

No Rise Checklists

This checklist is NOT REQUIRED. This is supplemental information to assist with the No-Rise review process.

Administrative Checklist: Helpful for those reviewing a no-rise analysis submitted as part of a floodplain development permit application, without going into technical depth.

1D & 2D Checklists: Helpful for those reviewing a no-rise analysis and going into the technical aspects of the submittal. Choose the checklist that corresponds to the model type, 1D or 2D.

Please ensure you are checking the latest FEMA Floodway Guidance Documentation as a part of this check. It can be found at [FEMA.gov](https://www.fema.gov). Also check with your local community for any local regulations and guidance.

Administrative Checklist

Date:	
Technical Review By:	
Flooding Source:	

Comment #	Question or Direction	Definition	Pass/Fail	Comments
No Rise Specific Checks				
1	No-Rise Certification Included and sealed/stamped?			
2	Narrative Provided?	Does it include statements defining data sources and explanation of land use?		
3	Are all required models provided?	Effective, DE, CE, Existing, Proposed?		
4	Annotated FWD, FIRM and Profile provided when applicable?			
5	Certified survey and proposed design plans submitted?	Survey data with the certification of a PE or a Professional Surveyor and design plans certified by a PE		
6	Topographic workmap proved? Is it signed and sealed by a PE? Do we have the digital format of the topographic workmap?	Digital format can be in any of the following forms a dgn, dwg or ArcGIS shape files with contours, cross sections, roadway alignments, proposed bridge, etc..		
General Checks				
7	Does the computer program used for hydraulic and hydrologic modeling approved by FEMA?	The list of models approved by FEMA can be found at www.fema.gov/fhm/en_modl.shtml		
8	What model version was used?			

If you are unsure you have the capacity or technical expertise to review the remaining no rise analysis tabs, you can request technical assistance from the FEMA regional office or request that the proposed project is submitted for review through FEMA's CLOMR application process.

A deficient No Rise analysis discovered during the LOMR or Study process may result in a Violation

1D Checklist

	Date:			
	Technical Review By:			
	Flooding Source:			
Comment #	Question or Direction	Definition	Pass/Fail	Comments
No Rise Specific Checks				
1	No-Rise Certification Included and sealed/stamped?			
2	Narrative Provided?	Does it include statements defining data sources and explanation of land use?		
3	Are all required models provided and documented?	Effective, DE, CE, Existing, Proposed?		
4	Annotated FWD, FIRM and Profile provided when applicable?			
5	Certified survey and proposed design plans submitted?	Survey data with the certification of a PE or a Professional Surveyor and design plans certified by a PE		
6	Topographic workmap proved? Is it signed and sealed by a PE? Do we have the digital format of the topographic workmap?	Digital format can be in any of the following forms a dgn, dwg or ArcGIS shape files with contours, cross sections, roadway alignments, proposed bridge, etc..		
General Checks				
7	Does the computer program used for hydraulic and hydrologic modeling approved by FEMA?	The list of models approved by FEMA can be found at www.fema.gov/fhm/en_modl.shtm		
8	What version of model (HEC-RAS, etc.) was used for this submission?			
Hydrology Checks				
On y required if not using effective hydrology				
9	Does the flow used in the hydraulic model match with the Hydrology flow distribution table?	If new hydrology analysis has been done. If no change to hydrology, compare FIS Qs with model Qs.		
10	Are the 1-percent-annual chance flows identical for both multiple & floodway models?			
11	Are discharges increasing as they move downstream?			
12	What is the starting boundary condition of the model & whether it's reasonable?	DS BC should be Known WSEL if tie-in to effective. Known WSEL should be different for 100YR and 100YR FW.		
13	Does the steady flow file include both Floodway and Multiple Profiles if the effective does?			
Hydraulics General				
14	Does the model run (both multiple and floodway analysis)?			
15	Does the model include DE, CE, Existing, Revised plans?			
16	Cross-sections should not intersect with each other and are spaced reasonably?	Review both Geometric Data and map, Do cross sections need to be added to account for large changes in conveyance, should be closer together for steep slopes		
17	Does any cross-section intersect the stream centerline more than once?			
18	Do any cross sections intersect the stream at an angle greater than 30 degrees? If so, is the skew angle correct?			
19	Make sure your bank stations are containing your stream centerline in the geometric window from HEC-RAS. s the stream centerline within the floodplain?	Review both corrected and revised plans.		
20	Is the water surface elevation higher than cross section end points?	review for any vertical walls or areas where XS should be extended		
21	Geo-Referencing; for any effective model which has been georeferenced, georeferenced all new cross sections which have been added to the models. Make sure outline length in the geometric data matches the cross-section length (r value of 1.0)	Review both Existing conditions/CE and Proposed/As-build plans		
22	Manning's "n" changes should be justifiable and stated in the project narrative.			
23	Does the project involve any sediment transport, coastal or alluvial fan issues?	For detailed analyses use respective checklist if necessary		
24	Are reach lengths correct?			
25	Check profile to ensure channel bed is reasonable and no crossing profiles or hydraulic jumps/dips.			
26	Are there any overflow or shallow flooding areas? If so, has any backup hydraulic analysis (as per Appendix E of Guide & Specs) for the shallow flooding area been provided?			
27	Is the hydraulic analysis provided for the shallow flooding area sufficient?			
28	Are there any lakes or ponds analyzed and mapped, which not included in the submitted model?			
29	Are all the model error messages (e.g., Check-RAS) resolved or justified?	If HEC_RAS (attach Check-RAS output)		
30	Do modeled flood depths, WSEL and velocity make sense?			
31	Are the proposed designs and existing survey incorporated correctly?			
32	Are there no changes between the existing and proposed conditions analysis aside from the proposed project alterations?	No other parameters should be changed aside from the project area adjustments		
33	Are there any major modeling issues/problems?			
34	There's no increase in BFE from existing conditions to proposed conditions?	If this is a yes, no-rise is invalid		
Hydraulics Structures				
35	Are bridges/culverts correctly modeled?	Structures not changing should be consistent throughout all plans—unless the water surface elevations are such that they produce a different flow condition through the structure. If a different flow condition is seen and adjusted for in the modeling, then it should be discussed in the project narrative.		
36	What method is used for bridge analysis?	Generally, be conservative and run "Momentum" as well as "Energy" for low flow and check "Use Highest Energy Answer" for Low Flow Methods. For high flow methods, generally check Pressure and/or weir.		

Comment #	Question or Direction	Definition	Pass / Fail	Comments
37	For structures in the project area, verify that the Max Submergence is consistent between all plans (should be around 0.98)	Note if there are any changes between the plans		
38	The Structure Data (deck width, low chord, roadway grade, culvert inverts, chart/scale, coefficients, etc.) in the hydraulic model should match the data shown on preliminary plans, as-builts, survey data or effective model			
39	Ineffective areas; make sure up and down stream act together on either side of bridge i.e.) being either effective or ineffective (together).			
40	Are there justifications for ineffective flow or blocked areas?	If used in the model		
41	Are the contraction/expansion coefficients correct?	Should be 0.1/0.3 throughout the stream and 0.3/0.5 around structures		
42	Are the modeled Levees certified by NFIP (65.10)?			
43	For areas where levees are shown on effective FIRM, has any analysis been provided for With & Without Levee conditions?	If there is any levee –for detailed levee analyses use the levee checklist		
	Hydraulics Floodway			
44	Is the Starting Water Surface Elevation for floodway run within 1-foot surcharge limit?			
45	Are there any surcharges greater than 1.0 foot in the floodway analysis?			
46	Are there any negative surcharges (except for right at structures)?			
47	Encroachment station placement should tie-in with the effective model stations at the upstream and downstream cross section in any truncated model.			
48	Encroachments contained by the 100-yr floodplain boundary, outside of bank stations and not placed in the ineffective flow areas, etc?			
	Mapping			
49	Does the model's stationing match with the cross-section shape file river stationing?	A quick check of the model and topographic workmap contours.		
50	Does hydraulic model extend beyond the limits of scope? Does the proposed floodplain/floodway extend beyond the limits of the model?			
51	Do the map cross sections encompass the floodplain?	Are the cross sections long enough or do they cut the inundation boundary short?		
52	Do the WSE in the map match with the model?			
53	Are floodplain/floodway boundary lines smooth and generally follow channel?			
54	Does the model tie-in at the upstream and downstream ends of the limits?	Does the proposed mapping fall within 10% of the width of effective mapping?		

2D Checklist

Date:				
Technical Review By:				
Flooding Source:				
Comment #	Question or Direction	Definition	Pass / Fail	Comments
No Rise Specific Checks				
1	No-Rise Certification Included and sealed/stamped?			
2	Narrative Provided?	Does it include statements defining data sources and explanation of land use?		
3	Are all required models provided and documented?	Effective, DE, CE, Existing, Proposed?		
4	Is use of 2D appropriate?	If the effective model was 1D, does it make sense to switch to 2D?		
5	Annotated FWD, FIRM and Profile provided when applicable?			
6	Certified survey and proposed design plans submitted?	Survey data with the certification of a PE or a Professional Surveyor and design plans certified by a PE		
7	Topographic workmap proved? Is it signed and sealed by a PE? Do we have the digital format of the topographic workmap?	Digital format can be in any of the following forms a dgn, dwg or ArcGIS shape files with contours, roadway alignments, proposed bridge, etc..		
General Checks				
8	Does the computer program used for hydraulic and hydrology modeling approved by FEMA?	The list of models approved by FEMA can be found at www.fema.gov/ihm/en_modl.shtml		
9	What model version was used?			
Hydrology Checks				
		Only required if not using effective hydrology		
10	Is this a rain on grid model? If it contains inflows from a separate model or from a 1D portion of the model, a separate review should be performed.	If new hydrology analysis has been done. If no change to hydrology, compare FIS Qs with model Qs.		
11	Correct rainfall depth used as input to the model?			
12	Is the rainfall duration appropriate?			
13	Was the appropriate temporal distribution of rainfall used in the model?			
14	Was the loss rate estimate correct?			
15	Was controlled storage defined and modeled appropriately?			
16	Does the flow used to perform hydraulic model correspond with the effective flows?			
Hydraulics Checks				
17	Does the model run?			
18	Does the project involve any sediment transport, coastal or alluvial fan issues? For alluvial fans, coordination with the Regional office is required for floodways with XP-2D or FLO-2D			
19	Are the modeled levees certified by NFIP (65.10)? Are they modeled appropriately?			
20	Does the model use terrain data at least as current as the current effective study and meet FEMA topo standards?			
21	Is the grid development correct?			
22	Is the cell size appropriate?	Is the grid refined enough to capture changes at the proposed project area?		
23	Are breaklines and refinement regions added and enforced where necessary?	Urban areas should have smaller cell sizes. Check roads, levees, dams, thalwegs are represented accurately		
24	Are the boundary conditions appropriate?	Refer to FEMA guidance to verify what is appropriate. Should have rain-on grid and/or inflow + outflow		
25	Are the outflow locations and conditions appropriate? Is water "piling up" at the mesh boundary without an outflow allowing the flow to leave the system?	Refer to FEMA guidance to verify what is appropriate		
26	Are there inflow locations in the model? What is the source of the inflows?			
27	Are the proposed designs and existing survey incorporated correctly?			
28	Are there no changes between the existing and proposed conditions analysis aside from the proposed project alterations?	No other paramters should be changed aside from the project area adjustments		
29	Are 2D Connections and any openings modeled correctly? If they used terrain modifications, are they in accordance with project guidance and are reasonable?	Does the width of the modification reasonably coincide with the opening of the structure (bridge/culvert)?		
30	Are 2D Connections and any openings supported with as-builts or survey data?			
31	Are the Manning's 'n' values developed and documented appropriately? Were they adjusted for calibration (or limiting Froude number)?			
32	Are the initial conditions appropriate?	Refer to FEMA guidance to verify what is appropriate		
Hydraulics (FLO2D and XP 2D)				
33	FLO2D: ARF/WRF XP-2D: Blocked areas Are these modeled appropriately?	Verify use of ARF/WRF is in accordance with FEMA guidance		
34	FLO2D: NOFLOCS Are these used correctly?			
35	FLO2D: Are any cells "turned off" or set artificially high for nonconveyance?			
36	FLO2D: If street features are used, are they modeled appropriately?	Refer to FEMA & FLO2D guidance to verify what is appropriate and accurate modeling for these features		
37	XP-2D: Is the 2D inflow capture at the 1D nodes modeled appropriately?	Refer to FEMA guidance to verify what is appropriate		
38	FLO2D: Was the limiting Froude Number Used			
Model Calculations				
39	Is the mass balance reasonable?	Is the volume accounting error less than 2-3%? (see computation log file)		

Comment #	Question or Direction	Definition	Pass/Fail	Comments
40	Are there any obvious oscillations, instabilities, or cell errors?	Are all water-surface elevation convergence warning messages acceptable per computation tolerances? Errors should not exceed 0.2 feet. (see runtime messages)		
41	Are depths, velocities, water surface profiles, stage hydrographs reasonable?	Velocities should be <25 fps, hydrographs should peak, run long enough to return to at least 50% of peak value and be smooth		
42	There's no increase in BFE from existing conditions to proposed conditions?	If this is a yes, no-rise is invalid		
43	Id the method for developing the model calibration documented and appropriate (if applicable)?			
Hydraulics Floodway				
44	Is the Starting Water Surface Elevation for floodway run within 1-foot surcharge limit?			
45	Floodway surcharge values must be less than or equal to 1.0 foot. If the state (or other jurisdiction) has established more stringent regulations, these regulations take precedence over the NFIP regulatory standard	Further reduction of maximum allowable surcharge limits can be used if required or requested and approved by the communities impacted		
46	Surcharge along elevation lines must be within 0 to 1-ft, cannot be negative			
47	Encroachment placement should tie-in with the effective model at the upstream and downstream cross section in any truncated model.	Refer to FEMA Floodway Guidance Document detailing Contiguous Community Matching		
48	There's no increase in FW WSE from existing conditions to proposed conditions?	If this is a yes, no-rise is invalid		
Mapping				
49	Does hydraulic model extend beyond the limits of scope? Does the proposed floodplain/floodway extend beyond the limits of the model?			
50	Are the evaluation lines correctly drawn?	Refer to FEMA Floodway Guidance		
51	Do the WSE in the map match with the model?			
52	Are floodplain/floodway boundary lines smooth and generally follow channel?			
53	Does the model tie-in at the upstream and downstream ends of the limits?	Does the proposed mapping fall within 10% of the width of effective mapping?		