



How do I remove my home or property from a FEMA mapped floodplain?



I. Introduction

This pamphlet is intended to help property owners in Pima County, including the incorporated communities of Marana, Oro Valley, Sahuarita, South Tucson, and Tucson, determine if their residence or property can be officially removed from a Special Flood Hazard Area (SFHA) as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). The SFHA is a high risk area that is commonly referred to as the 100-year floodplain, but it is more appropriate to call it the 1% annual chance floodplain because it has a 1% chance of flooding in any given year. The 100-year flood is also called the base flood.

Flooding is a repetitive but random naturally occurring phenomenon. Although FIRMs show a fixed floodplain boundary, floodplains are dynamic. Watercourses move and change over time. A residence that meets the criteria to be removed from the SFHA today may have an increased flood risk in the future due to these changes.

Flood insurance

The Flood Disaster Protection Act of 1973 and subsequent amendments mandate federally insured lenders to require flood insurance on loans secured by buildings located within an SFHA. That requirement is passed to property owners. Even if not required by law, the District recommends that property owners purchase flood insurance if their structure is located within a SFHA, in a low-lying area next to a SFHA or within a local floodplain. The District recommends this because not all floodplains are mapped by FEMA and because flood events larger than the 1% annual chance flood do occur.

There are two basic FEMA map revision processes: Letters of Map Change (LOMCs) and Letters of Map Revision (LOMRs). LOMCs consist of Letters of Map Amendment (LOMAs) and Letters of Map Revision based on Fill (LOMR-Fs). LOMCs are faster, have little or no FEMA processing fees and require little assistance from a civil engineer and/or land surveyor. LOMRs may take many months to process, have large processing fees and require extensive engineering. It is important to note that while your local floodplain management agency may have to sign-off on your map revision request, only FEMA has the authority to accept or reject requests for map revision.

Be aware there are times when a lender may still require flood insurance even after a home has been removed from the SFHA. If a home has been removed from the SFHA, but the lender still requires flood insurance, the insurance premiums would be reduced due to decreased risk.

Locally mapped floodplains

FIRMs only display flood zones that have been evaluated by FEMA, which tend to be along larger watercourses. Generally, FIRMs do not show floodplains for smaller watercourses or those in very rural areas. Local floodplain management agencies have additional maps that show many of these other floodplains. Subdivision plats are another resource that may show areas prone to flooding that are not shown on the FIRMs. Property owners are encouraged to contact their local floodplain management agency to determine if there are flood hazards not reflected on the FIRMs. Many of the homes in Pima County that have flooded repeatedly are not in a SFHA but are in a locally mapped floodplain.

Map Resources

Pima County Regional Flood Control District's (District) website <http://rfcd.pima.gov/dfirm/> should be used to determine the FEMA floodplain status of a property. Since there may be delays between a revision to the FIRM and its availability on the website, individuals are encouraged to contact their local floodplain management agency to make sure they are using the latest FEMA information and to determine if a property is impacted by any local floodplains not mapped by FEMA. A list of the local floodplain management agencies can be found at the end of this pamphlet.

II. FEMA FIRM Revision Process

There are several steps to the FIRM Revision Process.

- 1) Determine which Flood Zone the structure is in by going to <http://rfcd.pima.gov/dfirm/> or contacting your local floodplain management agency.
(Note: The District does not recommend the use of FIRMettes available from FEMA's website because they do not incorporate map revisions.)
- 2) Determine whether the structure qualifies for a map revision.
- 3) Determine the appropriate map revision product offered by FEMA for your situation and submit the relevant forms and data to FEMA for review and approval.

1) Determining what Flood Zone your structure is in

- The District website uses a free program called MapGuide to display official FEMA digital map data. MapGuide works by layering map data. Therefore, layers on top may mask information on lower layers. Use the list of layers left of the map to control the information shown on the map.
- Although the data shown dynamically in MapGuide is official data from FEMA, it does not represent the officially adopted FIRMs, which are static, fixed scale maps. There are times when the superior resolution of MapGuide may make it appear that a structure is outside the SFHA boundary but the official FIRM shows the structure inside the SFHA. Review the official FIRM if a structure is within 30 feet of the SFHA boundary. PDF copies of the official FIRM panels are available through the District's website and the MapGuide application.
- It is important to check for map revisions when making flood zone determinations. Map revisions are shown on MapGuide. PDF copies of the FEMA approved map revisions are available through the MapGuide application.
- The SFHA zones signify a high risk of flooding and are defined as follows:

Zone A	No Base Flood Elevations determined.
Zone AE	Base Flood Elevations determined.
Zone AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
Zone AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

Base Flood Elevation (BFE) means the calculated water surface elevation during the base flood, or 1% annual chance flood.

2) Determining whether a structure qualifies for a map revision

It is possible to obtain a LOMA or a LOMR-F by demonstrating through a survey or engineering analysis that the elevations of the lowest floor of the structure and the lowest grade adjacent to the structure are at or above the BFE. It is therefore necessary to know the BFE, which is determined at the most upstream point of the structure.

Examples are provided below, but for more information on determining a BFE, refer to the District's Technical Procedure 101 at: <http://rfcd.pima.gov/rules/>

For Zone A floodplains, FEMA has not established a BFE. Contact the local floodplain management agency to see if there is a study that could be used to determine the BFE, which is necessary to complete a LOMC application. Otherwise, the property owner must provide an analysis of the watercourse, prepared by a registered professional civil engineer, to determine the BFE.

For Zone AE floodplains, the BFE should be determined using the lettered cross section data (the flood profile or floodway data table) contained in the Flood Insurance Study (FIS) or subsequent revisions, and interpolating as necessary. For more information on how to determine water surface elevations, refer to the Flood Control District's Technical Procedure, TECH-101 located at: <http://rfcd.pima.gov/rules/>

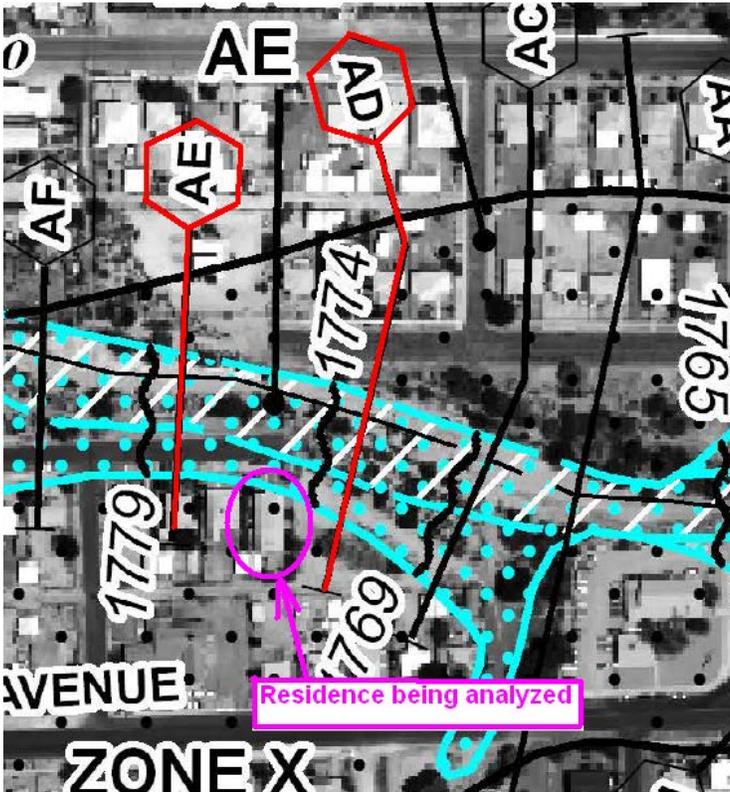


Figure 1 - Example of a residence in a Zone AE floodplain

In the FIS, the BFE at cross section AD is 1773.0 feet. The BFE at cross section AE is 1778.1 feet. Therefore BFE at the upstream edge of the structure is 1775.55 feet. (Lettered cross sections have been highlighted in red for this example).

Figure 2 - The BFEs referenced in Figure 1 are from the Floodway Data Table for the Gibson Arroyo found in the FIS

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gibson Arroyo (continued)								
AA	5,111	70	309	7.8	1,764.7	1,764.7	1,764.7	0.0
AB	5,275	74	258	9.3	1,766.8	1,766.8	1,766.8	0.0
AC	5,386	99	279	8.6	1,768.8	1,768.8	1,768.8	0.0
AD	5,539	117	426	4.9	1,773.0	1,773.0	1,773.0	0.0
AE	5,750	87	340	6.2	1,778.1	1,778.1	1,778.1	0.0
AF	5,908	117	416	5.0	1,782.3	1,782.3	1,782.3	0.0
AG	6,125	58	187	11.2	1,788.4	1,788.4	1,788.4	0.0
AH	6,310	74	259	8.1	1,791.7	1,791.7	1,791.7	0.0
AI	6,500	52	214	9.8	1,794.5	1,794.5	1,794.5	0.0
AJ	6,785	69	212	9.9	1,799.8	1,799.8	1,799.8	0.0
AK	6,859	121	297	7.1	1,803.2	1,803.2	1,803.2	0.0
AL	7,022	117	362	5.8	1,807.3	1,807.3	1,807.3	0.0
AM	7,144	34	207	10.1	1,809.7	1,809.7	1,809.7	0.0
AN	7,228	73	234	9.0	1,811.6	1,811.6	1,811.6	0.0
AO	7,403	52	212	9.9	1,813.6	1,813.6	1,813.6	0.0
AP	7,561	63	202	10.4	1,816.1	1,816.1	1,816.1	0.0
AQ	7,788	103	311	6.8	1,822.4	1,822.4	1,822.4	0.0
AR	8,031	64	225	9.3	1,826.6	1,826.6	1,826.6	0.0
AS	8,173	97	319	6.6	1,829.5	1,829.5	1,829.5	0.0
AT	8,385	102	265	7.9	1,832.3	1,832.3	1,832.3	0.0
AU	8,596	154	444	4.7	1,836.5	1,836.5	1,836.5	0.0
AV	8,781	160	453	4.6	1,842.1	1,842.1	1,842.1	0.0
AW	9,029	58	198	10.6	1,846.8	1,846.8	1,846.8	0.0
AX	9,272	70	234	9.0	1,851.7	1,851.7	1,851.7	0.0

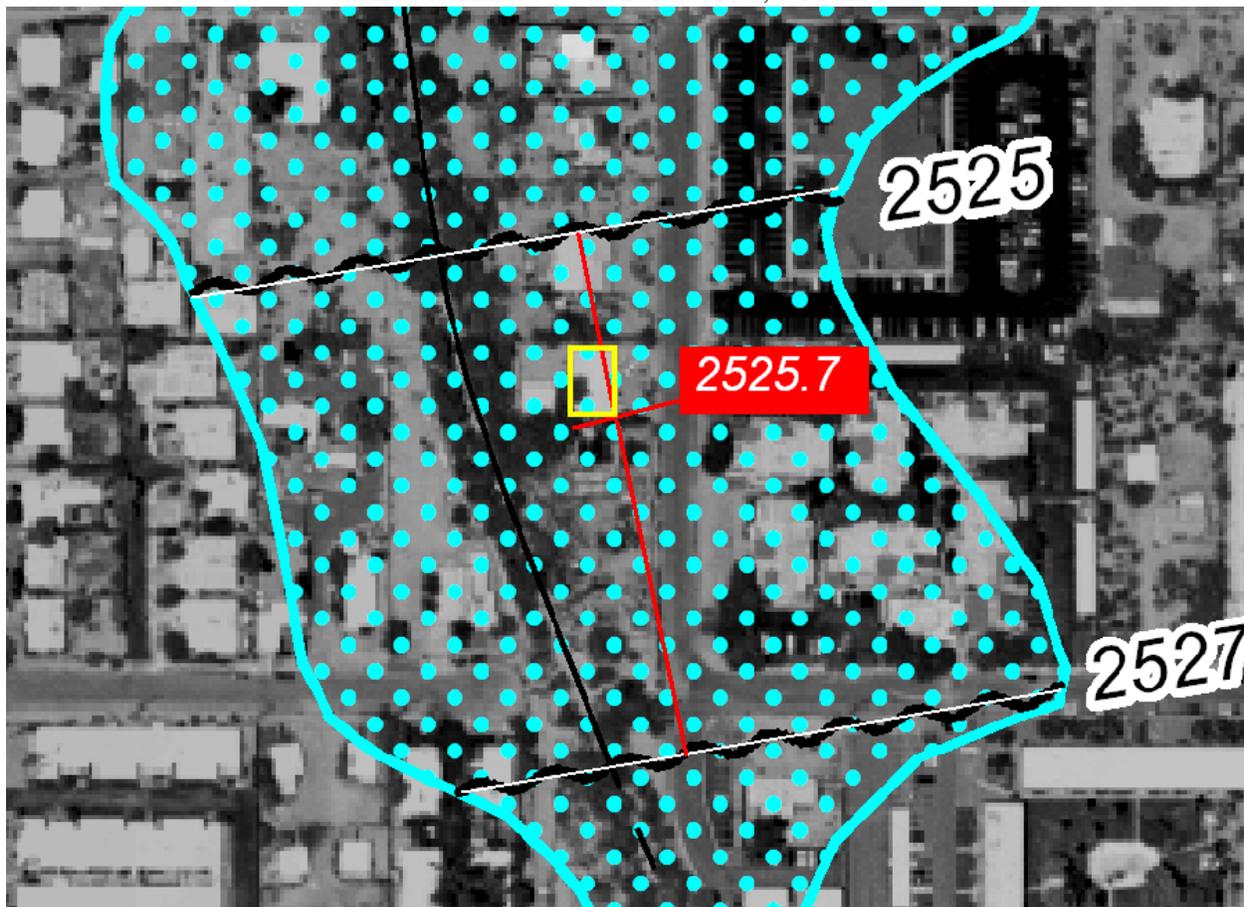
¹Feet above Rasmussen Road

TABLE 8	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	PIMA COUNTY, AZ AND INCORPORATED AREAS	
		GIBSON ARROYO

For Zone AE floodplains that do not have cross section information on the FIRM it is best to determine the BFE from the flood profile found in the FIS rather than making interpolations from the BFE contours on the FIRM. If cross sections exist, but there is no floodway data table, ask your local floodplain management agency for the cross section information.

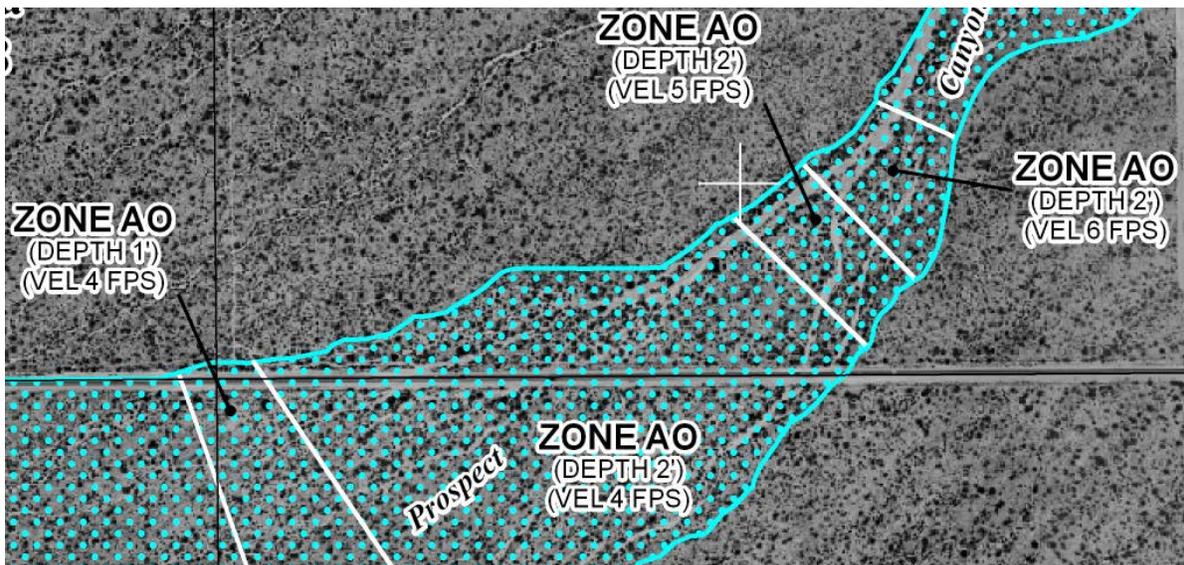
For Zone AH floodplains, there is no flood profile or floodway data table. The BFE is interpolated from the BFE contours shown on the FIRM panel. In Figure 3, white lines are drawn in the middle of the wavy BFE contours. Then a profile line (red) that intersects the most upstream portion of the structure is drawn perpendicular to those contours. Next, a red line is drawn perpendicular to the red line that intersects that portion of the residence furthest upstream.

Figure 3 - Profile line drawn in AH flood zone.
BFE determined to be 2525.7 feet, NAVD-88.



For Zone AO floodplains, obtaining a LOMC document to remove a structure or a property from the floodplain can be very difficult. The Zone AO floodplain is an approximated floodplain with average depths of flow of 1, 2, or 3 feet used instead of BFEs. There are two types of AO designations, sheet flooding and alluvial fan sheet flooding. Alluvial fan AO zones have average flow velocities associated with them (see Figure 4). The base flood depth within Zone AO is measured from highest adjacent natural grade. Since flood depths are measured from natural grade, a structure cannot show that the ground is above the flood depth without the placement of fill a LOMR-F must be used. However, the National Flood Insurance Program (NFIP) regulations do not allow for the use of fill as a means to remove a structure from an alluvial fan Zone AO floodplain (44 CFR § 65.13.b) due to the uncertain flow characteristics of this type of floodplain. This is the main reason why it is very difficult to obtain a map revision in an AO Alluvial Fan.

Figure 4 - Zone AO Alluvial fan, shown on the FIRM panels, have average velocities (VEL) listed as well as depth of flooding. FPS indicates feet per second during the regulatory event.



3) Determining the appropriate Map Revision product

There are several map revision options available from FEMA.

LOMA A LOMA is a Letter of Map Amendment. It is the simplest method to remove a structure, property or a portion of a property from the SFHA. There is no fee for a LOMA and approvals may occur within 30 days if the application is complete. There are two types of approvals. If a structure is within the SFHA, an acceptable application will result in a FEMA document entitled “LOMA Removed”. If a structure is more than 30 feet from the SFHA, and confirmation from FEMA is necessary, the submittal of an acceptable MT-1 form application will result in a LOMA “Out-As-Shown” designation.

The District does not recommend property owners submit for a LOMA to remove only a portion of a property from the SFHA. A “metes and bounds” legal description of an area removed can be difficult to illustrate on a FIRM panel which can create problems with lenders determining if flood insurance is required or not.

eLOMA - eLOMA is an electronically submitted Letter Of Map Amendment. It is the same process as a LOMA except everything is submitted electronically by a surveyor or engineer who is registered with FEMA to do so. The processing time for an eLOMA is faster than the regular LOMA process. The eLOMA process can be found at www.hazards.FEMA.gov.

LOMC Online

If a homeowner has all the necessary information to apply for a LOMA, it may be possible to submit that information online through FEMA's online process. For more information, go to www.FEMA.gov and type in "Online LOMC" in the search window.

LOMR-F A LOMR-F is a Letter of Map Revision Based on Fill, which may be used if a structure or property is elevated on fill and the top of the fill and the lowest floor of the structure are at or above the BFE. The fill must meet the requirements of NFIP regulations as outlined in 44 CFR § 65.5. LOMR-F applications require a community official from the local floodplain management agency to acknowledge the presence of the fill in the floodplain. The community may require engineering certification that the fill meets the compaction and other requirements of federal code as well as local floodplain management requirements. In Zone AO floodplains, it is difficult for surveyors to certify a home or area has been elevated above natural grade after construction if no survey benchmarks were created before construction disturbed the area. A property owner wishing to use the LOMR-F to remove a future structure from a Zone AO floodplain should have a surveyor create a pre-disturbance benchmark to facilitate the LOMR-F post construction survey. LOMR-F submittals are made using FEMA's MT-1 forms; review fees vary depending on how many properties are involved with the application. Please note that significant fill encroachments into floodplains may not qualify for a LOMR-F application. Property owners with large encroachments that modify the floodplain will need to apply for a LOMR with FEMA to change the floodplain designation. **Note: The National Flood Insurance Program (NFIP) regulations do not allow for the use of fill as a means to remove and area from an alluvial fan floodplain (44 CFR § 65.13.b).**

LOMR - A LOMR is a Letter of Map Revision, a full map revision that creates a new floodplain boundary. Depending on the process, the new floodplain may include base flood elevations, multiple flood profiles, and floodway delineations. A community acknowledgement form signed by the local community must be submitted with a LOMR. Local communities use this process to review the LOMR for accuracy and completeness, so it is important for engineers to coordinate with the local floodplain agency. LOMRs must be submitted by registered civil engineers. The District will provide FIRM data projected and in either ESRI or AutoCAD formats to assist engineers in providing spatially projected work map data. LOMR submittals are made using FEMA's MT-2 forms. The LOMR process takes several months to complete. and review fees depend on the type of LOMR.

III. Additional Information to Consider

There are several important issues to keep in mind.

- "Lowest Adjacent Grade" on the Elevation Certificate means the lowest ground elevation adjacent to the structure. If the lowest adjacent grade is below the BFE, FEMA will deny the LOMC because the floodwaters will touch some portion of the structure.
- "Lowest Floor" on the Elevation Certificate includes the lowest elevation of enclosed crawl spaces, sunken rooms, basements and enclosed attached garage floors. Even if the lowest adjacent grade is above the BFE, if the Lowest Floor is below the BFE, FEMA may not issue a LOMC.
- Fill may require encroachment analysis. Local floodplain agencies can provide further direction on this issue.
- Floodways are areas in the SFHA that are reserved for the conveyance of floodwaters during major flood events. LOMA and LOMR-F submittals in floodways require community acknowledgment from the local floodplain management agency and applicants may be required to submit additional engineering analysis. FEMA requires that communities verify the fill will not increase regulatory water surface elevations. A community may be suspended from the NFIP if it fails to monitor development in the floodway. A suspension means the community may not receive disaster assistance for damages that occur in identified Special Flood Hazard Areas, flood insurance through the NFIP will not be available to residents, and home lending processes for property in Special Flood Hazard Areas will be affected.

- FEMA sometimes uses the term “Regulatory Flood.” This is the flood that creates the high risk areas known as Special Flood Hazard Areas (SFHA) on the FIRMs. These flood hazard zone designations all start with the letter “A”. Because the Regulatory flood has a one percent chance of occurring any given year, it is commonly referred to as the 100-year flood.
- In the state of Arizona the term “Regulatory Flood Elevation” can be confusing. FEMA refers to the regulatory water surface elevation as the elevation of the regulatory event (commonly referred to as the 100-year flood). Arizona Revised Statutes refer to the regulatory flood elevation as the water surface elevation of the base flood plus one foot (A.R.S. § 48-3601.11). Because this document refers specifically to FEMA’s SFHA floodplains, the regulatory elevation is the calculated elevation shown on the FIRMs without the additional one foot required for building construction required by the state statutes.
- An alluvial fan is a geologic formation of alluvium or sediment that has formed downstream of a concentration point such as the mouth of a mountain canyon. Flooding on alluvial fans is characterized by high-velocity flows, active erosion, sediment transport and deposition, and unpredictable flow paths. Alluvial fan flooding is depicted on a FIRM as Zone AO, with average flood depths and velocities. It is more difficult to obtain map revisions on an alluvial fan.

General Information on Flood Insurance

- Your property may be at risk from flooding even if it is not in a SFHA. Between 20 and 25 percent of all flood damage claims occur in areas outside of SFHAs.
- Nationally, there is a 26 percent chance of a home being flooded during the life of a 30 year mortgage.
- Flood insurance can be purchased for structures outside of SFHAs and is cheaper, due to the lower risk of flooding.
- Structures within an SFHA are six times more likely to be flooded than damaged by fire.

Local Floodplain Management Agencies

The City of Tucson

County-City Public Works Center
201 N. Stone Avenue, 1st Floor
Tucson, AZ 85701
Phone (520) 791-5609

Unincorporated Pima County

Pima County Regional Flood Control District
Floodplain Management Division
97 E Congress St., 3rd Floor
Tucson Arizona, 85701-1797
Phone (520) 724-4600

The Town of Oro Valley

Department of Public Works
11000 N. La Canada
Oro Valley, AZ 85737
Phone (520) 229-4818

City of South Tucson

Planning and Zoning Department
1601 South Sixth Street
South Tucson, Arizona 85713
Phone (520) 917-1563

The Town Sahuarita

Public Works
375 W. Sahuarita Center Way
Sahuarita, Arizona 85629
Phone (520) 344-7100

The Town of Marana

11555 West Civic Center Drive
Marana AZ, 85653-7090
Phone: (520) 382-2600

FEMA LOMA and LOMR forms can be obtained at: <http://www.fema.gov/forms>