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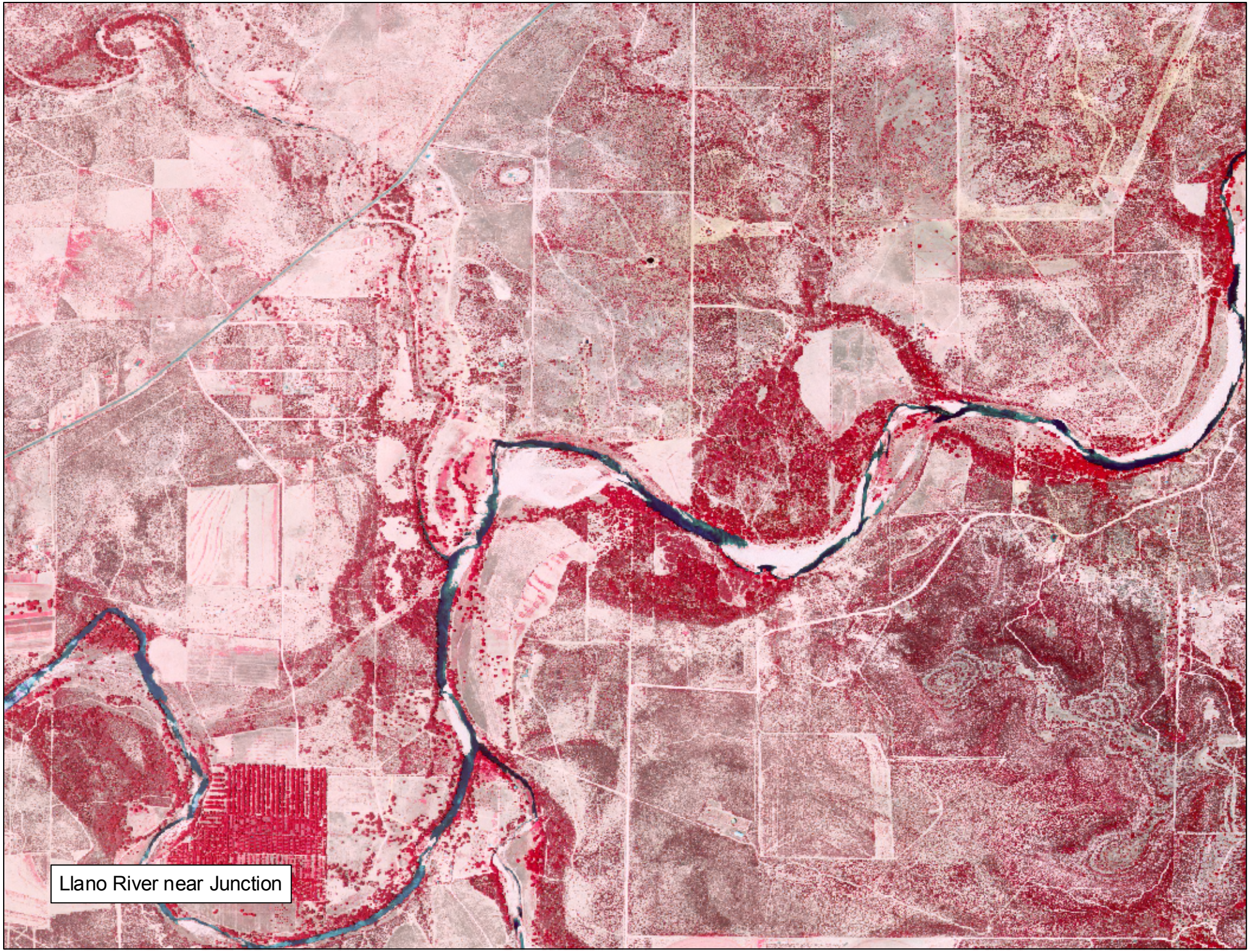
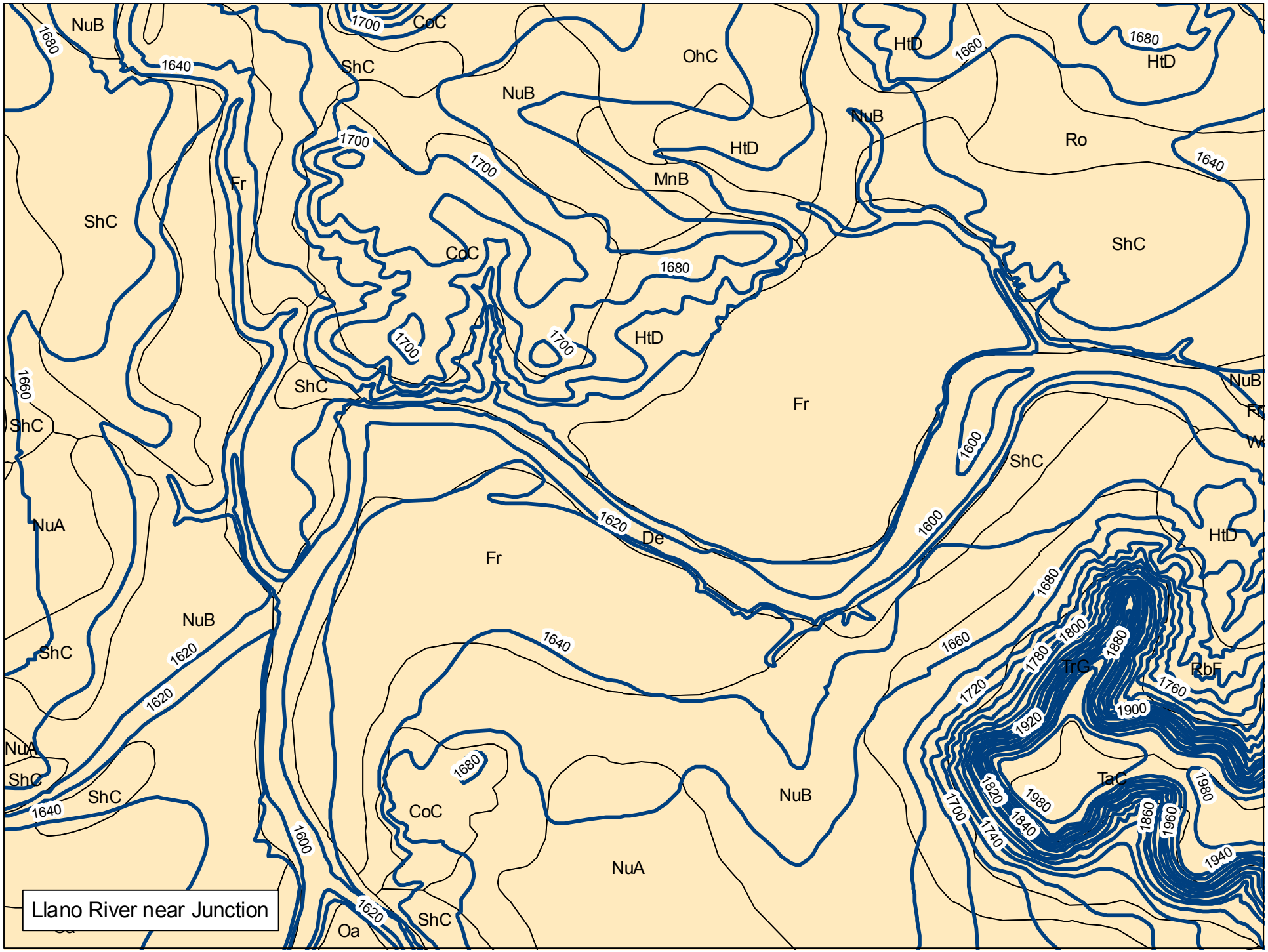
- American sycamore
- Black willow
- Others?


Llano River near Junction


Llano River near Junction
NuB
CoC
ShC
OhC
HtD
Ro
MnB
Fr
De
NuA
TrG
RbF
TaC
Oa
1680
1640
1700
1660
1620
1600
1720
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1800
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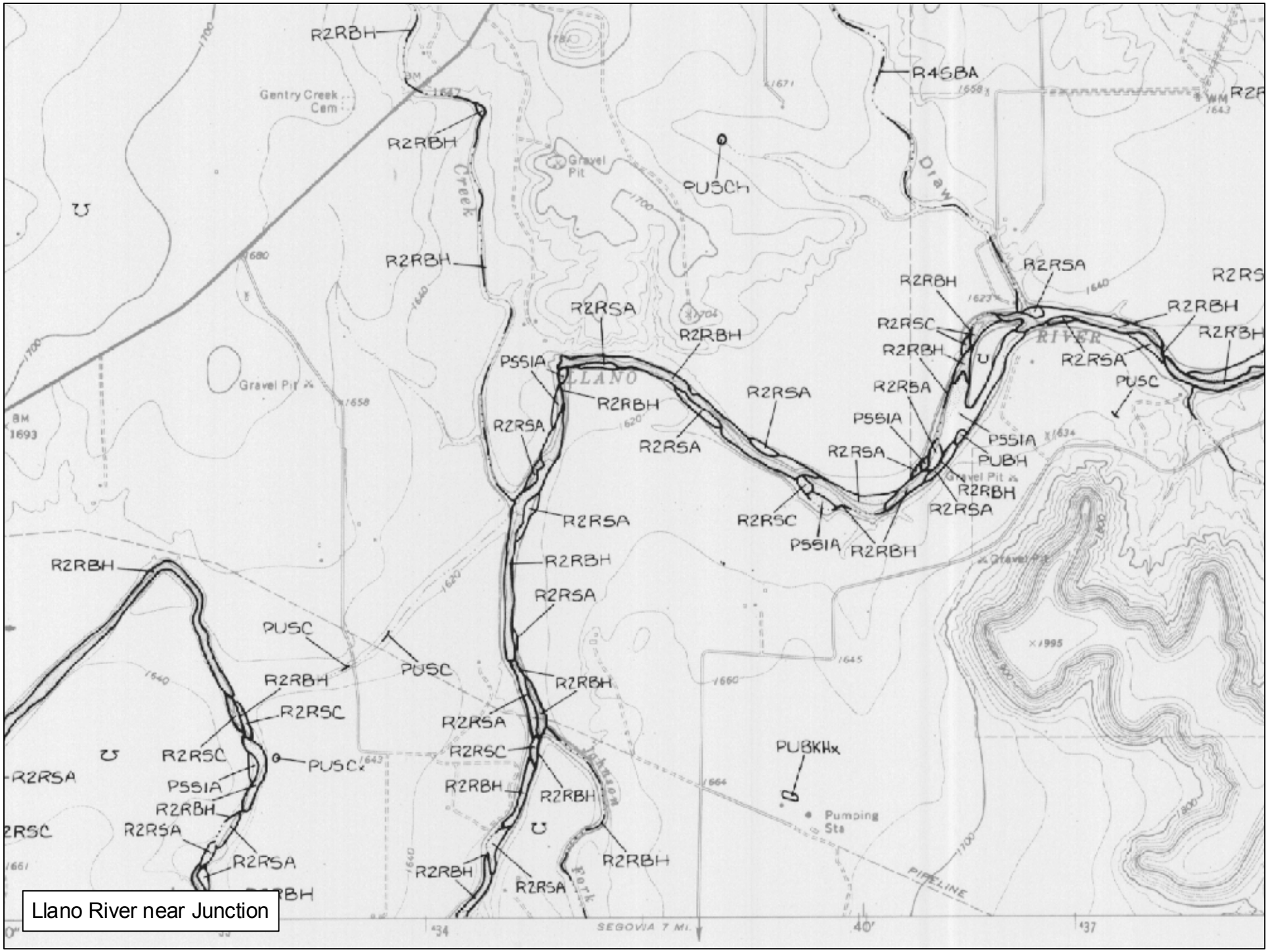
1880
1900
1920
1940
1960
1980



Llano River near Junction

Albuquerque, New Mexico 87103

the advice of appropriate Federal, State or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Primarily represents classified wetlands su identifiable areas an

M — MARINE

1 — SUBTIDAL

— ROCK BOTTOM
- 1 Bedrock
- 2 Rubble

UB — UNCONSOLIDATED BOTTOM
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

AB — AQUATIC BED
- 1 Algal
- 3 Rooted Vascular
- 5 *Unknown Submergent*

RF — REEF
- 1 Coral
- 3 Worm

OW — *OPEN WATER/ Unknown Bottom*

2 — INTERTIDAL

AB — AQUATIC BED
- 1 Algal
- 3 Rooted Vascular
- 5 *Unknown Submergent*

RF — REEF
- 1 Coral
- 3 Worm

RS — ROCKY SHORE
- 1 Bedrock
- 2 Rubble

US — UNCONSOLIDATED SHORE
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

1 — SUBTIDAL

RB — ROCK BOTTOM
- 1 Bedrock
- 2 Rubble

UB — UNCONSOLIDATED BOTTOM
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

AB — AQUAT
- 1 Algal
- 3 Rooted Vas
- 4 Floating Va
- 5 *Unknown S*
- 6 *Unknown S*

R — RIVERINE

1 — TIDAL

RB — ROCK BOTTOM
- 1 Bedrock
- 2 Rubble

UB — UNCONSOLIDATED BOTTOM
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

2 — LOWER PERENNIAL

*SB — STREAMBED
- 1 Bedrock
- 2 Rubble
- 3 Cobble-Gravel
- 4 Sand
- 5 Mud
- 6 Organic
- 7 Vegetated

AB — AQUATIC BED
- 1 Algal
- 2 Aquatic Moss
- 3 Rooted Vascular
- 4 Floating Vascular
- 5 *Unknown Submergent*
- 6 *Unknown Surface*

RS — ROCKY SHORE
- 1 Bedrock
- 2 Rubble

US — UNCONSOLIDATED SHORE
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic
- 5 Vegetated

**EM — EMERGENT
- 2 Nonpersistent

3 — UPPER PERENNIAL

4 — INTERMITTENT

5 — *UNKNOWN PERENNIAL*

OW — *OPEN WATER/ Unknown Bottom*

1 — LIMNETIC

RB — ROCK BOTTOM
- 1 Bedrock
- 2 Rubble

UB — UNCONSOLIDATED BOTTOM
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

*STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

P — PALUSTRINE

RB — ROCK BOTTOM
- 1 Bedrock
- 2 Rubble

UB — UNCONSOLIDATED BOTTOM
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic

AB — AQUATIC BED
- 1 Algal
- 2 Aquatic Moss
- 3 Rooted Vascular
- 4 Floating Vascular
- 5 *Unknown Submergent*
- 6 *Unknown Surface*

US — UNCONSOLIDATED SHORE
- 1 Cobble-Gravel
- 2 Sand
- 3 Mud
- 4 Organic
- 5 Vegetated

ML — MOSS-LICHEN
- 1 Moss
- 2 Lichen

EM — EMERGENT
- 1 Persistent
- 2 Nonpersistent

SS — SCRUB-SHRUB
- 1 Broad-Leaved Deciduous
- 2 Needle-Leaved Deciduous
- 3 Broad-Leaved Evergreen
- 4 Needle-Leaved Evergreen
- 5 Dead
- 6 *Deciduous*
- 7 *Evergreen*

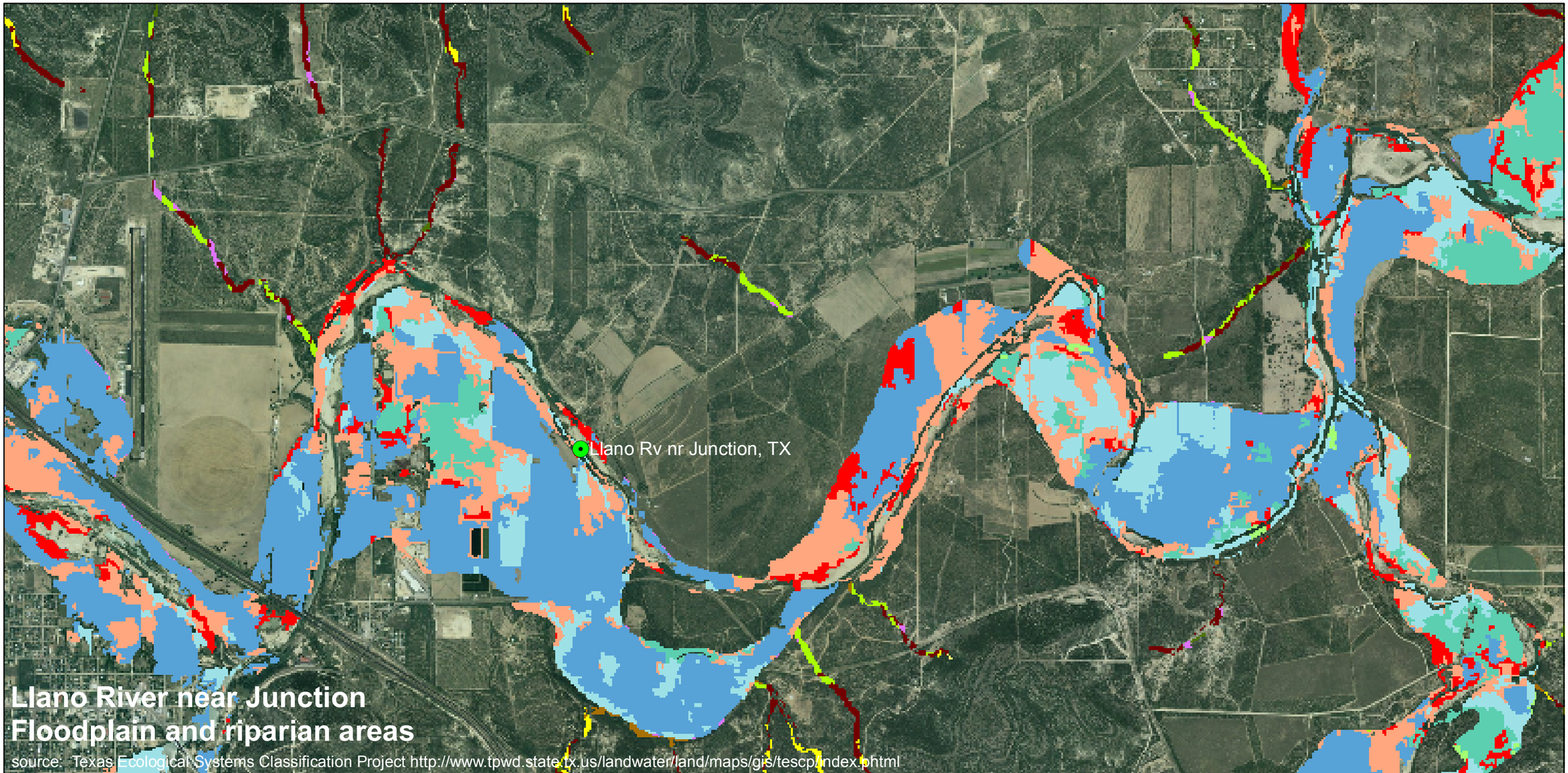
FO — FORESTED
- 1 Broad-Leaved Deciduous
- 2 Needle-Leaved Deciduous
- 3 Broad-Leaved Evergreen
- 4 Needle-Leaved Evergreen
- 5 Dead
- 6 *Deciduous*
- 7 *Evergreen*

OW — *OPEN WATER/ Unknown Bottom*

Non-Tidal

- A Temporarily Flooded
- B Saturated
- C Seasonally Flooded
- D *Seasonally Flooded/ Well Drained*
- E *Seasonally Flooded/ Saturated*
- F Semipermanently Flooded
- G Intermittently Exposed
- H Per
- J Inte
- K Arti
- W Inte Flo
- Y San Sea
- Z Inte Exp
- U *Unk*

Llano River near Junction



Legend

Texas Ecological Systems Database extract floodplain/riparian

COMMON_NAM

- Edwards Plateau: Floodplain Ashe Juniper Forest
- Edwards Plateau: Floodplain Ashe Juniper Shrubland
- Edwards Plateau: Floodplain Deciduous Shrubland
- Edwards Plateau: Floodplain Hardwood / Ashe Juniper Forest
- Edwards Plateau: Floodplain Hardwood Forest
- Edwards Plateau: Floodplain Herbaceous Vegetation
- Edwards Plateau: Floodplain Live Oak Forest
- Edwards Plateau: Riparian Ashe Juniper Forest
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0 0.5 1 Miles

N

USGS Gage 08150000 Llano River near Junction

DESCRIPTION:
Latitude 30°30'15", Longitude 99°44'03" NAD27
Kimble County, Texas, Hydrologic Unit 12090204
Drainage area: 1,854 square miles
Contributing drainage area: 1,849 square miles,
Datum of gage: 1,634.32 feet above sea level NGVD29.

Riparian Setting

The Llano River gage near Junction is located in Kimble County (Big Draw Quad), downstream of the confluence of the North Llano River and the South Llano River and downstream of the City of Junction, Texas. The elevation of the streambed near the gage appears to be 1660-1680 feet above sea level, with the streambanks at approximately 1680-1700 feet above sea level (up to 20 feet high banks) (USGS topographic map). Based on aerial photography, the surrounding land use appears to be cropland and pastureland. Few floodplain wetland features are present in this area (National Wetlands Inventory Map). One PFO1A and one PUBFx feature are located within the right bank floodplain. One PUSA and one PEM1Ah feature are located in upland area on the left bank. Soils in the region are mollisols (NRCS Soils Map). Specific soils within the area of the gage are (1) Dev very gravely loam, frequently flooded (De) soil within the Llano River channel and (2) Frio silty clay loam, occasionally flooded (Fr) soil along the river banks on both sides of the river.
The river has a large bend in the 2 miles upstream of the gage, with several small islands with side channels seen on aerial photography (possibly 6 areas with an island).

Riparian Vegetation

The vegetation communities in this region are designated by TPWD as the Edwards Plateau mapped vegetation type. Approximately 1.5 miles of the left river bank upstream of the gage appears to have a restricted riparian floodplain area, comprising a narrow band of floodplain herbaceous vegetation and floodplain ashe-juniper shrubland. The right river bank has a wider floodplain up to one half a mile wide, with vegetation communities made up of floodplain herbaceous vegetation, floodplain deciduous shrubland, and scattered floodplain hardwood forest. Floodplain riparian communities downstream of the gage are made up of a similar assemblage of vegetation communities, although the floodplain is wider on the opposite side of the bank downstream of the gage.

Floodplain herbaceous vegetation areas are typically grasslands that may include bermudagrass, King Ranch bluestem, switchgrass, bushy bluestem, Viginia wildrye, Texas wintergrass, little barley, eastern gamagrass, and Lindheimer muhly.

Floodplain ashe-juniper shrubland is a disturbance evergreen shrubland commonly a mix of ashe juniper, live oak, and mesquite.

Floodplain hardwood forest is mainly deciduous forest commonly with cedar elm, American elm, pecan, plateau live oak, bur oak, western soapberry, Arizona walnut, green ash, and plateau live oak. Understory species may include gum bumelia, roughleaf dogwood, red mulberry, Texas persimmon, and possumhaw.

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RIPARIAN SPECIES INFORMATION

Bottomland hardwood forests are dynamic and complex systems. Frequent flooding from adjacent streams provides the forcing function that characterizes the affected plant communities. Frequency and duration of floodwater determine the extent of anaerobic soil conditions that directly affect plant populations. Plant species adapted for life in anaerobic soil conditions are located in the topographically lowest areas subject to long duration flooding. Species composition changes as the elevational and associated moisture gradient changes from wettest to driest and reflects species adaptations to prevailing hydrologic regimes. (USACE Report)

Many studies have shown that a definite relationship exists between plant species and the timing, frequency, and duration of inundation and soil saturation (Larson et al. 1981, USACE Report).

In a study to develop flood tolerance indices for plants in the southeastern U.S., tree species were found to be more useful than saplings, shrubs, vines or herbaceous species in predicting hydrologic zones (USACE Report). However, it was noted that the study was conducted in relatively undisturbed areas and because trees can remain for decades following hydrologic disturbance, the use of sapling and seedling data may be more reliable in some areas.

Larson, J.S., M.S. Bedinger, C.F. Bryan, S. Brown, R.T. Huffman, E.L. Miller, D.G. Rhodes, B.A. Touchet. 1981. "Transition from wetlands to uplands in southeastern bottomland hardwood forests," *Wetlands of bottomland hardwood forests*. J.R. Clark and J. Benforado, eds., Elsevier, New York.

Plains cottonwood (Populus deltoids)

In semiarid and arid regions of western North America, the plains cottonwood is a disturbance-dependent species with relatively specific germination and establishment requirements. Its relatively small seeds (400-1260 seeds per gram; Hardin 1984) are released over several weeks (Engstrom 1948) and remain viable for only 1-2 weeks (Moss 1938, Ware & Penfound 1949, Kapustka 1972). The timing of this germination window corresponds to the high flows of snowmelt runoff (Scott et al. 1993). These flows produce the bare, moist, mineral-substrate sites on which cottonwood normally become established (Moss 1938, Schopmeyer 1974). After germination, cottonwood seedlings require continued supplemental moisture to avoid desiccation (Mohoney & Rood 1991, Segelquist et al. 1993). These conditions are frequently provided by the descending limb of a natural snowmelt hydrograph but may not be provided by rapid declines following a thunderstorm peak flow or reservoir release. Furthermore, cottonwood is considered intolerant of shade (Van Haverbeke 1990), regenerating at the landscape scale on newly created disturbance sites rather than under existing stands. (Shafroth et al. 1995)