Product Removal are required, and regulations require the groundwater quality be restored.

Additional data collection is proposed at the area where homes were demolished at 4th and Chaffer Streets, which will help refine a proposal for additional remediation. The report is under review.