UNDERGROUND STORAGE TANK VULNERABILITY STUDY

Geographic Underground Storage Tank Information (GUSTI) program

EIGHT NORTHERN INDIAN PUEBLOS COUNCIL

OFFICE OF ENVIRONMENTAL TECHNICAL ASSISTANCE

Jeffrey Lyon

- Worked at Santa Clara Pueblo (Forestry, Wildland Firefighter, Land Claims) and Los Alamos National Laboratory;
- 17 years' experience of GIS/GPS applications;
- Advance experience in data collection methods, Trimble survey equipment and GPS handheld units;
- Trained and advanced experience in ArcGIS 10+ suites

WHERE DOES THE WATER WE DRINK COME FROM?

- *Water Cycle is a continuous system of water transfers and storage*
- *Collection: (River, Lake, Groundwater)*
- *Condensation (Clouds)*
- *Precipitation: (Rain, Snow)*
- *Evaporation: Sun heats up bodies of water & creates vapor*

ENVIRONMENTAL RECEPTORS

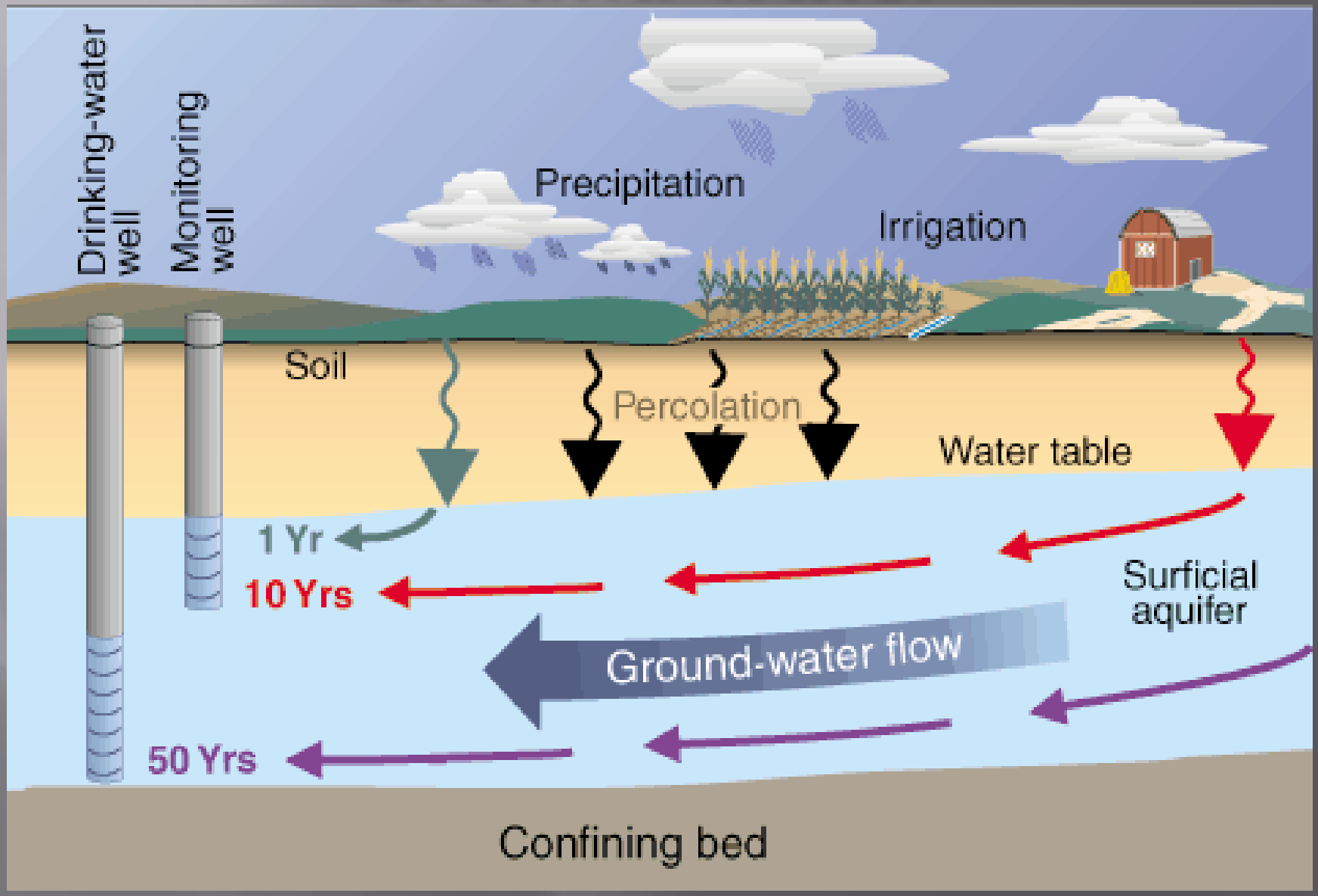
It only takes 1 gallon of fuel to contaminate 1 MILLION gallons of drinking water!

- *Surface Water Use; Distance to Water*
- *Groundwater (Community & Domestic Wells)*
- *Aquifer Depth*
- *Agriculture (Ditch/Canals)*
- *Sensitive Wetlands*
- *Stream Density*
- *Storm Drains*

VULNERABILITY STUDY

- *1,000 foot buffer from regular unleaded fill port*
- *Identifying environmental receptors*
- *Possible migration pathways*
- *Monitoring wells*
- *Threatened water supplies*
- *Potential threat to Human Health and Environment*

Ground Water

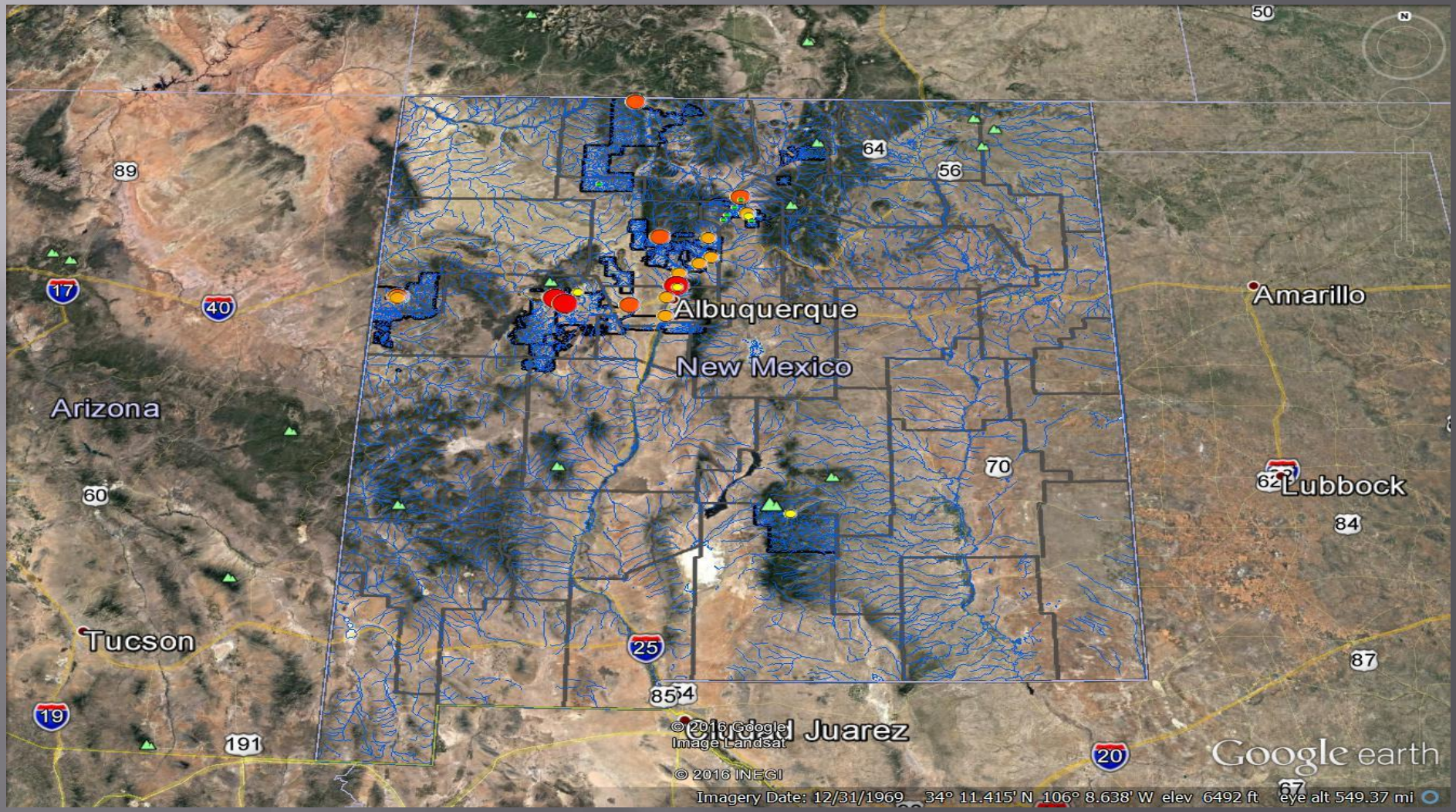


VIDEO OF GROUNDWATER SIMULATION

Sensitive Wetlands

Surface Water

Geographic Underground Storage Tank Information (GUSTI) program



FACILITY RANKING

The Facility Ranking System is used to rate the potential risk a UST facility. There are 20 + factors that determine a facility score.

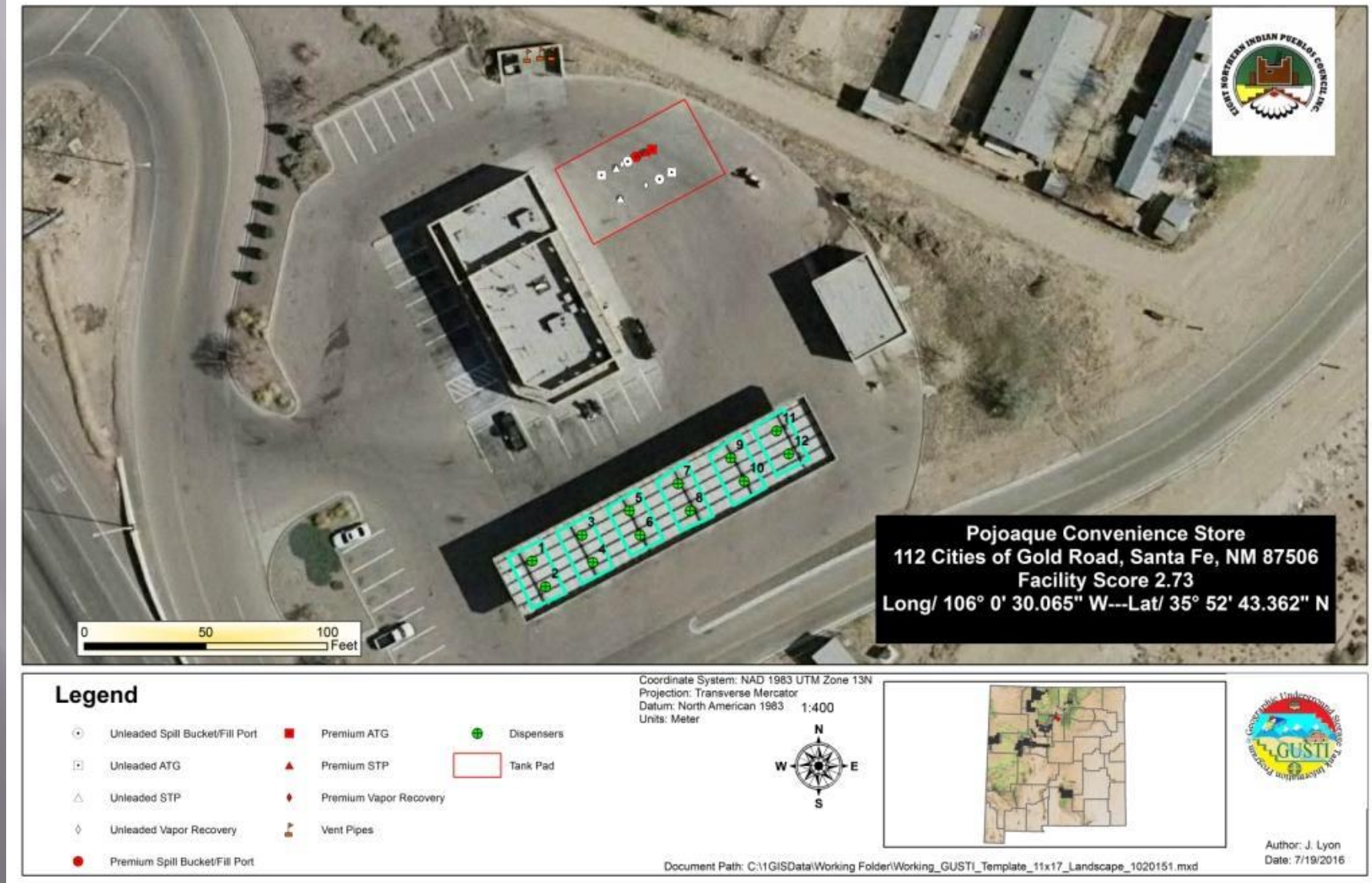
1 = minimal risk. 5 = maximum risk.

- *The higher the potential to leak the higher the score. The lower the potential to leak the lower the score.*
- *A low score suggests a facility is well maintained A high score suggests a poorly maintained facility*

FACILITY RANKING

Number_of_Dispensers_Score	5
Number_of_Tanks_Score	4
History_of_Facility_Score	2
Age_of_Facility_Score	3
Leak_Site_Score	2
Tank_Age_Score	3
Tank_Composition_Score	5
Tank_Status_Score	2
Tank_Capacity_Score	5
Compartmentalized	-1
Piping_Construction_Score	1
Spill_Containment_Score	3
Secondary_Containment_Tank_Score	5
Secondary_Containment_Piping_Score	5
Cathodic_Protection_Tank_Score	3
Cathodic_Protection_Piping_Score	5
UST_Pumping_System_Score	4
Overfill_Protection_Score	3
Tank_Contents_Score	3
External_Protection_Score	5
Internal_Protection_Score	5
Spill_Catchment_Score	2
Release_Detection_Tank_Score	3
Release_Detection_Piping_Score	3
Frequency_Of_Inspections_Score	4
Distance_to_Water_Supply_Score	3
LUST_Site_Score	2
Equipment_Maintenance_Records	0

FACILITY SITE MAP



FACILITY RANKING AND 1,000 FT BUFFER

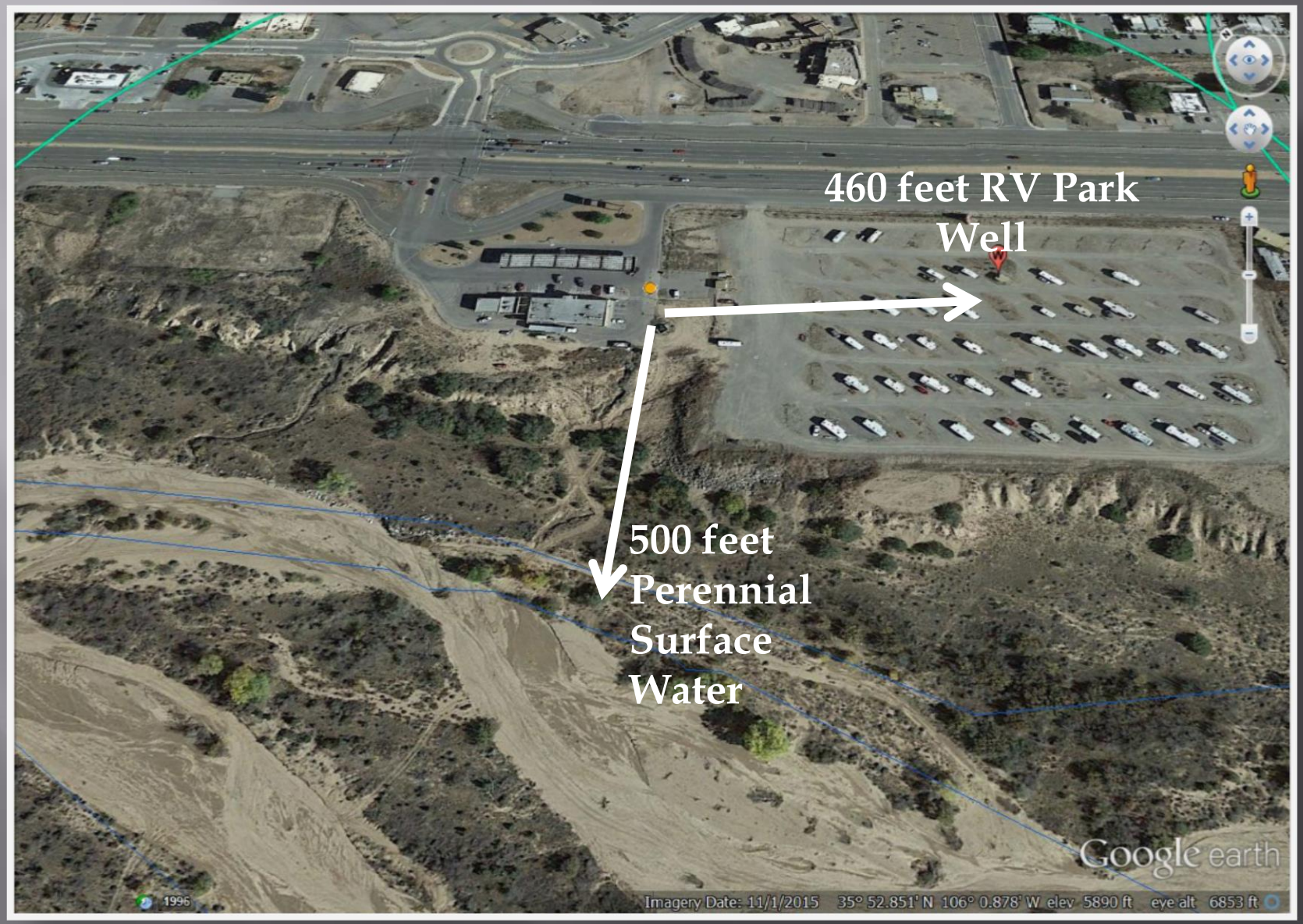
Prevailing Wind Direction From Vent Pipes

Major Arroyo Transport

Community Well

Street View of Community Well and UST

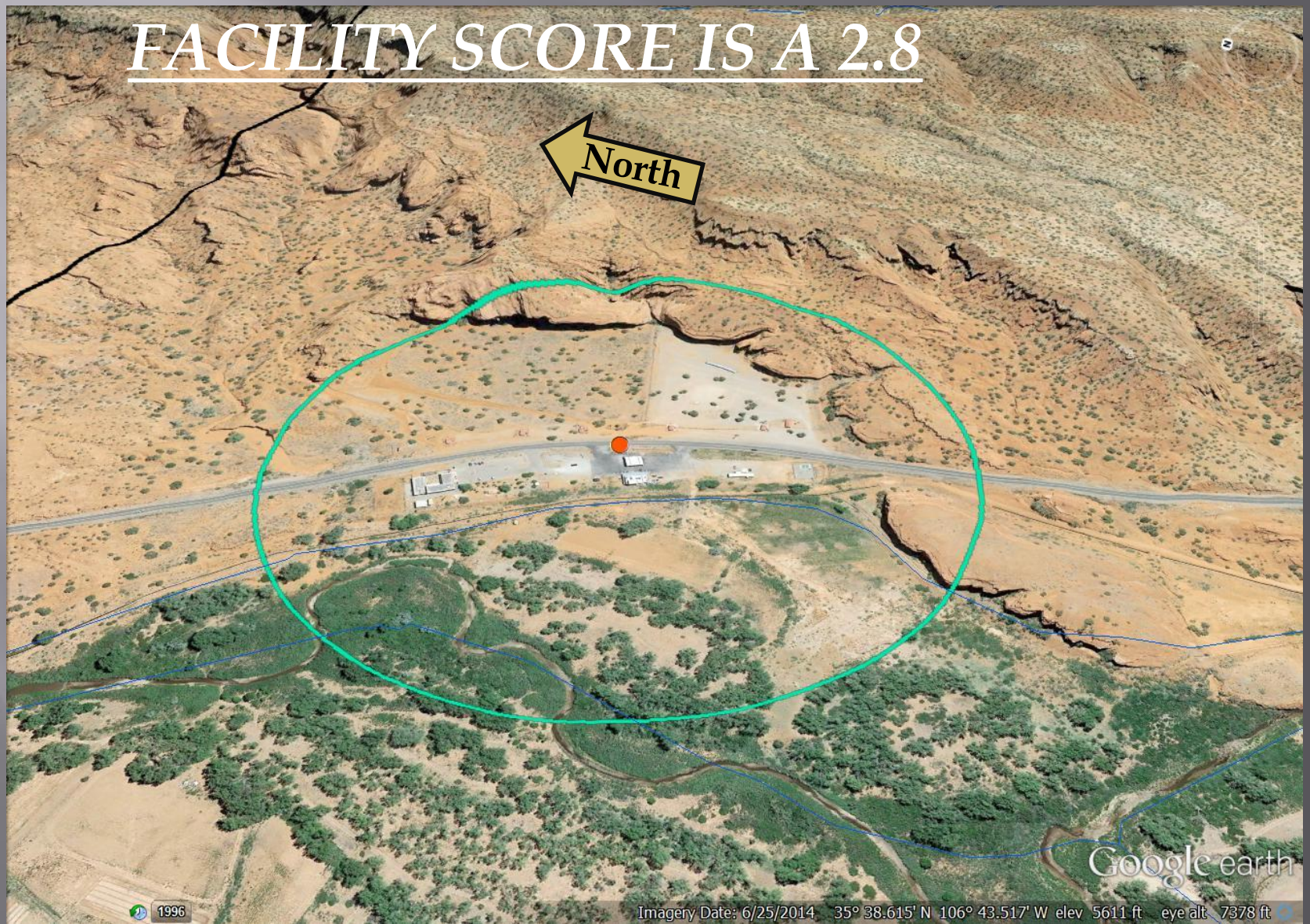
Receptor: Perennial Stream



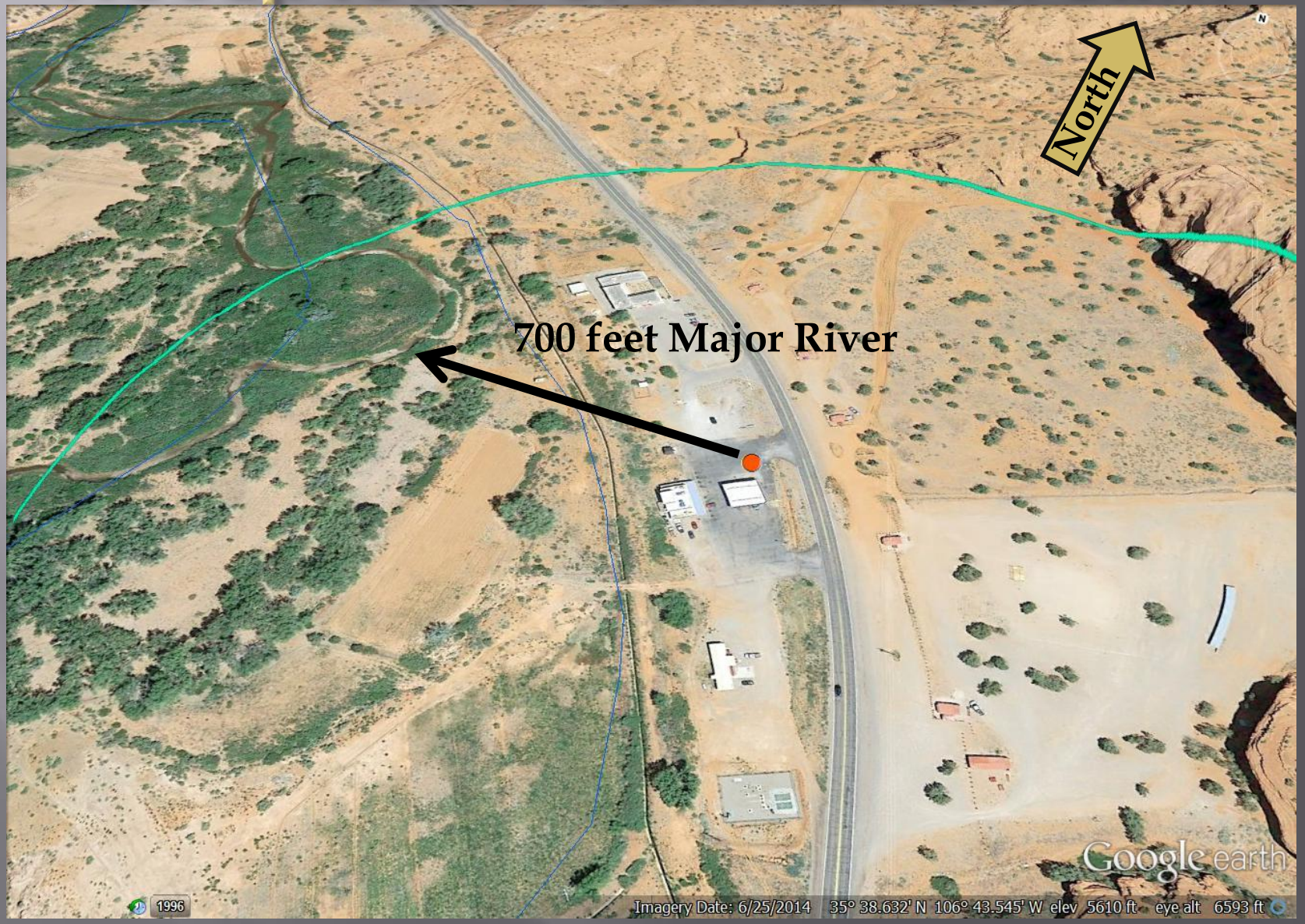
Facility: Surface Water Receptor

FACILITY SCORE RANKING 1-5

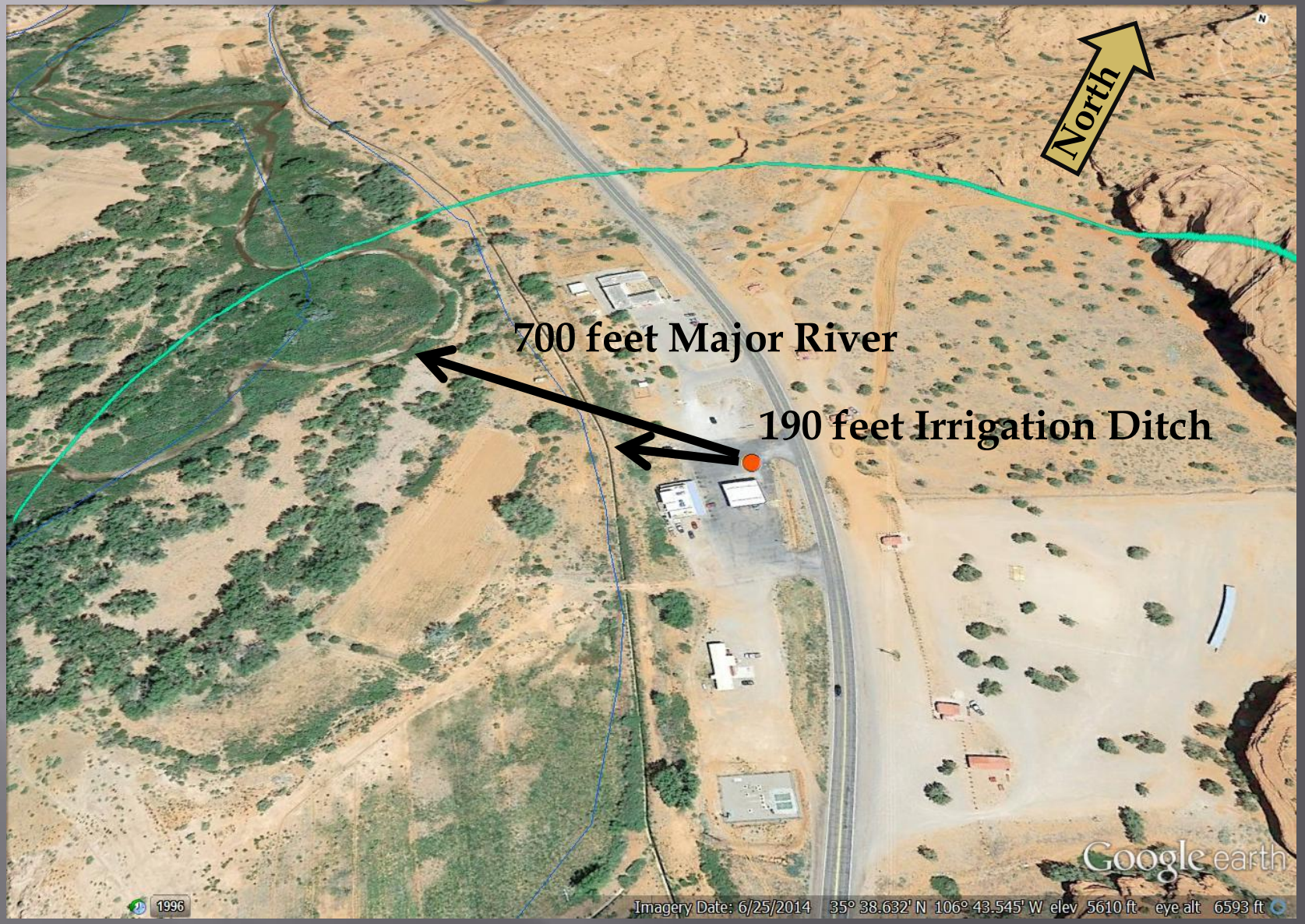
FACILITY SCORE IS A 2.8



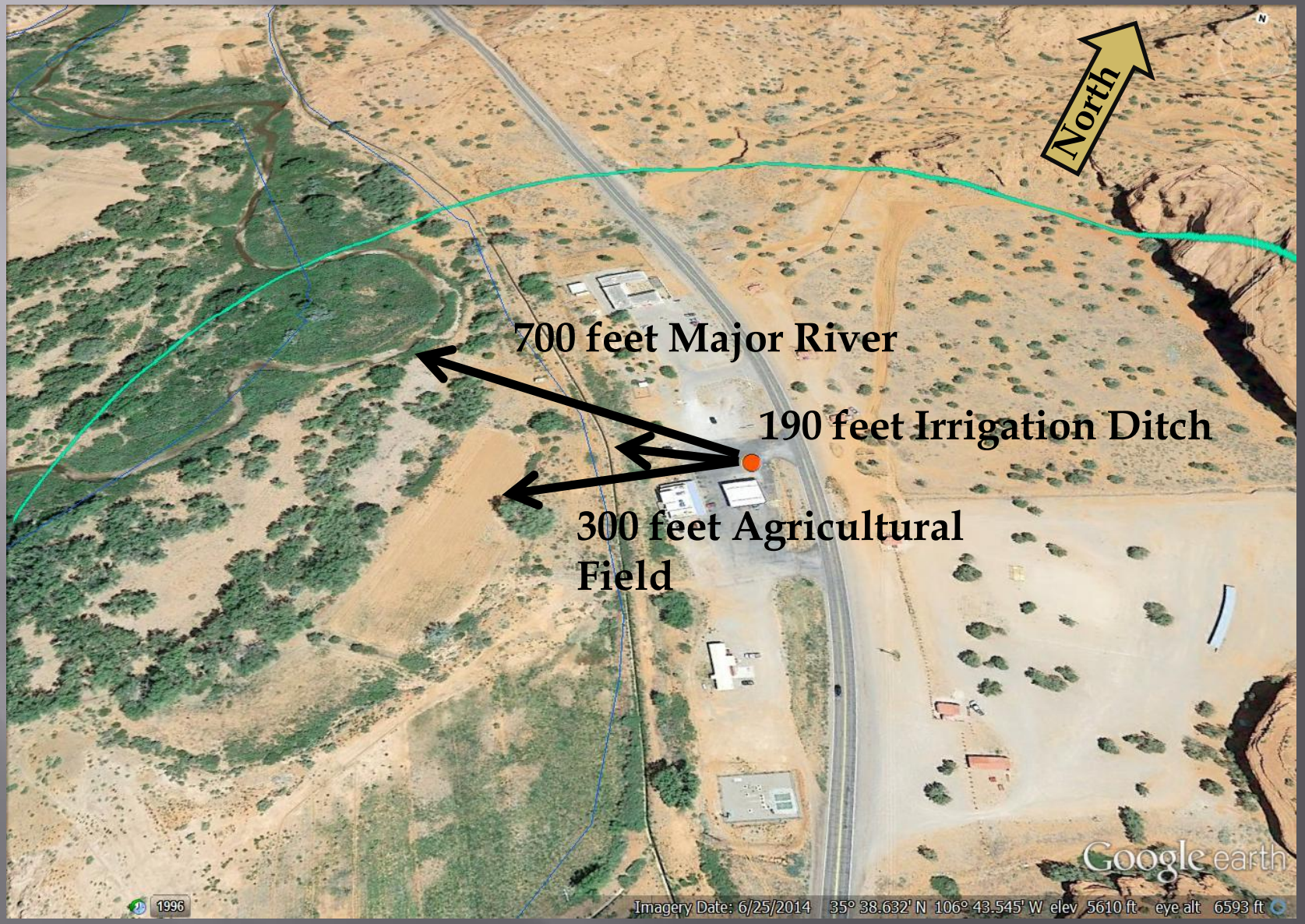
Receptor: Perennial Stream



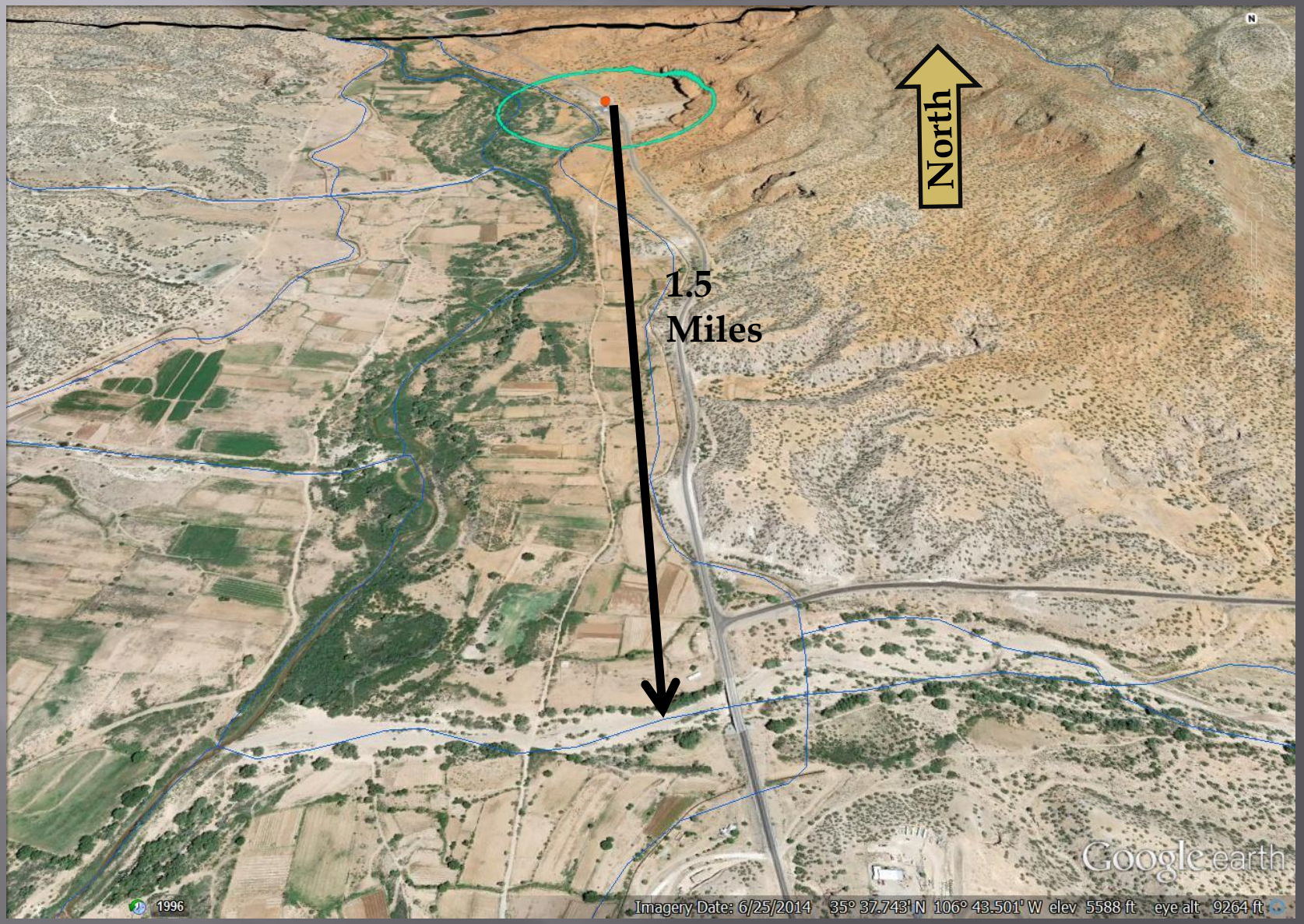
Receptor: Irrigation Ditch



Receptor: Agricultural Field



Receptor: Community Irrigation Ditch



HOW DO WE GATHER THIS SPATIAL INFORMATION?

DATA GATHERING METHODS:

1. *ON SITE DATA GATHERING*
2. *UTILIZING TRIBAL GIS STAFF*
3. *DATABASE MANAGEMENT*
4. *GOOGLE EARTH & GIS ANALYSIS*
5. *VERIFYING RECEPTORS IN THE FIELD AND GPS QA/QC*
6. *UP-TO-DATE IMAGERY*

HOW DO WE UTILIZE SPATIAL DATA THAT IS GATHERED?

- *VULNERABILITY RANKING SYSTEM*
- *CREATE AND MAINTAIN WORKING RELATIONSHIP WITH TRIBAL GIS & ENVIRONMENTAL STAFF*
- *CENTRAL GEOGRAPHIC DATA BASE (ENIPC-OETA)*
- *ENVIRONMENTAL ASSESSMENT AND/OR HYDROLOGICAL ASSESSMENT FOR NEW WELL LOCATION*

BENEFITS OF A VULNERABILITY STUDY!!

- GREAT COMMUNICATION TOOL FOR TRIBAL GOVERNMENTS TO ANALYZE POTENTIAL RISK TO THEIR PEOPLE'S DRINKING WATER SUPPLY
- *START & CONTINUE SAMPLING OF MONITORING WELLS*
- *IDENTIFYING RECEPTORS THAT TRIBAL STAFF CAN CONTINUE TO ANALYZE*
- *TRIBAL ENVIRONMENTAL AWARENESS & MOTIVATION TO PROTECT OUR PEOPLE!!!*

CONTACT INFORMATION

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