

US National Grid System

What and why?

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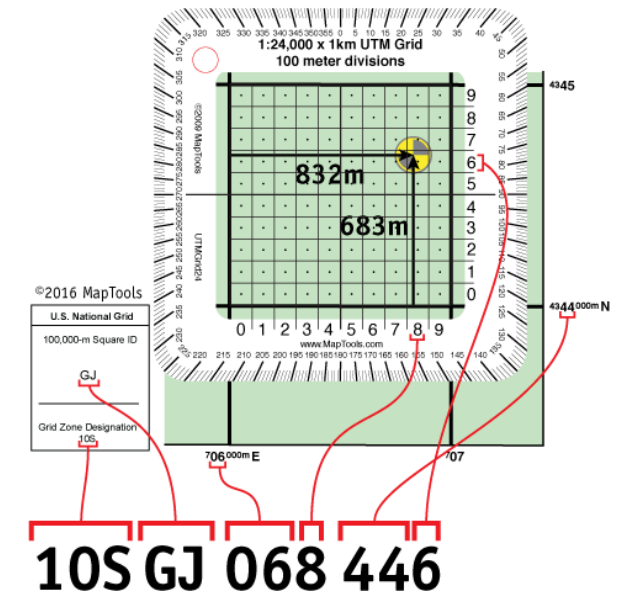
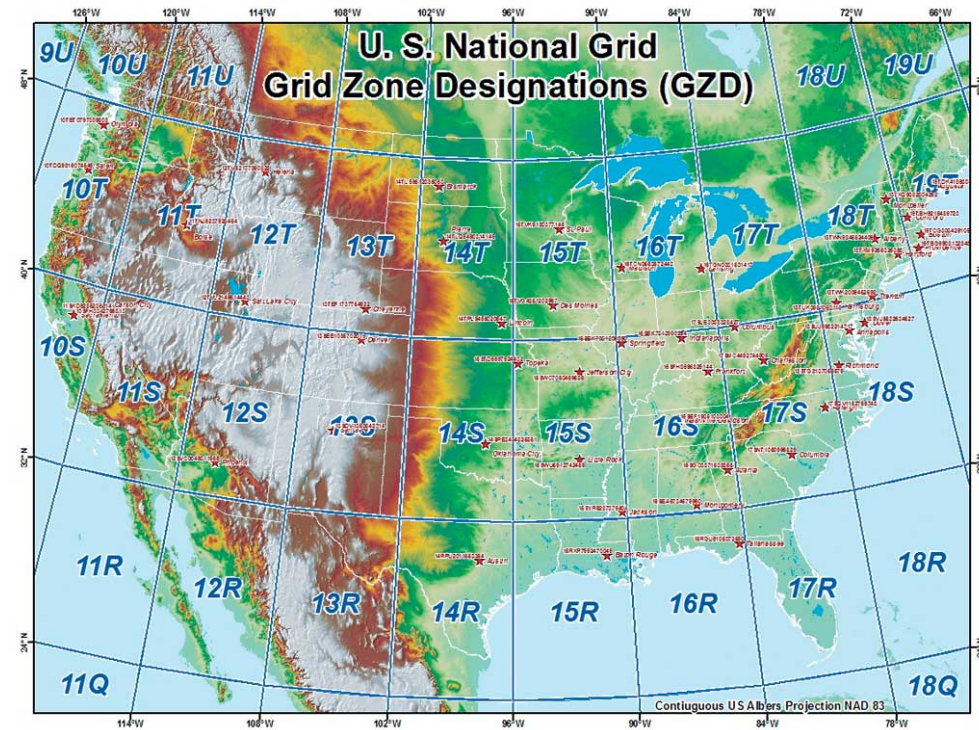


Purpose

- Understand the benefits of using USNG over traditional coordinate systems or addresses
- Identify who uses USNG
- Obtain a basic, functional, knowledge of how to use USNG
 - Finding a coordinate on a map
 - Giving a coordinate from a map

What is US National Grid?

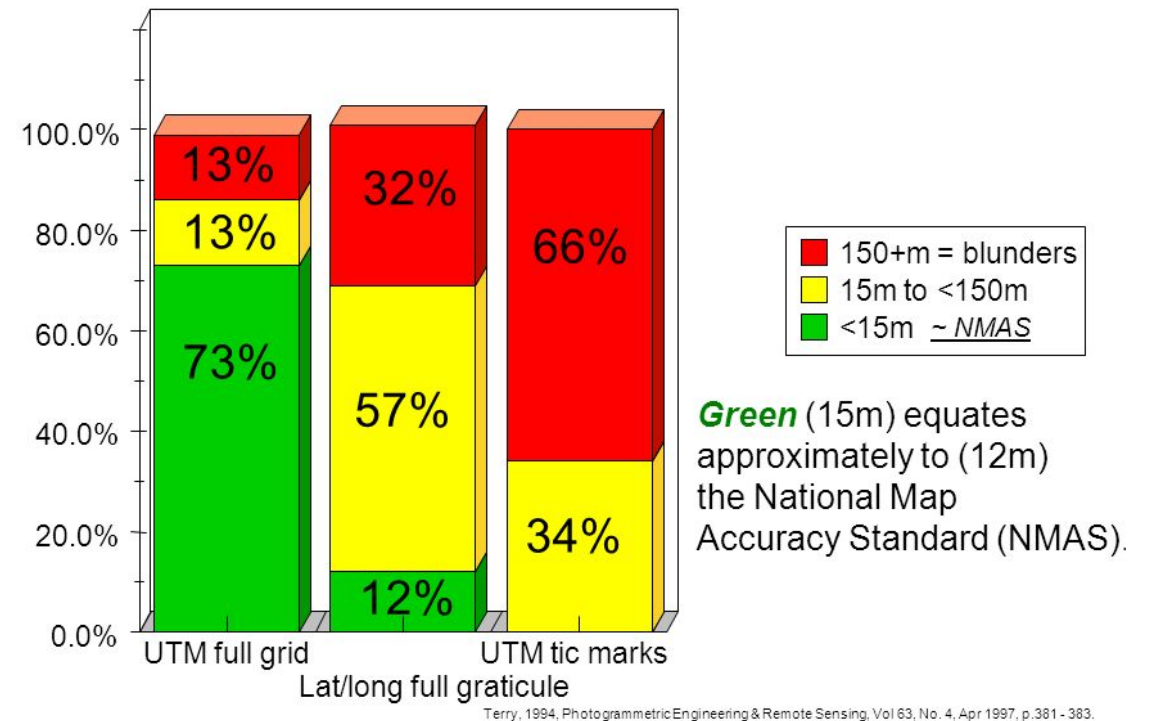
- **Grid reference** system for the entire planet
- Consensus based, standardized system
- Nationally consistent language of location
- Bridge between paper maps and GPS



Why use USNG?

What was wrong with Lat/Longs and street addresses?

- One common grid for the entire planet
- Allows for precision down to 1 square meter
- Results in a drastic reduction of navigational errors
- Easier to relay coordinates (vocal/written)
- Does not depend on street signs/landmarks



14R PU 24815 55543 vs 30°19'30.9755", -097°42'06.0426" vs 30.3252710°, -097.7016785°



Who is using USNG?

- Officially adopted by FEMA as the standard for operational maps
- Civilian first responders
- Land based search and rescue groups
- National Guard
 - Virtually identical to the Military Grid Reference System (MGRS)
 - Declared as independent so the standards can be updated independently



FEMA



How does it work?

- Broken down into three chunks
 - Grid Zone Designation
 - 100,000 meter Square ID
 - Grid Coordinates (Easting/Northing)
- Read right, then up
- Truncation



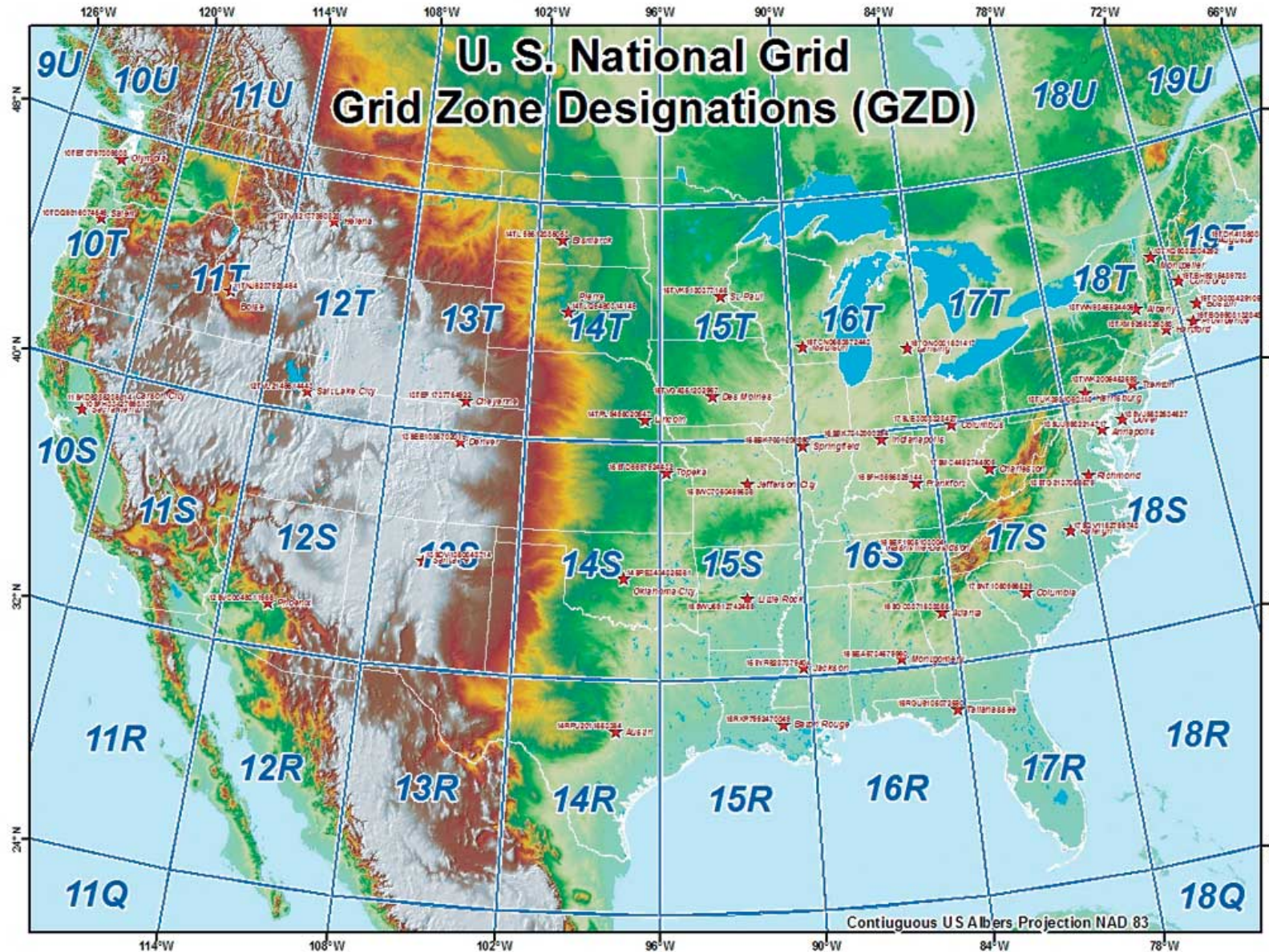
100,000-m Square ID

USNG format: **16R BU 1028 0976**

Grid Zone Designation (GZD)
(6° lat x 8° longitude quad)

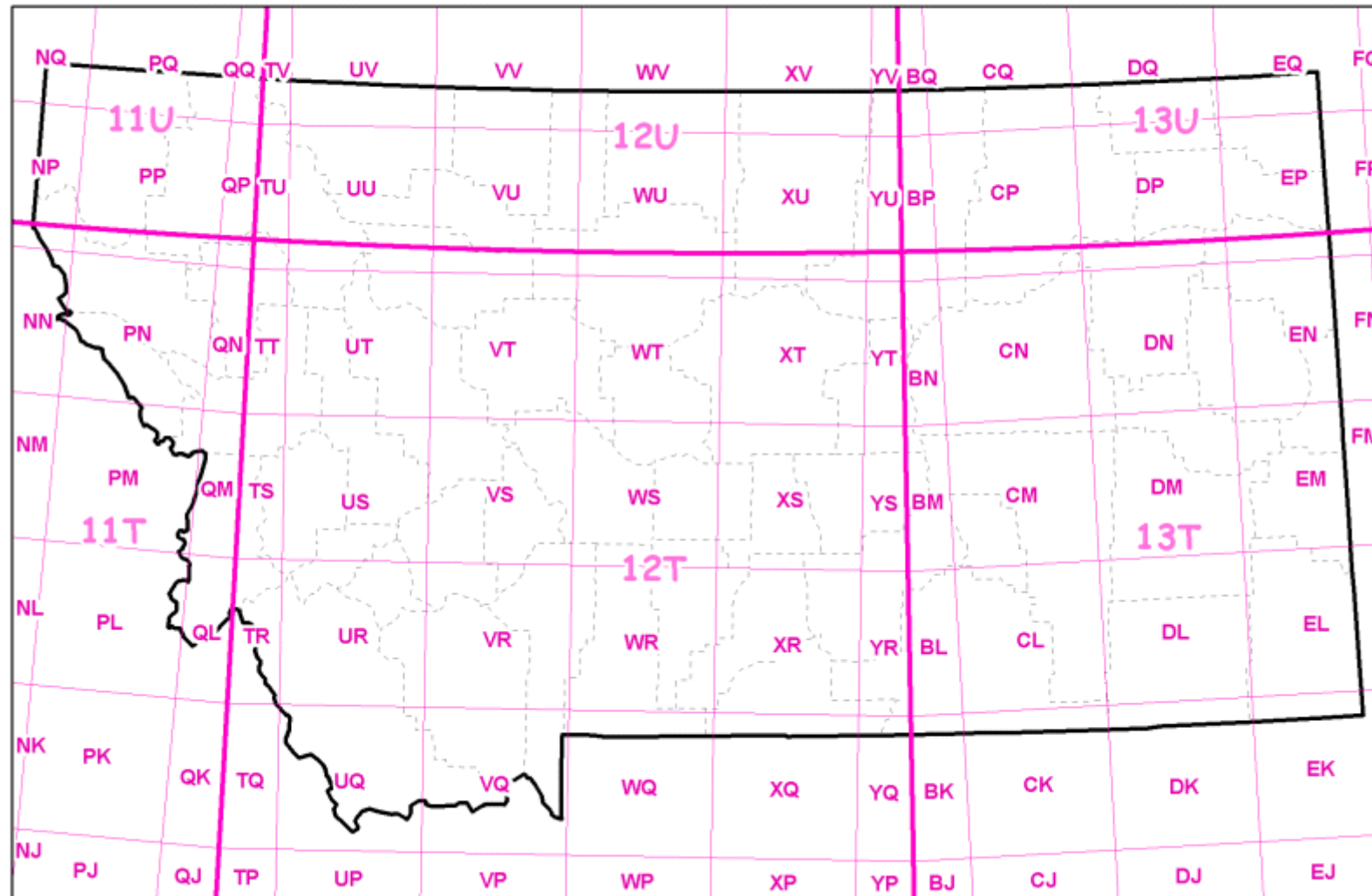
Grid Coordinates
Easting Northing

Resolution at the GZD level



Resolution at the 100,000 meter Square ID level

Montana Grid Zones and Grid Squares
U.S. National Grid



Resolution at the coordinate level

US National Grid Training Map



Produced by the United States Geological Survey

Topography compiled 1964. Planimetry derived from imagery taken 1998 and other sources. Public Land Survey System and survey control current as of 1967

North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 16 10 000-foot ticks: Louisiana Coordinate System of 1983 (south zone)

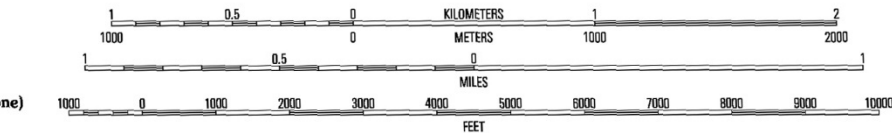
North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

There may be private inholdings within the boundaries of the National or State reservations shown on this map

City of New Orleans and Orleans Parish are coextensive

This quadrangle covers a subsidence area

Landmark buildings verified 1967

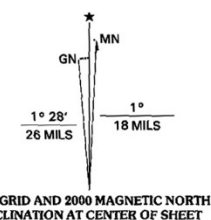


1	2	3
4		5
6	7	8

ADJOINING 7.5' QUADRANGLE NAMES
LA 200A

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048

U.S. National Grid
100,000-m Square ID
BU
Grid Zone Designation
16R



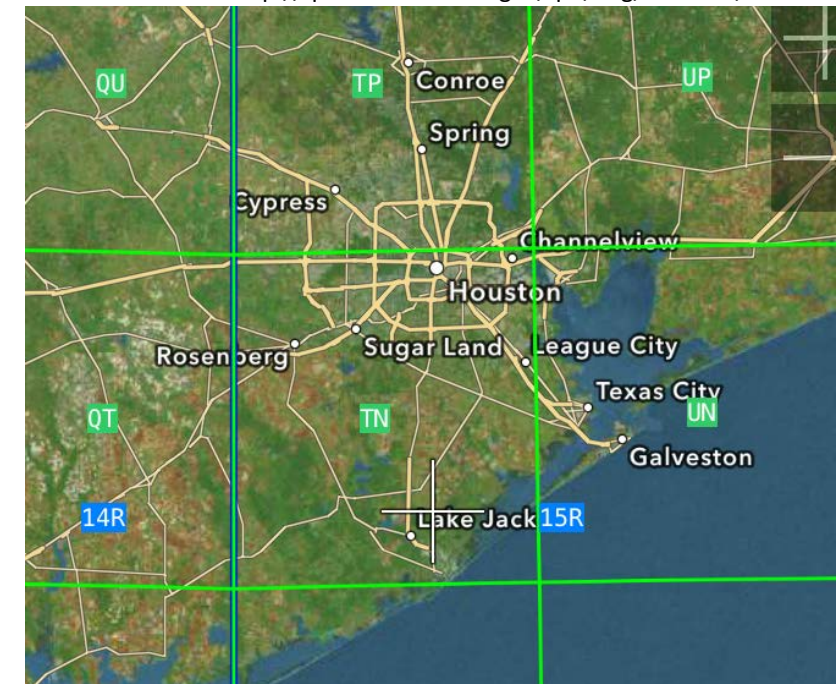
Why would I truncate?

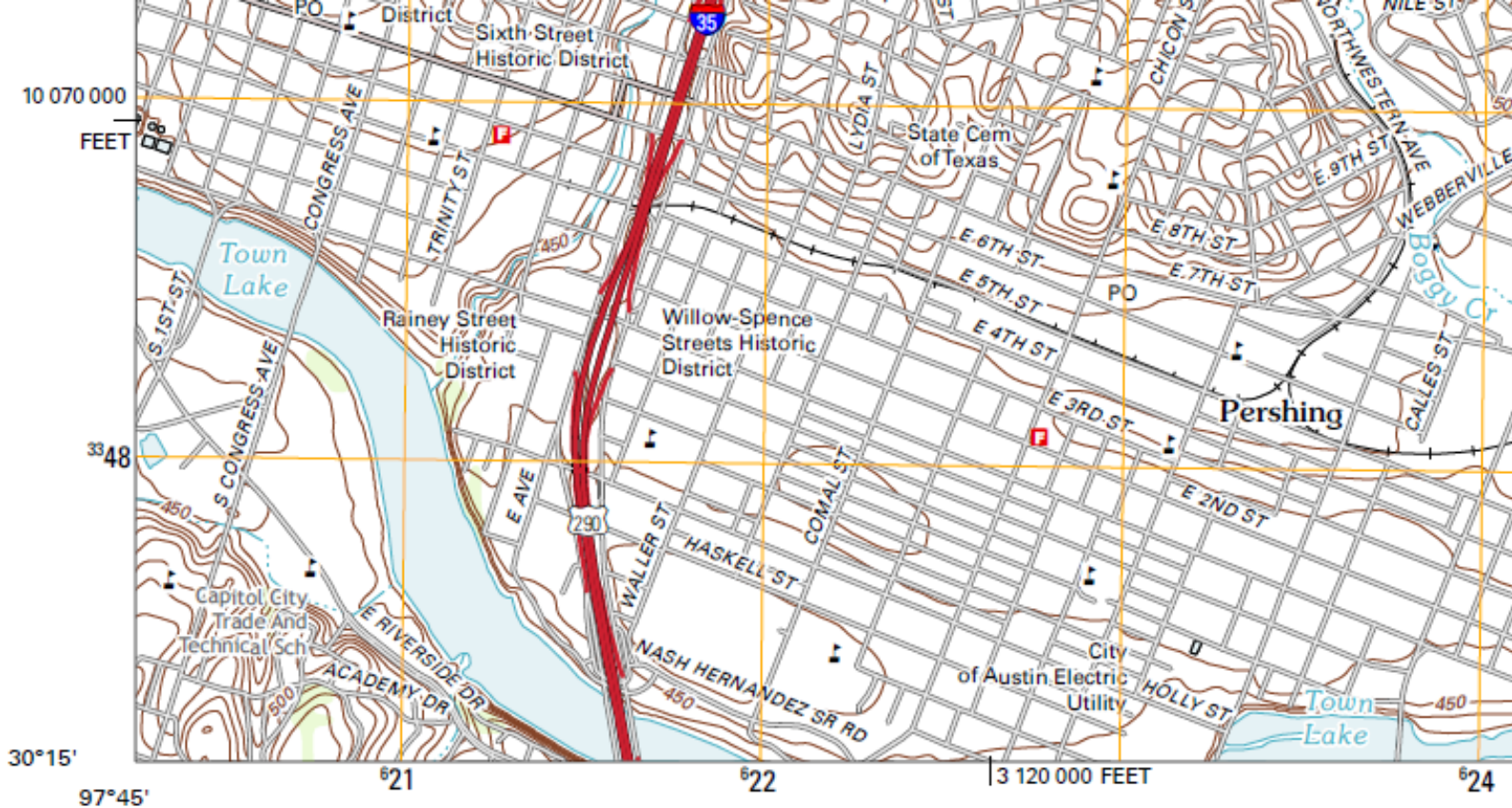
- Sharing the location of a general area
 - Important when calling mutual aid
 - There are 254 counties in Texas
 - Harris County vs 15R TN
- Simplify radio traffic
 - Operation confined to one 100,000 meter square
 - ~~15R TN~~ 12345 12345

4-digit: 12 10 = 1,000m
6-digit: 124 108 = 100m
8-digit: 1249 1084 = 10m
10-digit: 12490 10840 = 1m precision



<http://quickfacts.census.gov/qfd/img/counties/stout48.gif>

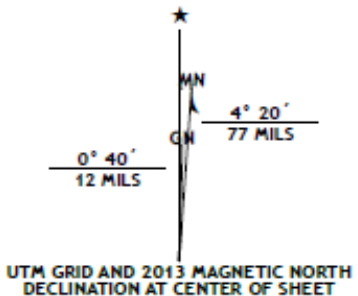




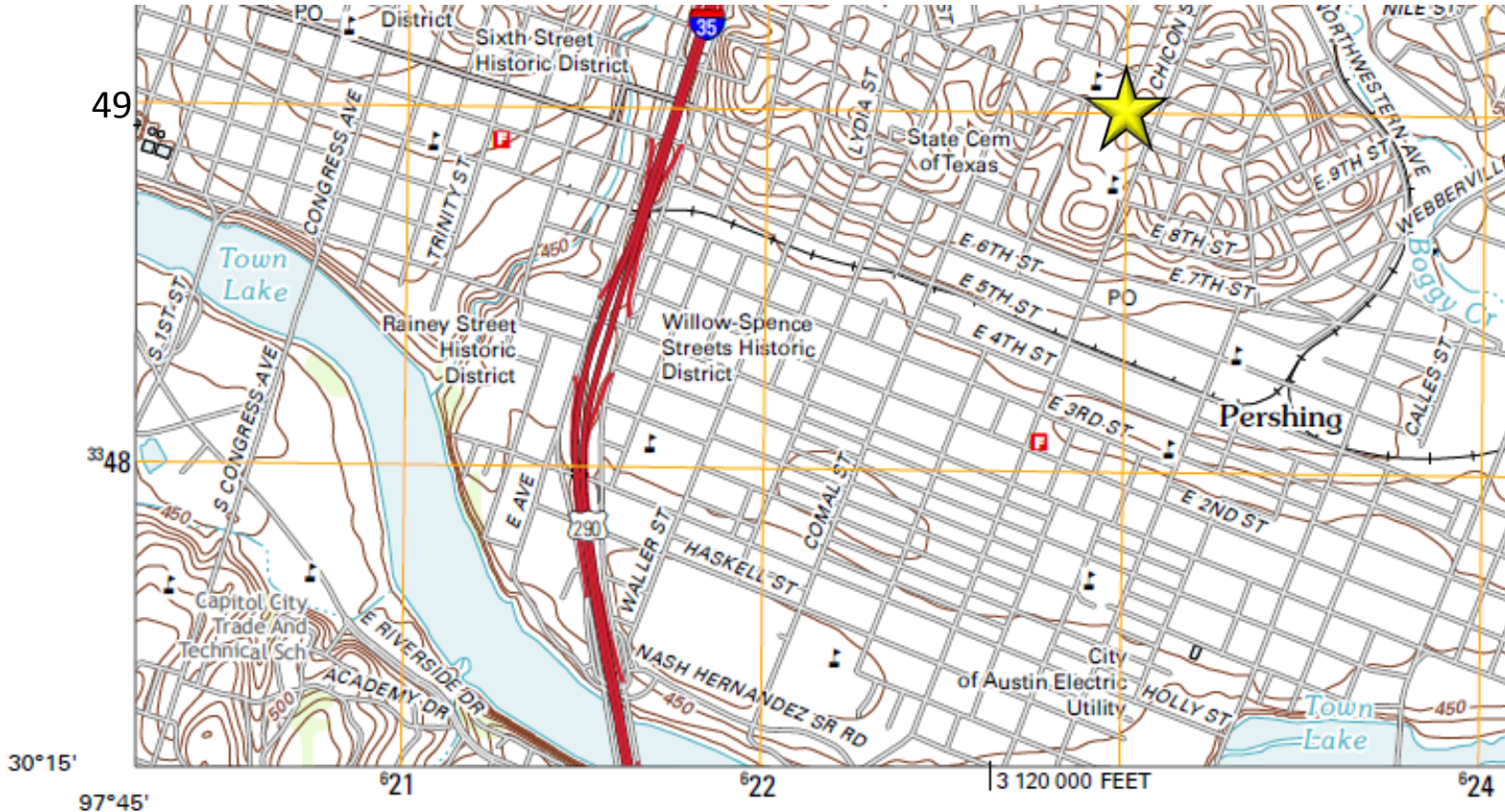
What is the name of the water feature located at: 14R PU 2148?

Produced by the United States Geological Survey
 North American Datum of 1983 (NAD83)
 World Geodetic System of 1984 (WGS84). Projection and
 1 000-meter grid: Universal Transverse Mercator, Zone 14R
 10 000-foot ticks: Texas Coordinate System of 1983 (central
 zone)

Imagery.....NAIP, May 2010
 Roads.....©2006-2012 TomTom
 Names.....GNIS, 2012
 Hydrography.....National Hydrography Dataset, 2010
 Contours.....National Elevation Dataset, 2002
 Boundaries.....Census, IBWC, IBC, USGS, 1972 - 2012



U.S. National Grid	
100,000-m Square ID	
PU	
Grid Zone Designation	
14R	



Give the coordinate for the star.

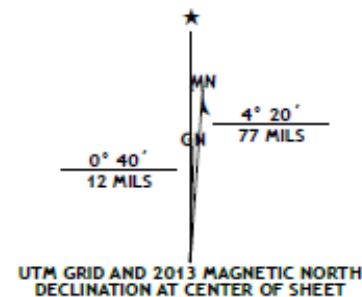
Include

- Grid zone designation
- 100,000 meter Square ID
- Easting/Northing

Produced by the United States Geological Survey

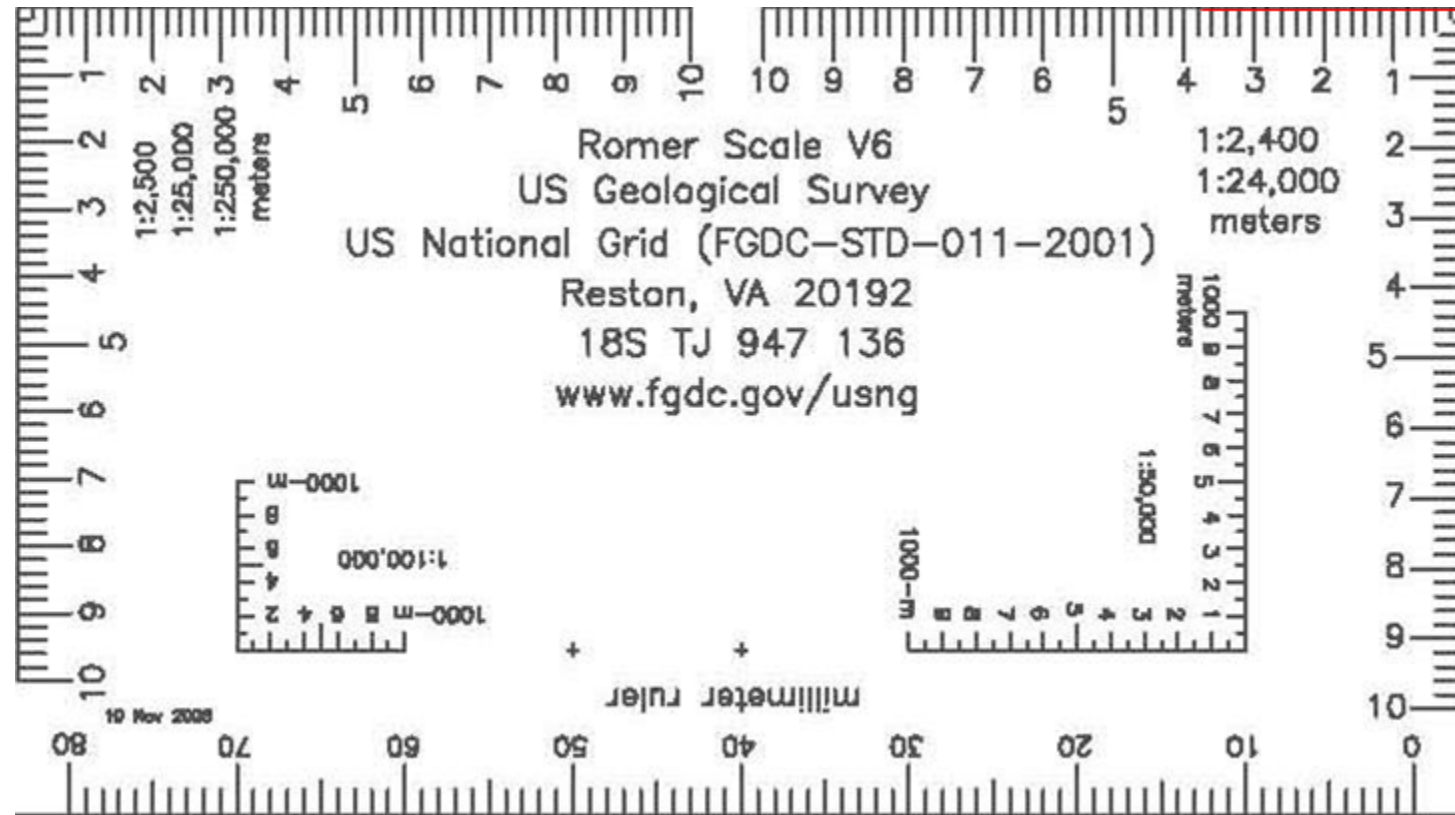
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U.S. National Grid
100,000-m Square ID
PU
Grid Zone Designation
14R

Romer Scale



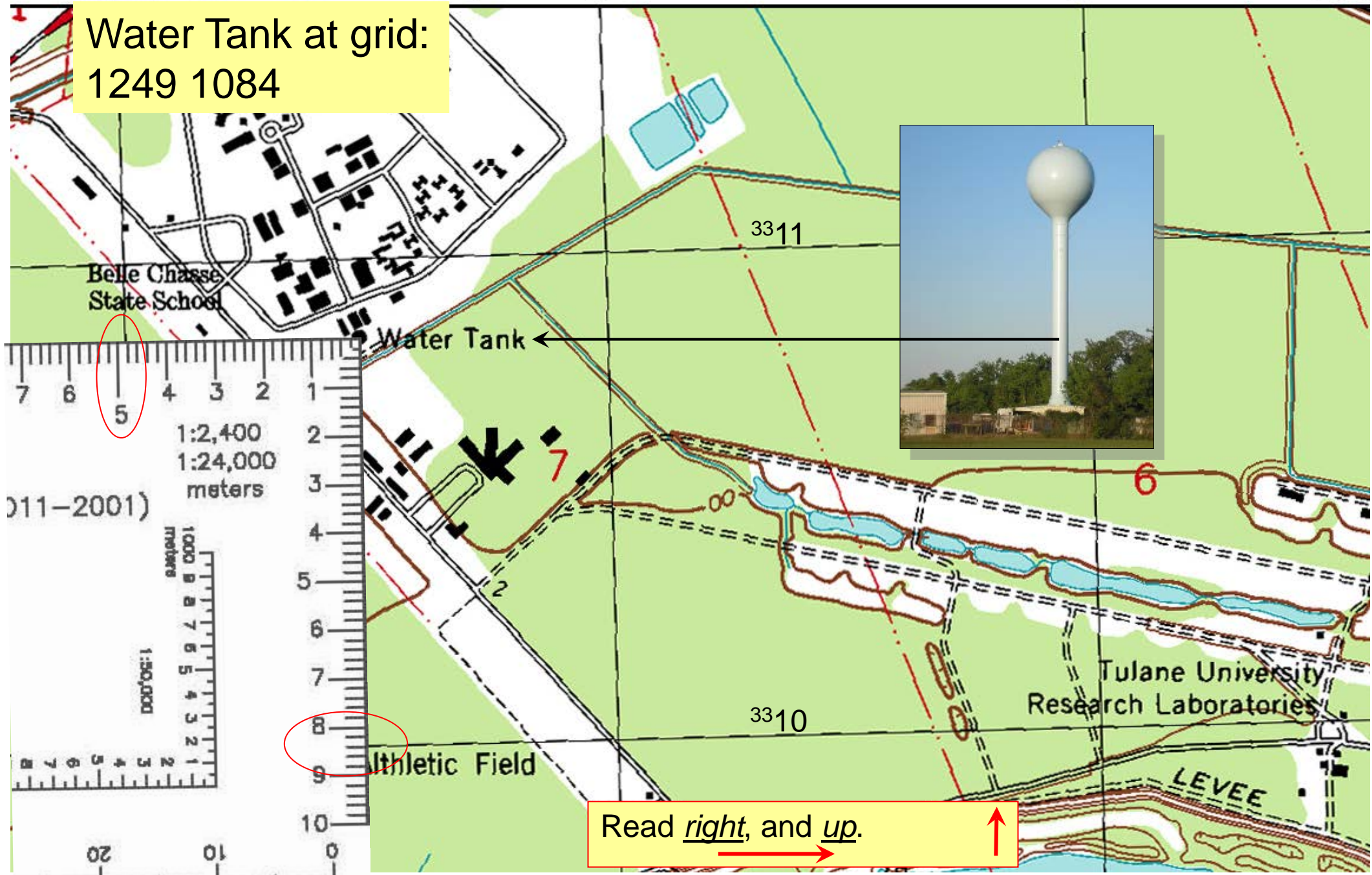
212

213

214

57'

Water Tank at grid:
1249 1084



Review

- What were some of the benefits of using USNG?
- Who is using USNG?
- Could you find 14R PU 24815 55543 on a map?
- Could you relay a coordinate using a map?

Resources

- US National Grid Information Center
 - <http://usngcenter.org/>
- USGS Map Store
 - <http://store.usgs.gov/>