

Narrative for Lake Mary Parcel Floodplain Zoning Code Text Amendment

Date: October 25, 2019
To: Daniel Symer, Zoning Code Manager, COF
From: Woodson Engineering & Surveying
Re: 118029- Floodplain Zoning Code Text Amendment

The purpose of this narrative is to support the request for a Zoning Code Text Amendment to revise the floodplain designation on a private parcel from a Rural Floodplain to an Urban Floodplain designation.

The private parcel (APN# 103-270-03K) owned by the Preston Family Trust is a 4.46-acre site located NW of the Lake Mary Road and High Country Trail intersection. The current zoning of the site is Highway Commercial (HC). The site is bordered by I-17 on north, Lake Mary Road on east and High Country Trail on south. The site is in very close proximity to the I-40 & I-17 Interchange and to Northern Arizona University (NAU).

Per Federal Emergency Management Agency's (FEMA), Flood Insurance Rate Map (FIRM) 04005C6816G (effective 09/03/2010), a portion of the site is located within a floodzone A. Zone A is subjected to 100-year flooding and the base floodplain is not modeled to any degree of accuracy and is mapped by approximate methods with no Base Flood Elevations (BFEs) determined. Zone A is subjected to 1% annual chance of flooding. See Exhibit 1 for FIRMette for subject site that shows the Zone A limits. The COF Rural and Urban Floodplain maps the area limits set on the FEMA maps.

Per COF Zoning Code Rural Floodplain Map, the floodplain on the subject parcel is designated as a Rural Floodplain. Per the COF Zoning Code, Rural Floodplains are defined as natural undisturbed open spaces that are unsuitable for development purposes due to periodic flood inundation and the need to preserve the stream corridor for beneficial uses such as the preservation of important ecological resources. See Exhibit 2 for the Rural Floodplains within the City of Flagstaff.

All watercourses and associated floodplains not defined as Rural Floodplains are Urban Floodplains which are typically located in urbanized areas and have typically been altered from their natural state by channelization. Urban Floodplains may be altered to address conveyance and erosion concerns.

It is the opinion of the owner that the floodplain has been incorrectly designated and should be re-defined as an Urban Floodplain per the definition in the Zoning Code for Urban Floodplains and per the historical and current nature of the wash.

Based on research on the history of the unnamed wash, we find that it has been diverted from its historical flow path over time, please see Exhibit 3. Prior to 1960, the flow historically drained east crossing Lake Mary Road at the Bow and Arrow subdivision located east of Lake Mary Road, please see the attached

Exhibit 4 for the 1954 USGS historical topographic map which shows that the unnamed wash didn't traverse through the subject site historically.

After the Bow and Arrow subdivision improvements, the wash that historically traversed east crossing Lake Mary Road is shown to be diverted north to flow parallel along Lake Mary Road and then flow east crossing Lake Mary Road just north of at the current day's Beverly Avenue. Please see the attached Exhibit 5 for the 1962 USGS historical topographic map which shows that the unnamed wash has been diverted and the flow is traversing through the subject site, then crossing Lake Mary Road and continuing in a north easterly direction.

Please see Exhibit 3 which shows the how the wash has been diverted from it's historical flow path.

The diverted nature of the wash from it's natural course is clearly shown. As to the current condition of the floodplain, it is readily apparent that this floodplain does not exhibit a natural wash morphology. The braided nature of the flow channels with erosion and head cutting continuing with no well-defined channel through the site supports the argument that this is not a natural channel and is a diverted channel formed by surrounding improvements. There is no riparian preserve or alluvium deposits with low flow channels and defined banks which reduce stream bank erosion and maintain stable stream morphology which is the typical nature of natural and established channels.

The wash has been crossed by High Country Trail utilizing a 10' x 4' RCBC, a private parcel access road and by another access road for the parcel west of subject site utilizing three 36-inch cmps and US Interstate 17 utilizing twin 6' x 5' RCBCs. These impacts include concrete channels converging flow to the Interstate culverts. Thus, this diverted wash has been modified by surrounding improvements and is not a natural undisturbed channel.

Thus, we believe that the unnamed wash through the subject site has been created due to previous private and public improvements and the wash does not follow the historic flow path and cannot be considered as a Rural Floodplain as a natural undisturbed space. Therefore, we request that the floodplain designation on the subject site be revised to Urban Floodplain from Rural Floodplain via Zoning Code Text Amendment. This Amendment would provide an opportunity to the land owner to channelize the flow through the site and reduce the eroded braided channels.

Findings: Zoning Code Section 10-20.50.040.F.1.b: Findings for the approval of this Text Amendment

1. The proposed amendment is consistent with and conforms to the goals of the general Plan and any applicable specific plan;

Following is the list of the applicable goals and policies that will be met by the proposed project:

Climate Change and Adaptation Goals and Policies:

Goal: E&C.3. Strengthen community and natural environment resiliency through climate adaptation efforts.

Provide an improved wash that is not subjected to the erosion problems occurring onsite now.

Policy E&C.3.3 Invest in forest health and watershed protection measures.

Response: The trees will be preserved to meet the Natural Resources Protection Plan (NRPP) requirements, thereby preserving the forest health. Channelizing the flow also reduces erosion and head cutting and promotes forest health.

Ecosystem Health Goals and Policies:

Goal: E&C.6. Protect, restore and improve ecosystem health and maintain native plant and animal community diversity across all land ownerships in the Flagstaff region.

Policy E&C.6.3 Promote protection, conservation, and ecological restoration of the region's diverse ecosystem types and associated animals.

Response: Preserving the trees and eliminating eroded channels will result in restoration of region's natural vegetation and ecosystem and associated wildlife habitat.

Policy E&C.6.4 Support collaborative efforts to return local native vegetation, channel structure and where possible and applicable, preservation and restoration of in-stream flows to the region's riparian ecosystem.

Response: Introducing a defined channel to replace eroded and braided channels will eventually establish a natural drainage corridor which will promote the region's riparian ecosystem along the channel which runs along the eastern perimeter of the subject parcel.

Stormwater and Watershed Management Goals and Policies:

Goal WR.5. Manage watersheds and stormwater to address flooding concerns, water quality, environmental protections, and rainwater harvesting

Policy: WR.5.1. Preserve and restore existing natural watercourse corridors, including the 100-yr floodplain escarpments, wildlife corridors, natural vegetation, and other natural features using methods that result in a clear legal obligation to preserve corridors in perpetuity, where feasible.

Response: Since there is designated FEMA floodzone A on the property, change of floodplain from rural to the urban floodplain would still require protecting the improved drainageway. Project intends to improve the channel and submit CLOMR and LOMR applications to FEMA to officially remap the floodplain limits which clearly obligates the site to preserve the stream corridor and designates it FEMA floodplain which can not be modified without notifying the Floodplain Administrator (COF) and FEMA in future.

Policy: WR.5.7. Support healthy watershed characteristics through implementation of practices, consistent with the City of Flagstaff Low Impact Design Manual, that improve flood control and flood attenuation, stormwater quality, and water sustainability; increase groundwater recharge; enhance open space quality; increase biodiversity; and reduce land disturbance and soil compaction.

Response: The project improvements will include City of Flagstaff's Low Impact Development Integrated Management Practices (LID-IMPs). LID facilities will be implemented to address Runoff Control Volume (ROCV) for the first 1-inch rain. The LID facilities will treat and infiltrate ROCV which improves water quality and promotes groundwater recharge. Stormwater detention facilities will be implemented to attenuate the increased flow rate from the proposed improvements.

- 2. The proposed amendment will not be detrimental to the public interest, health, safety, convenience or welfare of the City.

Response: The proposed amendment is to revise floodplain designation on a private parcel and is not detrimental to the public interest, health, safety, convenience or welfare of the City. The proposed change will provide an opportunity to the owner to address erosion, head cutting and transporting sediment further downstream in the watershed which in turn enhances ecosystem health, water quality, restores natural, riparian and wildlife habitat. As discussed above, the amendment is in conformance to many of the goals and policies of the City's General Plan.

- 3. The proposed amendment is internally consistent with other applicable provisions of the Zoning Code.

Response: The proposed amendment is internally consistent with all other applicable provisions of the Zoning Code. The development procedures will conform to City's Zoning Code requirements for Commercial Developments.

The request is to revise the floodplain designation only and any modifications to the flood Zone A limits will be performed via FEMA notifications with a formal Conditional Letter of Map Revision (CLOMR) prior to any construction and a Letter of Map Revision (LOMR) after construction will be prepared for the City's concurrence and FEMA's approval. Please see the attached Exhibit 7 for the floodplain limits overlaid on the site plan.

The owner intends to improve the channel to address erosion and head cutting which will improve the water quality of the wash. The trees will be preserved to meet the Natural Resources Protection Plan (NRPP) requirements, there by preserving the wildlife habitat. The stream ecology will also be maintained by an open channel to the maximum extent possible except at access crossings. All of these measures will promote a naturally healthy environment and conform with the requirements of the City's Regional Plan.

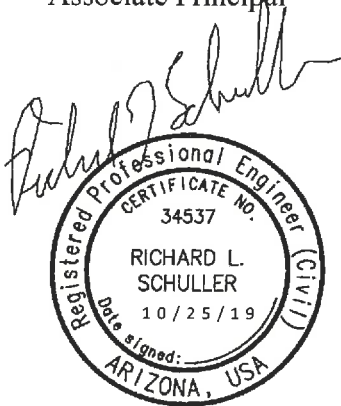
If you have any questions, please feel free to contact us: Rick Schuller at rschuller@woodsoneng.com or Sirisha Kalluri at skalluri@woodsoneng.com, or call 928-774-4636.

Sincerely,

WOODSON ENGINEERING

Rick Schuller, PE
Associate Principal

Sirisha Kalluri, PE, CFM
Assistant Project Manager



Attachments:

Exhibit 1: FIRMette

Exhibit 2: COF Rural Floodplain Map

Exhibit 3: 1982 USGS Historical map that shows the change of flow path of the Wash

Exhibit 4: 1954 USGS Historical Topographic Map

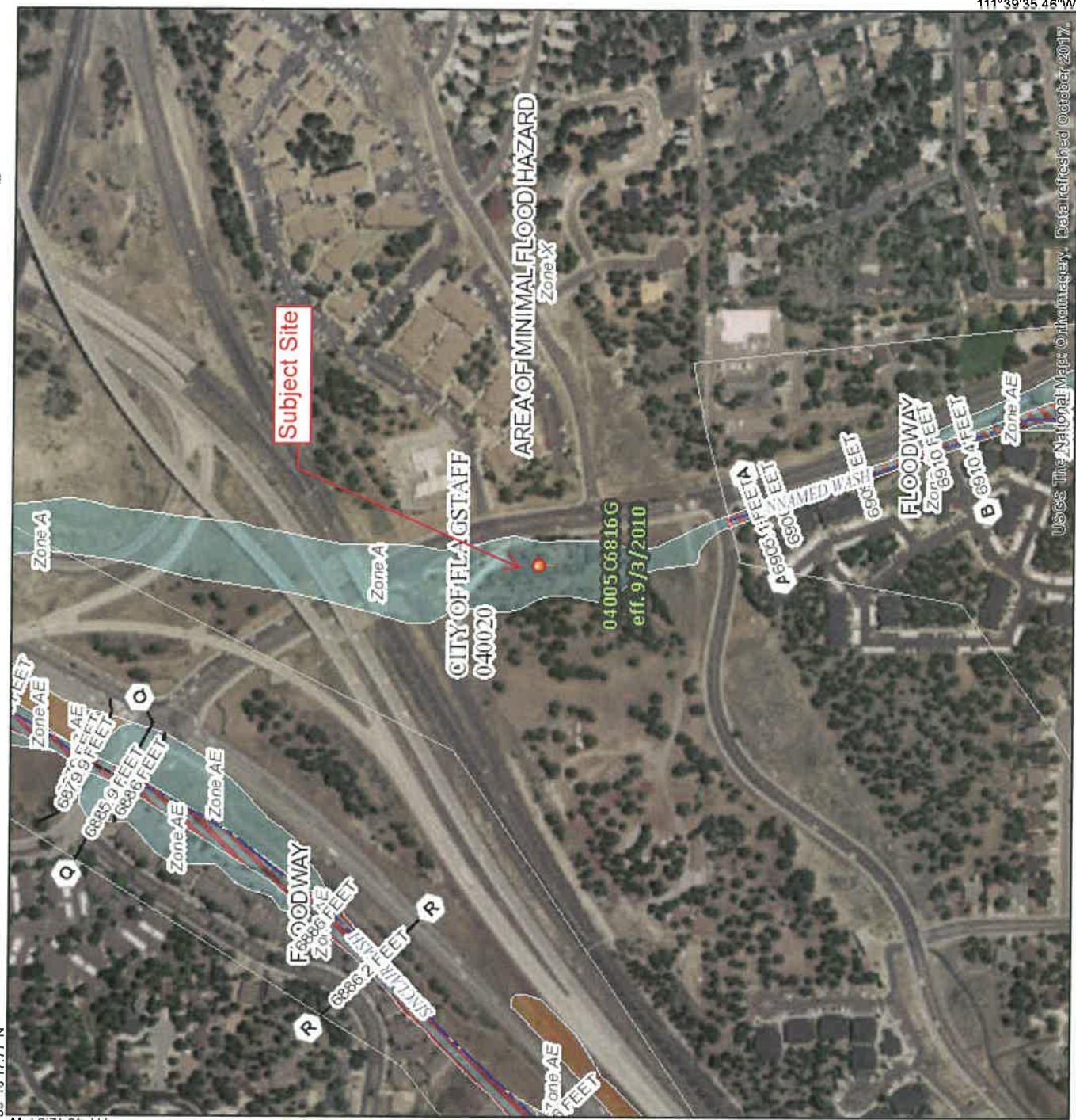
Exhibit 5: 1962 USGS Historical Topographic Map

Exhibit 6: Floodplain Limits Overlaid on Site Plan

National Flood Hazard Layer FIRMette



35°10'17.77"N
111°40'12.91"W



USGS The National Map: Orthoimagery. Data refreshed October 2017.
Scale: 1:6,000
Feet: 0, 250, 500, 1,000, 1,500, 2,000

Exhibit 1: FIRMette

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

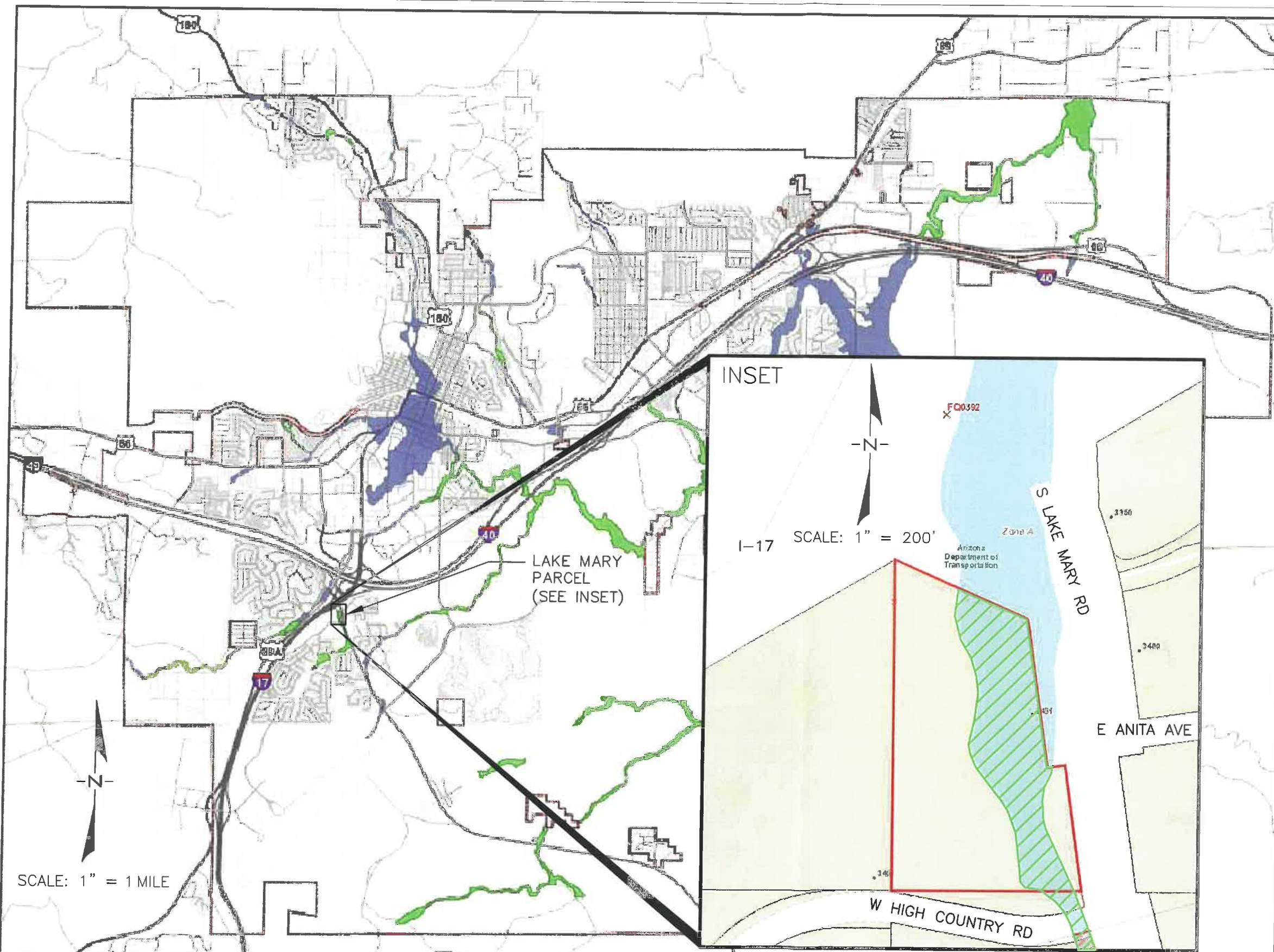
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/5/2018 at 4:15:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.




Division 10-90.50.030: Rural Floodplain Map

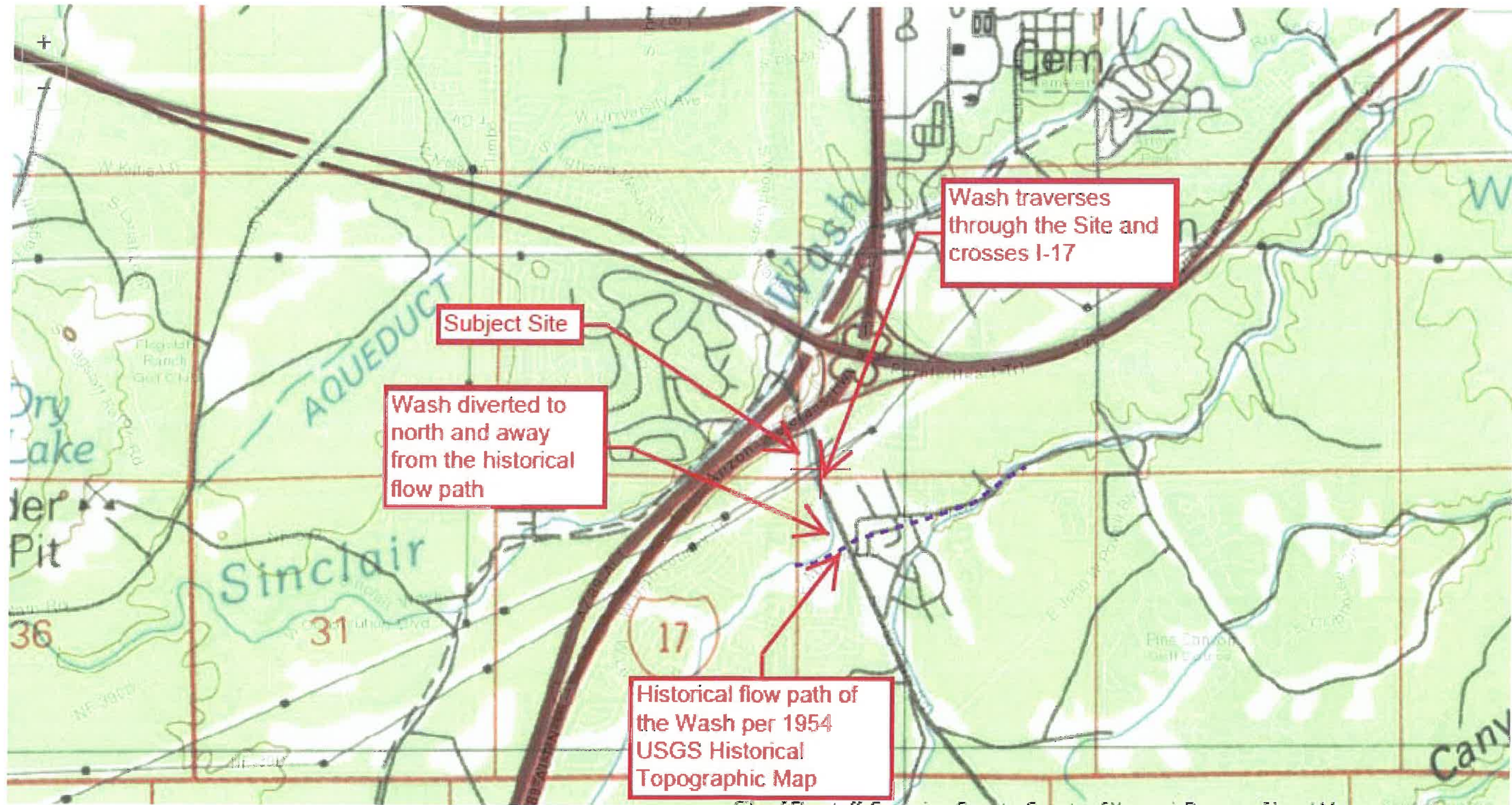
-  City Limits
-  Urban Floodplains
-  Rural Floodplains
-  Parcels

Floodplain widths reflect the FEMA regulated floodplain widths, and are subject to change. Please consult the City of Flagstaff Stormwater section for the latest width information.



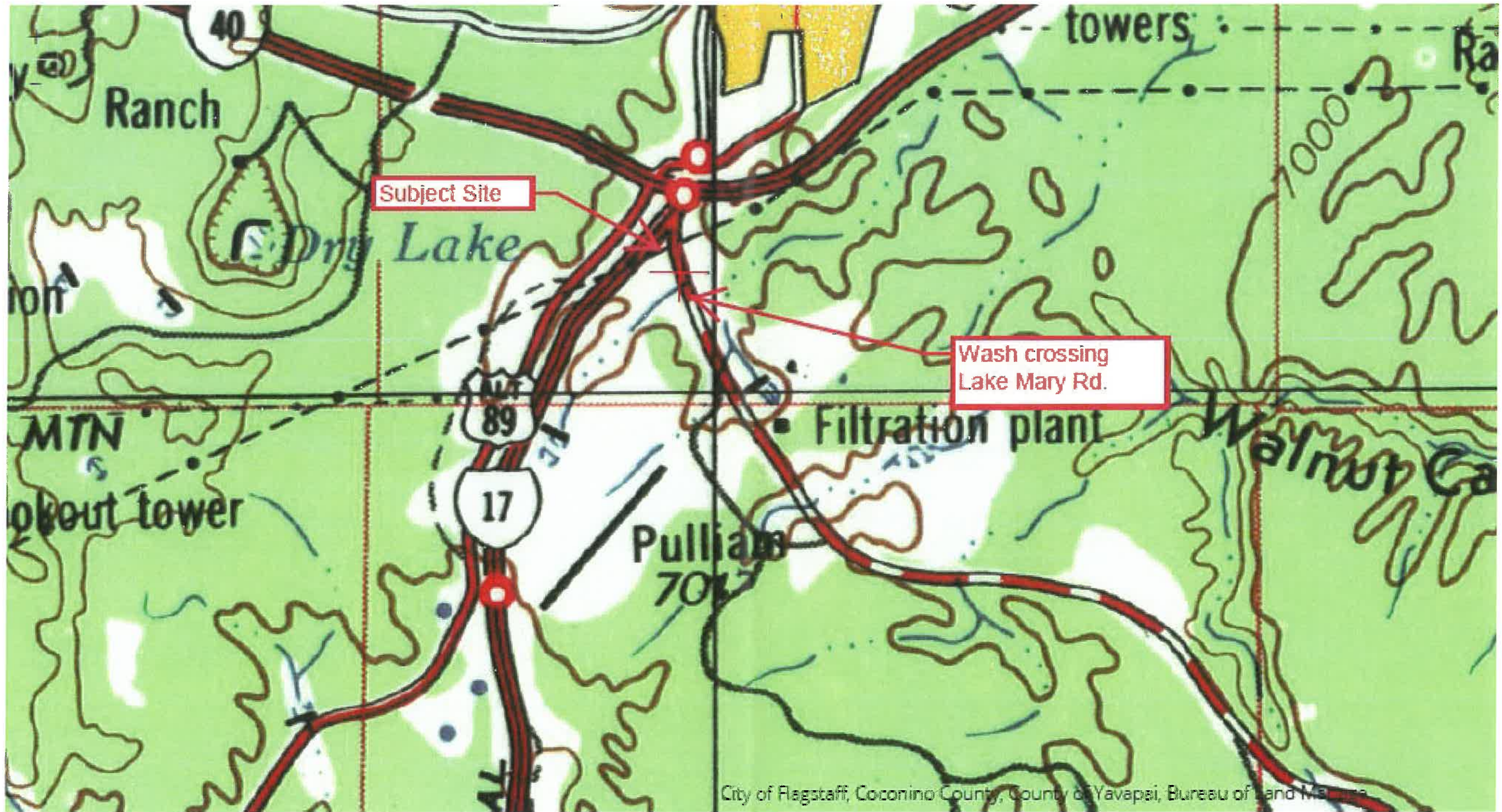
LEGEND INSET

-  COF RURAL FLOODPLAIN
-  FEMA FLOODPLAIN
-  PARCEL LIMITS



CHANGE OF HISTORICAL FLOW PATH OF THE WASH

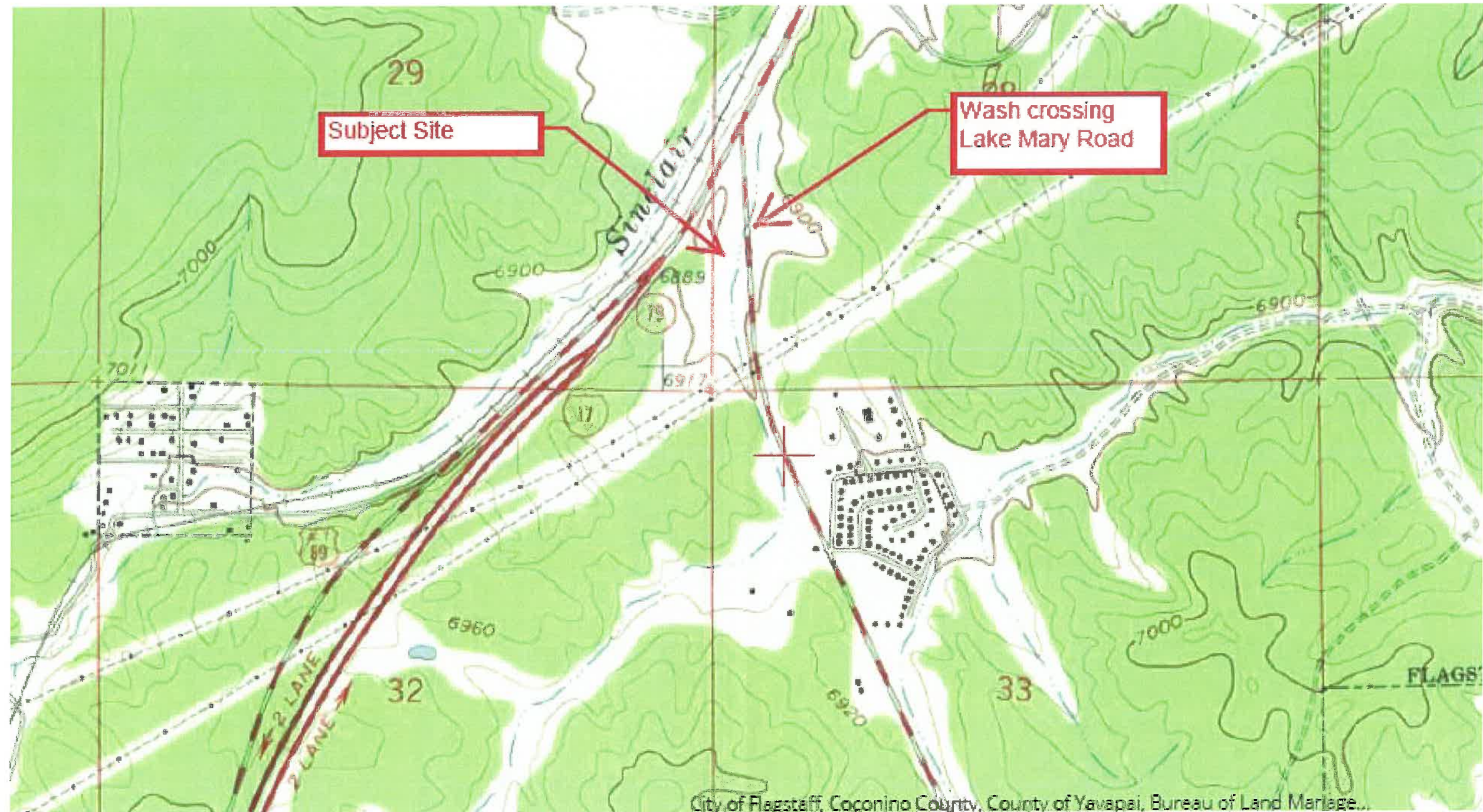
EXHIBIT 3



1954 USGS HISTORICAL TOPOGRAPHIC MAP

EXHIBIT 4





1962 USGS HISTORICAL TOPOGRAPHIC MAP

EXHIBIT 5



LAKE MARY ROAD PARCEL

PORTION OF SECTION 28, TOWNSHIP 21 NORTH, RANGE 07 EAST,
GILA AND SALT RIVER MERIDIAN, CITY OF FLAGSTAFF, COCONINO COUNTY, ARIZONA

LEGEND

- PROPERTY BOUNDARY, EXISTING
- EASEMENT, EXISTING
- RIGHT-OF-WAY, EXISTING
- RIGHT-OF-WAY, PROPOSED
- ASPHALT EDGE, EXISTING
- ASPHALT EDGE, PROPOSED
- ROAD SHOULDER, PROPOSED
- ROAD CENTERLINE, EXISTING
- ROAD CENTERLINE, PROPOSED
- BACK OF CURB, EXISTING
- BACK OF CURB, PROPOSED
- SIDEWALK, EXISTING
- SIDEWALK, PROPOSED
- CONCRETE EDGE, EXISTING
- CONCRETE EDGE, PROPOSED
- MAJOR CONTOUR, EXISTING
- MINOR CONTOUR, EXISTING
- BUILDING EDGE, EXISTING
- OVERHEAD ELECTRIC LINE, EXISTING
- SANITARY SEWER LINE, EXISTING
- SANITARY SEWER LINE, PROPOSED
- WATER LINE, EXISTING
- WATER LINE, PROPOSED
- STORM DRAIN, EXISTING
- FIBER OPTIC LINE, EXISTING
- DIRT ROAD, EXISTING
- BARBED WIRE FENCE, EXISTING
- CHAIN LINK FENCE, EXISTING
- WOOD FENCE, EXISTING
- EXISTING PAVEMENT
- EXISTING STRUCTURE
- WATER VALVE, EXISTING
- WATER VALVE, PROPOSED
- GAS VALVE, EXISTING
- SANITARY-SEWER MANHOLE, EXISTING
- SANITARY-SEWER MANHOLE, PROPOSED
- ELECTRIC MANHOLE, EXISTING
- STORM DRAIN MANHOLE, EXISTING
- WATER MAN-HOLE, EXISTING
- TELEPHONE RISER, EXISTING
- ELECTRIC RISER, EXISTING
- GAS RISER, EXISTING
- CABLE TV RISER, EXISTING
- SEWER RISER, EXISTING
- WATER RISER, EXISTING
- ELECTRIC METER, EXISTING
- GAS METER, EXISTING
- WATER METER, EXISTING
- FIRE HYDRANT, EXISTING
- FIRE HYDRANT, PROPOSED
- AIR RELEASE VALVE MANHOLE, PROPOSED
- AIR RELEASE VALVE VENT, PROPOSED
- CATCH BASIN, EXISTING
- GUY ANCHOR, EXISTING
- LIGHT POLE, EXISTING
- LIGHT POLE, PROPOSED
- SIGN POST, EXISTING
- SIGN POST, PROPOSED
- UTILITY POLE, EXISTING
- UTILITY POLE, PROPOSED
- BOLLARD, EXISTING
- BOLLARD, PROPOSED
- TREE, DIAMETER AT BREAST HEIGHT AS NOTED (P=PINE, J=JUNIPER, D=DECIDUOUS)
- FOUND REBAR AS NOTED
- FOUND PIPE AS NOTED
- FOUND SECTIONAL CORNER AS NOTED
- FOUND RIGHT-OF-WAY MONUMENT AS NOTED
- FOUND NAIL AS NOTED
- FOUND PANEL POINT
- FOUND MONUMENT AS NOTED
- SET MONUMENT AS NOTED

PRELIMINARY
NOT FOR CONSTRUCTION
OR RECORDING

SITE DATA:

PARCEL: 103-27-003K
APN: HIGHWAY COMMERCIAL (HC)
ZONING:

FLOOD DATA:

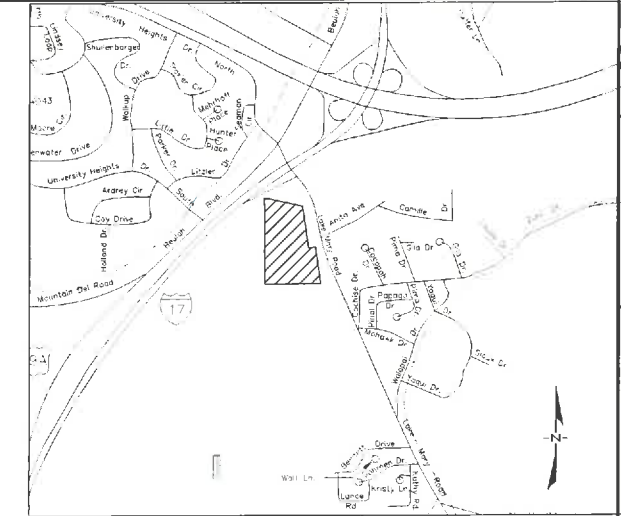
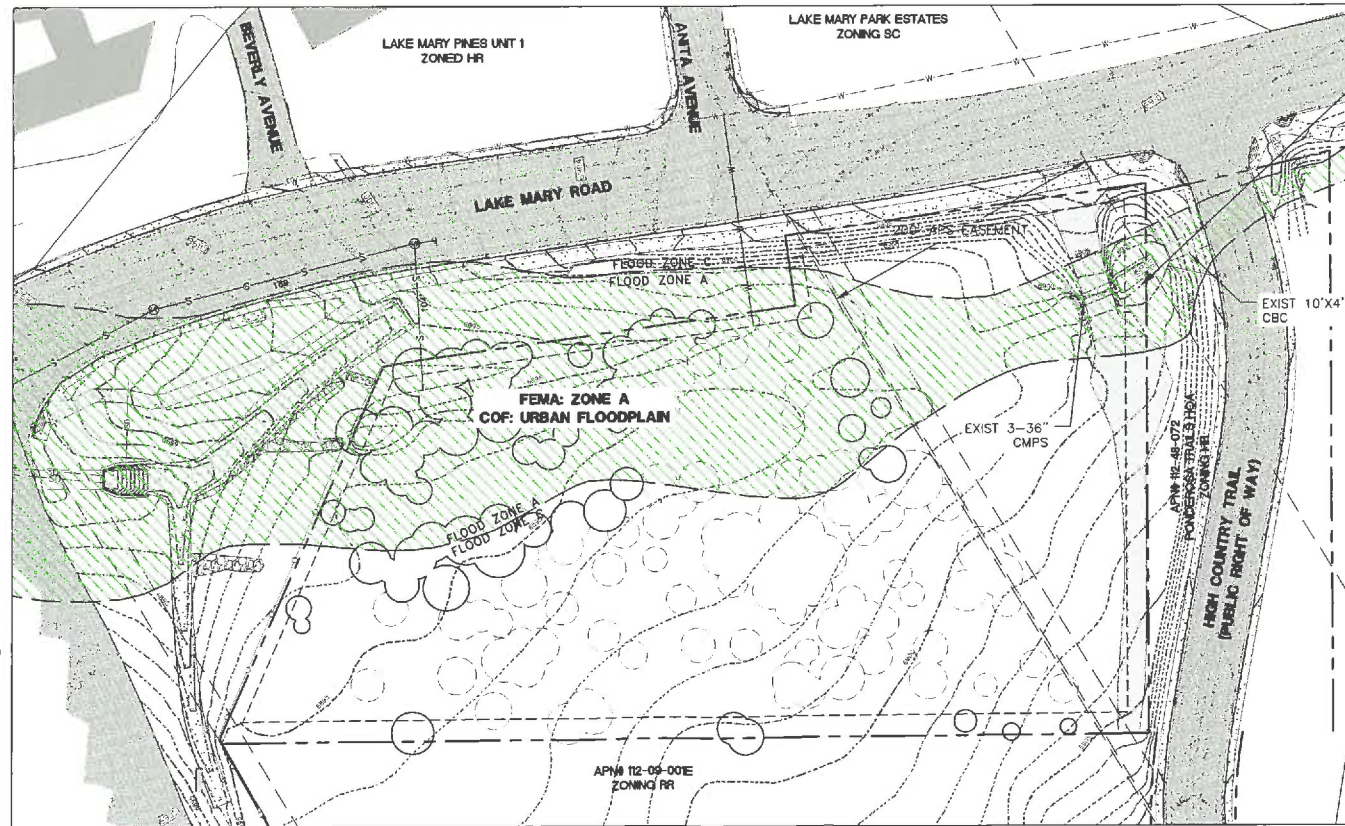
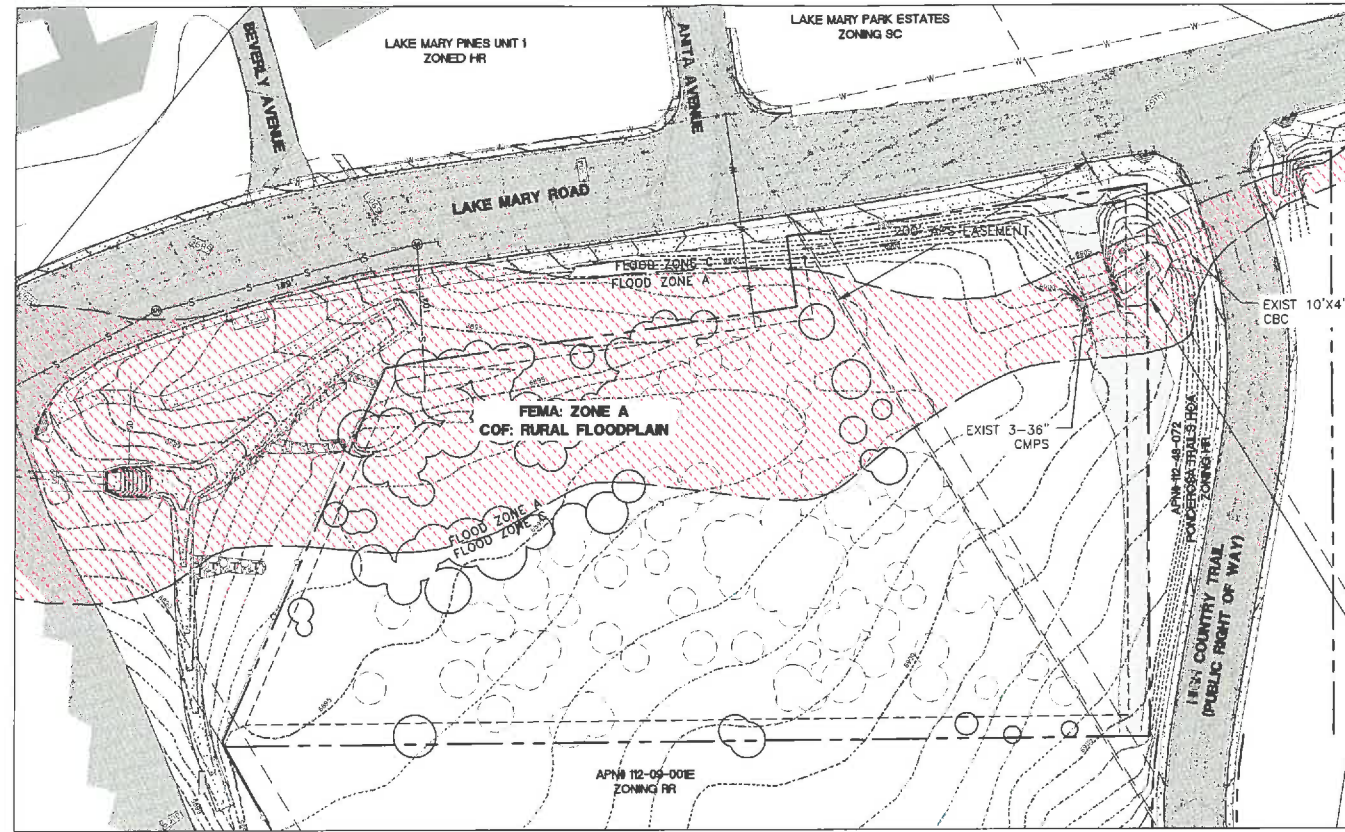
FIRM PANEL: 04005C6816G (EFF. DATE - 9/03/2010)
FLOOD ZONE: A (BASE FLOODPLAIN MAPPED BY APPX. METHODS, BFE'S NOT DETERMINED)

FLOW RATE: 150 CFS (BASE FLOW RATE I.E., Q100 REFERENCED FROM FIS FOR UNNAMED WASH)

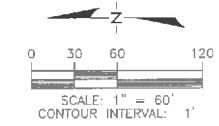
FLOODPLAIN NOTES

FLOODPLAIN ON THE SUBJECT PROPERTY IS DESIGNATED AS RURAL FLOODPLAIN PER CITY OF FLAGSTAFF ZONING CODE DIVISION 10-90.40.030: RURAL FLOODPLAIN MAP. THE CURRENT APPLICATION IS TO CHANGE THE RURAL FLOODPLAIN DESIGNATION TO URBAN FLOODPLAIN BY ZONING CODE TEXT AMENDMENT.

ENGINEER
WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
(928) 774-4636



VICINITY MAP
FLAGSTAFF, ARIZONA (NOT TO SCALE)



CHANGE OF COF FLOODPLAIN FROM RURAL FLOODPLAIN TO URBAN FLOODPLAIN BY ZONING CODE TEXT AMENDMENT.

THE LIMITS OF FLOODPLAIN (BOTH RURAL AND URBAN FLOODPLAINS) MATCH FEMA'S FLOODZONE A.

FEMA ZONE A
COF: RURAL FLOODPLAIN

FEMA ZONE A
COF: URBAN FLOODPLAIN

WOODSON
ENGINEERING & SURVEYING
124 N ELDEN ST, FLAGSTAFF, AZ 86001
(928) 774-4636 | WWW.WOODSONENG.COM

Exhibit 6

SHEET 1 OF 1

118029

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 • WWW.WOODSONENG.COM

06/26/19

AZ North DEVELOPMENT
LAKE MARY ROAD PARCEL
EXHIBIT: FLOODPLAIN AMENDMENT

DRAFTED BY: SK
DATE: 06/26/19
PROJ. NO.: 118029
FIR: Flagstaff, AZ Development