Development Services / deveng@maranaAZ.gov
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APPLICATION CHECKLIST — FLOODPLAIN USE PERMIT

SUBMITTAL REQUIREMENTS

❑ Completed Floodplain Use Permit Application

❑ **Note:** If there are any questions regarding the submittal requirements or if an in-person meeting would help with the submittal process please contact Development Services.

❑ Owner authorization letter or Owner/Applicant Authorization Form if applicable

❑ Permit fees, due at time of submittal (see comprehensive fee schedule)

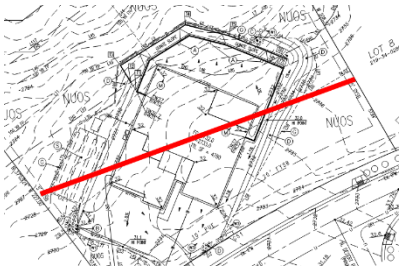
❑ Separate Permits are required for each constructed structure, improvement, and significant drainage alterations.

❑ Simplified Drainage Statement that includes:

NOTE: If the work area is fully stabilized with an impermeable surface (Proposed or Existing) contract Development Services to determine if the Drainage Statement is required.

NOTE: If the project includes a drainage report as part of the improvement package, this information can be included in the report, in its own section, for quick reference at the permit review.

- Brief description of the property and the designed method of elevating the structure above the FEMA, local, or platted flood hazard area.
- The FEMA map panel number, the map effective date, and the FEMA Special Flood Hazard Area zone(s) the project is located within.
- The existing average slope of the property in the direction of regional flow, measured through the area where the proposed structure or fill pad will be located. The slope line needs to be extended upstream and downstream to the property line or 100 feet (if less justify the distance) of the structure. Provide the calculations for the slope in a reproducible manner, see the sample on the right.



- Determine the upstream water velocity using PC-HYDRO (https://pchydro.rfcd.pima.gov/) and PC-SCOUR TR (https://www.pima.gov/1745/PC-SCOUR), Hydraulics tab. Alternative methods are acceptable. Provide results or printouts so the calculations can be reviewed.
- 17-15-10(B)(2)(e), include the following calculation: dv^2(depth times velocity squared), if the value exceeds 18 refer to the note below.

  NOTE: If the DV^2 calculation exceeds 18 it will not prevent the issuance of the permit. It only means a professional engineer will need to provide a sealed design to protect the structure from flooding, contact Development Services with any questions.
- 17-15-10(B)(2)(f), If the water velocity is 2 feet per second or greater then the maximum anticipated scour depth needs to be calculated for all sides of the Method of Elevation(MOE) that exceeds 2 feet per second. The depth can be calculated using PC-SCOUR TR. Alternative methods are acceptable. Provide results or printouts
- List of references used in the statement, the following PCFCD tech Policies are accepted by TOM:
  - PCFCD Tech Policy -003: Minimum Construction Requirements for Manufactured Home Foundations in Floodway/Fringe Areas.
  - PCFCD Tech Policy-006: Erosion Protection for Fill Pads in Regulatory Floodplains
  - PCFCD Tech Policy-014: Erosion Protection of Stem Walls Foundations in Regulatory Floodplains.

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❑ Site Plan - The following information must be identified, labeled, and shown on the site plan. (The items on this checklist can be included on the plans for the T1 permit (Minor Grading permit), Improvement plans (ENG), and Development Plan Packages (DPP), or submitted as an independent document, a single sheet is requested. (If the items on this checklist are included on the T1, ENG, or DPP we request that they be shown on a single sheet so that the entire plan set does not need to be submitted with the Floodplain Use Permit.

- Property/Lot lines
- North Arrow, drawing scale, and elevation datum.
- Existing contours at min of one-foot intervals with labels, 50 feet beyond the property boundary
- Drainage features or facilities – including flow arrows, washes, swales, channels, drainage details, etc.
- 100-yr floodplain lines, 100-yr floodprone lines, platted flood and erosion hazard lines, FEMA flood zone(s), and erosion hazard setbacks for regulatory (50 cfs or greater) drainage ways
- Tortolita Fan active soil boundaries.
- Grading Limits
- Existing and proposed structures – including buildings, fences, walls, wells, tanks, irrigation, cargo containers, recreational vehicles and travel trailers (RV's per MTC 17-15-10(G)), site improvements, etc.
- Identify the total area in square feet of buildings.
- Fill Pads
  - The top of the fill pad shall extend at a minimum, 15 feet outward from all sides of the structure unless a study/analysis prepared by a Civil Engineering recommends a lesser distance (MTC 17-15-10(B)(3)(h). The length of the slope cannot be included in the 15 feet.
  - Label or identify the top and bottom of the slope.
  - All slopes steeper than 3:1 shall be protected
    - Slopes 3:1 or shallower shall be revegetated (or use clean landscape rock)
    - Slopes steeper than 3:1 but shallower than 2:1 shall be covered with rock riprap over engineered filter fabric(Mirafi 180 N or approved equal).
    - Slopes 2:1 and steeper shall have grouted riprap, earth retaining walls, or retaining walls as appropriate.
- Fences and Walls (17-15-9)
  - Fence Obstruction - Fences with holes equal to or smaller than a typical chain link fence.
  - Fences and walls that can be obstructed preventing water from passing through shall be elevated to the base flood elevation, or;
  - Have 50% open area to allow flood waters to pass through the base of the wall, or;
  - Fences placed on the property line shall not impact adjacent property owners (MTC 17-15-5(A) & MTC 17-15-9 (E)(3), it is recommended to set fences 15 feet from the property line or provide analysis that the fence will not impact the adjacent owner.
- Storage of materials
- Flood-proofed elevation in relation to the datum, (non-residential structures only)

❑ Detail sheet

- Cross sections as required.
- Sections for utility crossings if scour applies to the project or provide the following note on the plan "UTILITES SHALL BE BURIED A MINIMUM DETPH OF THE UTILITY MINIMUM PLUS THE CALCULATED SCOUR DEPTH OF ___FEET."
- Modular Homes – a copy of State of AZMH details used on the project.
- Single family residential – Stem walls, Engineered fill pads, flood-vented stem walls, piers, etc.

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❑ Plan Notes - The following information must be provided on the cover sheet, if applicable
- Basis of elevation, including elevation datum with conversion factor between NGVD & NAVD
- Identification and elevation of the benchmark used
- Description of stabilization, erosion, and drainage control measures.
- Calculate venting requirements when stem wall/crawl space construction (1 sq. in per 1 sq ft of enclosed area).
- Manufactured Homes with break-away skirting only, not required to add venting for flood water.
- Materials for skirting and tie-down requirements (Factory Built Structures only)
- "Owners will hold the Town of Marana, its successors and assigns, harmless in the event of flooding."
- "Drainage will not be altered, disturbed, or obstructed without the approval of the Marana Town Council."
- This project requires a FEMA Elevation Certificate completed by AZ licensed Land Surveyor or Civil Engineer
- As-built certificate completed by an AZ licensed Civil Engineer.

❑ Method of Elevation
- Definitions
  - RFE – Regulatory Flood Elevation, the regulatory flood elevation is base flood elevation or depth of sheet flooding plus the state-required freeboard of 1 foot.
  - HANG - The Highest Adjacent Natural Grade or the highest natural elevation of the ground surface, before construction next to the proposed walls of a structure.
  - Finish Floor Elevation – The top of the finished concrete slab, typically at the main entrance to the primary dwelling.
  - Lowest Floor Elevation - The top of the finished concrete slab, typically measured at the corner of the garage door.
- Measurement
  - AO zones – Elevated to the Regulatory Flood Elevation (RFE) as measured from the Highest Adjacent Natural Grade (HANG).
  - AE zones – Elevated to the RFE as measured from the calculated water surface elevation.
  - A zones – Contact development services for criteria.
- HANG – Grades shall be shown at all major corners of the structure, the highest grade needs to have the label "HANG" and will be the elevation used to set the RFE.
  - If special conditions exist on the site please contact Development Services to discuss the conditions to prevent delays in the permit review.
- Structures
  - Site-built structures – Lowest finish floor elevated to the RFE
  - Modular Structures – The lowest structural frame member shall be elevated to the RFE.
  - Cargo container (used for storage) – Bottom of container elevated to the RFE or flood vented.

❑ Certification by an Arizona registered professional civil engineer or architect that the flood-proofing standards (local and FEMA) for any nonresidential structure meet the flood-proofing criteria, if applicable.

❑ Required base flood elevation data for all subdivisions, if applicable

❑ Description of the extent to which any watercourse will be altered or relocated as a result of proposed development, if applicable

❑ Items required or permitted as part of state standard SSA 6-05 (Development of Individual Residential Lots Within Floodprone Areas), if applicable

FOR OFFICIAL USE ONLY **Permit No.**_____ **Date Received**_____