Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 1 - Introduction	1.2	Travis Tyboroski (JAECO)	Section 1.2: the manual "neither replaces the need for sound engineering judgment, nor precludes the use of information not presented". Specific examples to the contrary include the explicit exclusion of the modified rational method and frustratingly the limitation of HGL to the crown of pipe.	This language has been updated, as it was not intended to introduce other methods.
Chapter 1 - Introduction	1.8 Definitions	Suzanne Harris (Home Builders Association)	Need a definition for “concentrated flow” as it’s referenced multiple places in the manual. For example, any downspout, regardless of captured roof area, is currently being considered “concentrated flow”. This is much too broad for use in engineering practice.	We will be using the following definitions for concentrated flow - (a) Section 2.1 now defines it for the Lot Grading Plan. (b) Chapter 3 refers to shallow concentrated flow as defined by NRCS TR-55. (c) the reference to concentrated flow was removed from Chapter 4 (d) In Chapter 5 the term "concentrated runoff" is used and a reference to the buffer rules has been added. (e) references to concentrated flow were removed from Chapter 6. (f) concentrated flow is defined in Chapter 7 for the context of the Downstream Discharge Permit.
Chapter 1 - Introduction	1.8 Definitions	Suzanne Harris (Home Builders Association)	Need a definition for “disturbed area”. Staff currently interpret driving on a concrete driveway to demolish a structure as disturbed area. It's not, it’s still concrete.	Limits of disturbance are defined in detail in Section 8.2.1.
Chapter 1 - Introduction	1.8 Definitions	Travis Tyboroski (JAECO)	The definitions are a little thin, but I understand this may be a "less is more" situation.; teset	Noted.
Chapter 1 - Introduction		Hunter Freeman (McAdams)	Under permit information / exempt requirements, I suggest revising the language to: "These impervious surface limitations may be exceeded if runoff is properly managed with with constructed stormwater controls or adequate engineering studies are prepared by a qualified licensed professional as described in the UDO and in Chapter 5." Under traditional stormwater requirements " Typically, the development will need to construct one or more stormwater control measures (SCM) to meet those requirements." Underlying Regulations: The City of Raleigh's NPDES MS4 Permit	The document has been updated.
Chapter 1 - Introduction		Keri Hamlin (Citizen)	The manual IS READ and reviewed by non- professionals who are land owning citizens in Wake County/ City of Raleigh. Please ensure the manual is written in a manner that makes the information accessible to a wide audience. For example: runoff rate compliance standards are of great importance to adjoining land owners!!	Most of the chapters do not apply to single family properties adding things like decks or accessory structures. We have tried to make Chapter 1 accessible to a wide audience and Section 2.1 is applicable to single family properties and addresses runoff from infill development. Additionally, we have work planned for the Stormwater website to better explain regulations to a non-technical audience.
Chapter 1 - Introduction		Suzanne Harris (Home Builders Association)	More comments to come.	NA
Chapter 1 - Introduction		Suzanne Harris (Home Builders Association)	A. First look at SW Chapter 1 “This manual and its contents are fully incorporated into the City’s UDO under UDO Sections 1.1.12 and 9.2.1B and 9.4.2…” Then looking at the website cover page of the Engineering Services Department, see that “We manage the stormwater system”. The implication of these two statements is that the Building Permit Application will have to be substantially expanded or an additional permit will be required.	Raleigh Stormwater already conducts reviews of Building permits. For infill development of single family homes, we have added the requirements in Section 2.1 of this Manual. Applicable to development at all scales, we now have requirements for a Stormwater Conveyance permit. That permit can be obtained under a Building permit.
Chapter 1 - Introduction		Travis Tyboroski (JAECO)	Thank you for removing the planning “process” references; avoids unnecessary potential confusion if/when planning changes terminology.	Thanks. Yes, the names of specific submittals and other process items change frequently.
Chapter 1 - Introduction		Travis Tyboroski (JAECO)	The permit information, underlying regulation, and required reference summaries are an excellent addition!	Thanks.
Chapter 1 - Introduction		Vinicius Taguchi (Designer)	I'm glad to see that stormwater regulations extend to infill developments of less than 1/4 acre.	The stormwater regulations have applied to infill development since 2016. This is being strengthened with the Lot Grading Plan in Section 2.1 of the Draft Manual.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 2 - Site Development Requirements	2.1	Hunter Freeman (McAdams)	A statement to the effect of "LGPs are a simplified stormwater management report used for small projects. Larger site plans require compliance with Section 2.2 Stormwater Compliance Report"	Thank you for the suggestion. Some edits have been made to the appliability sections for LGP and SCR.
Chapter 2 - Site Development Requirements	2.1	Hunter Freeman (McAdams)	For the LGP, I suggest using the language that you used in the summary of revisions to clarify when an LGP is an option - "The Lot Grading Plan will now only be required for projects that fall under Exempt Property requirements in UDO 9.2.2.A or for other one- and two-unit dwelling projects." The language in the draft manual is confusing to me.	Section 2.1.1 has been updated to better clarify that it applies to projects not subject to the Fulll Stormwater Requiremnts.
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	Additionally, many of the SW chapter 2 requirements are redundant – but just different enough – to the Residential Permit Data Form that no one site plan can satisfy the requirements of both.	The Residential Permit Application and the Tier One Site Plan Checklist have been compared to the Lot Grading Plan requirements. The Stormwater Design Manuall contains the items that are necessary to conduct the stormwater review. This ensures that if Planning and Development were to change the Tier One Site Plan Checklist, the stormwater items would still be required. We will work with Planning and Development in 2024 in updating the checklist. That is on a different timeline because checklists do not require council approval.
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	B. SW 2.1 has equated the process of procuring a SFR building permit with a) being a development and b) a Site Plan for a development. Additionally, an LGP will be required for adding impervious surface and grading. This could result in requiring a Lot Grading Plan for a 4000sf existing lot.	The Lot Grading Plan can be submitted with a building permit. It does not create the need for a site permitting review (SPR) if one is not otherwise required by Planning and Development. The intent of the Lot Grading Plan is to address common stormwater issues without requiring an engineer to be hired. It is necessary to understand the proposed grading on a site. This impacts the LOD and in some cases the buffer and floodplain permits.
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	Summary: Chapter 2 and the concept of creating drainage codes is different from current impervious and zoning rules. The impervious rules and infill set back rules are defined and are mostly not subjective (ex: 38% plus 400sf). It will be difficult to create rules, define on a permit, and then enforce, based on the nature of single-family infill and existing conditions of the lot and neighbor. Will require almost all additions and new homes to: ●Have a as-built survey and full topography by a surveyor prior to plans ●Employee a site/civil engineer to design the plan ●Have a as-built survey and full topography by a surveyor after final completion ●Have the site engineer issue the SCR ●Potential have a recorded easement ●This will apply to any added impervious surfaces The negative impacts of this are: ●More trees removed and large disturbed areas to meet the grading demands ●Added cost, survey, engineering, landscaping cost ●Slow the permitting time down further and overburden an already understaffed permitting office. ●One added gutter downspout or any added impervious during construction could trigger a revised permit. ●If an easement is required for concentrated water discharge, the neighbors can deny that easement, if they accepted, the process of recording this would be time consuming.	Section 2.1.2 has been added to better define the requirements of the Lot Grading Plan. The Design Manual does not change the existing UDO Section 9.2.2.A which exempts certain developments from the Full Stormwater Requirements (UDO Section 9.2.2.B through H). The lot grading plan seeks to address other issues that that are being seen as part of infill development. In terms of what will be required: surveys are already required; the requirements are strctured so an engineer is not required; as-built surveys are already required; SCR will not be required for most single family, unless it is in a watershed overlay; options have been added instead of easements; the rules already apply to any added impervious. Also: we are not requiring grading; we are not requiring new survey or an engineer; our permitting office has been fully staffed for most of the past year - if you are having issues with review timelines not being met, please contact Sally Hoyt; added impervious has always had the possibility to trigger a permit revision; we have added 4 options other than an easement.
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	Overall the LGP requirements add costs to homeowners/developers for any addition of new impervious on a lot	Changes have been made to Section 2.1.2 in response to conversations with representatives of the Home Builders Association.
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	Per the comment responses, the City states the LGP can be performed by the homeowner or builder. I believe this to be a misleading statement as I highly doubt any homeowner, not in the design field, could accomplish this. There are probably some builders that could produce this, however this would certainly be a cost that would be passed onto the homeowner. This requirement is much too costly and broad and will subject homeowners to thousands of additional dollars for preparation and the review process, even if their patio project is only 5 SF.	Changes have been made to Section 2.1.2 in response to conversations with representatives of the Home Builders Association. If the revised requirements do not address this concern, please let us know.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 2 - Site Development Requirements	2.1	Suzanne Harris (Home Builders Association)	Whereas neither the SW Chapter 2 nor the Permitting staff of COR has addressed the application/integration of the SWv3 into the Residential Building Permit Process, the potential for confounding the permit process by two-fold remains in the interpretation of both the SW and the UDO as to the applicability of the SW to preexisting residential lots. Overtly incorporating UDO 9.2.2.A into SW 2.1 would go far in mitigating this lack of clarity. An overview of the permitting process shows the inefficiencies of the "silo" organization of the permitting process, this Chapter 2 accentuates that. The silo organization does not allow for sequential review flow or permit process administration.	Section 2.1 is built upon the exemptions created in UDO Section 9.2.2.A. If those exemptions did not exist, there would be no need for the Lot Grading Plan. The impervious cover limits in UDO Section 9.2.2.A.4 do not fully address the impacts of infill development. Thus, the criteria in Design Manual section 2.1.2 has been added. These process are not siloed - they will be evaluated by the same reviewer.
Chapter 2 - Site Development Requirements	2.1	Travis Tyboroski (JAECO)	Section 2.1: understand with the lot-to-lot drainage sensitivity we want to offset downspouts from traditional boundaries, but I'm not sure offsetting from a drainage easement accomplishes this. Wouldn't encroachment in fact be encouraged as to limit the overland flow from the downspout to a potential existing outfall?	This language has been removed.
Chapter 2 - Site Development Requirements	2.1.1	Suzanne Harris (Home Builders Association)	2.1. 1 LGP Applicability- I am not sure if they are referencing UDO 9.2.2. B-H correctly, below is the first part oc Sec 9.2.2	When we reference the Full Stormwater Requirements (UDO Section 9.2.2.B-H) we are referenced the requirements for the projects that do not receive exemptions per UDO Section 9.2.2.A.
Chapter 2 - Site Development Requirements	2.1.1	Suzanne Harris (Home Builders Association)	B.1 LGP 4th bullet point cites UDO 9.222B-H as exemptions from the LGP requirement. It is unclear that by not referencing UDO 9.2.2.A, that as the SW is a subset of the UDO, if this section is still applicable; if it is still applicable, then the impact of the SW for Building Permits is considerably mitigated.	Please see other responses.
Chapter 2 - Site Development Requirements	2.1.2	Suzanne Harris (Home Builders Association)	2.1.2 - The manual is encouraging the use of piping systems to connect to existing drainage infrastructure however, a 15" min. Pipe size is required in the ROW. Accommodations need to be made for smaller drainage to connect.	Chapter 2 is encouraging flow to be discharged to the ROW rather than to neighboring parcels, when possible. In terms of connecting to existing drainage infrastructure, please see Draft Manual Section 4.2.8 regarding connecting to conveyance systems in the City ROW. We will allow privately owned pipes under 15" to connect to City infrastructure. However, it will require a Stormwater Conveyance Permit so that City inspectors can inspect the connection.
Chapter 2 - Site Development Requirements	2.1.2	Suzanne Harris (Home Builders Association)	C. SW 2.1.2 This clause may well result in the need for civil engineering apart and different from the site plans, by surveyors, presently required for a SFR Building Permit.	The intention is the requirements could be met by a surveyor.
Chapter 2 - Site Development Requirements	2.1.3	Suzanne Harris (Home Builders Association)	D. SW 2.1.3 bullet point 13 references SW Chapter 2, Section 9. Currently, there is no Section 9.	This reference has been removed.
Chapter 2 - Site Development Requirements	2.1.3.	Suzanne Harris (Home Builders Association)	Section 2.1.3- Who decides what is practical and what if the existing flow pattern is harmful to the neighbors?	Explicit criteria have been added to Section 2.1.2.
Chapter 2 - Site Development Requirements	2.2	Suzanne Harris (Home Builders Association)	E. SW 2.2 Opening paragraph calls for a Stormwater Compliance Report (SCR) "Prior to the approval of any preliminary or permitting submittal…" for (as per) SW2.2.1 bullet 2 "Under 1 acre (one and two unit detached residential) …" As in SW2.1, this could result in a SCR for a 4000sf existing lot.	This language has been updated to clarify that the SCR is required only if the project seeks to exceed the established impervious limits.
Chapter 2 - Site Development Requirements	2.2 and 2.3	Suzanne Harris (Home Builders Association)	G. The balance of SW 2.2 and SW 2.3 is concerned with technical design, assemblies, and requirements.	No response.
Chapter 2 - Site Development Requirements	2.2.2	Suzanne Harris (Home Builders Association)	2.2.2 - Typo in first bullet, "Lager 1 acre…"	This has been corrected.
Chapter 2 - Site Development Requirements	2.2.2	Suzanne Harris (Home Builders Association)	F. SW 2.2.2 In both the opening paragraph and 2.2.2.1 the SCR is to be signed and sealed by a licensed/design professional. What kind of professional is not called out.	Based on State law, there are different designs that can be performed by different professions. These have been noted in specific chapters or requirements. When it is necessary to present work done by more than one professional, typically one professional will attach appendices containing work performed by other professionals that has its own cover.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 2 - Site Development Requirements	2.2.2	Travis Tyboroski (JAECO)	Section 2.2.1 and 2.2.2: an SCR including cost estimates at "preliminary" is excessive. Can certain sections be moved to only required at "construction"?	Yes, the cost estimate can be provided at permitting review. The text has been updated.
Chapter 2 - Site Development Requirements	2.2.2.12	Suzanne Harris (Home Builders Association)	2.2.2.12 - Cost estimates - Does this eliminate the O&M Cost estimate? Why is it required in the SCR?	City staff are currently debating whether the cost estimate will be in the SCR or the O&M Manual. It will only be required in one location.
Chapter 2 - Site Development Requirements	2.2.2.2	Suzanne Harris (Home Builders Association)	2.2.2.2.b.vi - Why is an SCR required with complying with the maximum impervious areas of UDO Sec. 9.2.2.A.4?	The SCR is not required in that situation. The language has been changed to clarify this.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	2.2.2.5.a.i - sentence is incomplete	The language has been updated.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	2.2.2.5.c.2.4 - SNAP reports volume in an annualized basis (not one particular storm event) and they have removed Storm-EZ from their website. The City might want to revisit their guidance on volume matching, or talk with a consultant who might be able to provide them with a copy of Storm-EZ pre-populated with Raleigh's P90 rainfall data so consultants have a tool to compute the P90 volumes.	Thank you. This comment will be fully addressed with Chapter 5.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	2.2.2.5.d.i.1 - I don't think POI was defined earlier	The term has been spelled out.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	5.b.ii - suggest revising to "List the maximum allowable impervious area (or allocation), and the existing and proposed impervious areas"	This change has been made.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	5.c - so the previous two requirements use Impervious Area, and 5.c uses BUA, is there any way to standardize these terms/calculations?	We have changed the language around the Nitrogen requirements to reflect the State's requirement to use the term BUA. We have chosen to continue using the term impervious in UDO Section 9.2.2.A, so that we do not need to retrain the many citizens and small builders who are subject to that section.
Chapter 2 - Site Development Requirements	2.2.2.5	Hunter Freeman (McAdams)	5.e.1 - you want the whole table in the SCR? Isn't this usually included on the site plan? Maybe just ask that the narrative mentioned the MISA/lot? On residential projects the table can be large.	Yes, we call for a table. In cases where many lots have the same limits, these are typically grouped into one line.
Chapter 2 - Site Development Requirements	2.2.2.5	Suzanne Harris (Home Builders Association)	2.2.2.5.c - Can we assign a rainfall to the 90th percentile, or at least a source?	This information will be provide on the City's website along with other rainfall data.
Chapter 2 - Site Development Requirements	2.2.2.8	Hunter Freeman (McAdams)	2.2.2.8.a - suggest revising to "Provide UDO references and justification for any floodplain fill proposed on the project". The current language of "indicate why" is inviting a lot of responses that might not have anything to do with the UDO :)	Language has been revised.
Chapter 2 - Site Development Requirements	2.2.2.8	Hunter Freeman (McAdams)	2.2.2.8.c - elaborate or rephrase. I think you're asking the applicant to specify if an elevation certificate is required.	Correct. Language has been revised.
Chapter 2 - Site Development Requirements	2.2.2.9	Hunter Freeman (McAdams)	2.2.2.9.a - these are two fragments of sentences. the second sentence is incomplete	Language has been revised.
Chapter 2 - Site Development Requirements	2.2.3	Travis Tyboroski (JAECO)	Section 2.2.3: The way this reads to me, with specific language re: "vegetated area", is that there is an allowance for steeper slopes with additional treatment/armoring; is that true? If so recommend clarity here to that point.	Yes this is correct.
Chapter 2 - Site Development Requirements	2.3.2	Hunter Freeman (McAdams)	2.3.2 - is there a requirement for a site survey? And would a site survey, even if more than 1 year old, grandfather a claim of previous impervious?	Yes, a site survey is needed. Site surveys greater than 1 year old do not grandfather the impervious area.
Chapter 2 - Site Development Requirements	2.3.3	Suzanne Harris (Home Builders Association)	2.3.3 - 2:1 slopes are very commonly used stabilized with various landscaping techniques. This requirement will result in loss of development potential and the addition of unnecessary land disturbance.	Steeper slopes are allowed when stablized.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 2 - Site Development Requirements	2.3.3	Suzanne Harris (Home Builders Association)	2.3.3 - Does this mean that all slopes on site must be 3:1? What about the inclusion of geotechnically stabilized slopes with matting for slopes less than 3:1?	Steeper slopes are allowed when stablized.
Chapter 2 - Site Development Requirements	2.3.4.1	Hunter Freeman (McAdams)	2.3.4.1 - Provide some guidance on how this impacts SCM sizing. I assume impervious areas draining to sanitary do not need additional SCMs. But you probably want to add more qualifiers so applicants don't direct any additional runoff to the SS in an effort to bypass stormwater requirements.	Raleigh Water has stringent rules regarding what can be discharged to the sanitary sewer that prevent excess diversion.
Chapter 2 - Site Development Requirements		Anonymous	conflicting draft language regarding downspout distances from the property line/building setback line and the encroachment standards of UDO Sec 1.5.4.D.2.c. The language shown below is in Section 2.1.3. LGP Design Considerations and Requirements of the Stormwater Design Manual Draft Version 3 pdf.	The language about downspout distance from the property line has been removed.
Chapter 2 - Site Development Requirements		Hunter Freeman (McAdams)	The UDO uses Built Upon Area, Built Area, and Impervious.....it's confusing to me, and probably confusing to you as well	As part of the text changes associated with the Manual, we will propose to eliminate Built Area. We intend to keep both BUA and Impervious, but treat them as synonyms.
Chapter 2 - Site Development Requirements		Suzanne Harris (Home Builders Association)	The purpose of this review is to compare Chapter 2 with the existing UDO/Zoning ordinances and permitting process. SW shall indicate Storm Water and UDO shall indicate the existing Uniform Development Ordinance.	Noted.
Chapter 2 - Site Development Requirements		Suzanne Harris (Home Builders Association)	What happens when a homeowner adds a gutter downspout after closing and a neighbor complains?	If your permits are closed out, this becomes the new owner's issue.
Chapter 2 - Site Development Requirements		Travis Tyboroski (JAECO)	The “downstream assessment” (10% rule) is oftentimes unnecessarily burdensome (i.e. urban redevelopment), and entirely too subjective. Accurate modeling of the subject areas is unlikely and the resulting analyses and/or measures, in our Professional opinion, would not have resulted in demonstrably improved water quality or peak flow reduction on downstream neighbors. Frankly happy to see this section eliminated.	Thank you for the feedback.
Chapter 2 - Site Development Requirements		Vinicius Taguchi (Designer)	Require sweeping and leaf litter management plans for any plans where trees would overhang impervious surfaces. https://www.usgs.gov/centers/upper-midwest-water-science-center/science/using-leaf-collection-and-street-cleaning-reduce	The Stormwater Design Manual and UDO address activities at the time of development and do not require this type of on-going, programmatic nutrient reduction measure. Note that the City performs street sweeping and leaf management as a municipal program.
Chapter 2 - Site Development Requirements		Vinicius Taguchi (Designer)	Require that roof drainage prioritize surface runoff or direct SCM connection over direct storm sewer tie-ins. https://files.nc.gov/ncdeq/Energy%20Mineral%20and%20Land%20Resources/Stormwater/BMP%20Manual/Ch%2024%20DIS%20Final%20Draft.pdf	We agree with this statement. Do you have specific language that you think is counter to this principle? Disconnected Impervious Surface is an SCM option that applicants may choose. Also, the principles of DIS are used in the new option in 2.1.2.1.C.
Chapter 2 - Site Development Requirements		Vinicius Taguchi (Designer)	The establishment of a maintenance agreement is important, but how will it be enforced? Is it tied to the deed? Will it automatically pass to the next property owner? Even if routine maintenance is required, it will be difficult for new owners to cover restorative maintenance (end of design life or total failure) costs unless some sort of usage fee is collected regularly to save up. Setting up such a program is important since municipal utility funds are not generally available for private SCMs.	The City has required SCM maintenance and inspection since 2002. Each year property owners must submit certified inspections. We have a team that checks these inspections and enforces the requirement. Please see UDO Section 9.2.2.G. Also see https://raleighnc.gov/stormwater/services/submit-stormwater-device-inspection-report
Chapter 3 - Hydrology	3.2	Hunter Freeman (McAdams)	3.2 Drainage "Area" Delineation and Analysis	The document has been updated.
Chapter 3 - Hydrology	3.3	Dori Sabeh (Withers Ravenel)	1.Section 3.3 Hydrologic Design Methods. EPA SWMM is listed as acceptable method. The software does not solve the NRCS Unit Hydrograph method. Will the SWMM curve number be added as an acceptable method (non-linear reservoir, not commonly used)? FEMA’s Hydrologic Guidance Document 91 provides the following guideline: “…If the Mapping Partner uses an option to model the response as a series of hydraulic processes, i.e., Kinematic-wave models or nonlinear reservoir models, that option must be fully documented in the hydrology report, including the reasoning for choosing it in lieu of a unit hydrograph approach.”	Our intent is that the SWMM curve number is made acceptable by the language in Draft v3.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 3 - Hydrology	3.3	Hunter Freeman (McAdams)	3.3 - consider adding Mannings Equation to the list for channel design	Mannings equation is an option for channel design. We consider that a hydraulic method, so it is not listed in this chapter.
Chapter 3 - Hydrology	3.3	Suzanne Harris (Home Builders Association)	3.3 - Modified Rational was removed. Why? This methodology has been utilized in raleigh for more than 20 years and I believe it to be more accurate for smaller sites vs. NRCS. This has been accepted without exception so are do you think there is a flaw in the method? Is it beneficial for stormwater controls to remove it?	The Modified Rational Method is not contained in nor allowed in the current (2002) Stormwater Design Manual. However, it may have been allowed by reviewers in the past. We removed the method because it is not used by NCDOT, by the FHWA, or another reference material that is applicable to North Carolina.
Chapter 3 - Hydrology	3.3	Travis Tyboroski (JAECO)	Section 3.3: only two methodologies are specifically NOT allowed here; I'm assuming that means the modified rational is still an option and not explicitly excluded (as was my understanding while i was reviewing section 1).	Use of the Modified Rational would require a Design Exception.
Chapter 3 - Hydrology	3.4	Suzanne Harris (Home Builders Association)	How often will the rainfall data be updated (section 3.4)? What will happen if a project is in the middle of review and there is an update to this rainfall data? Will the project be grandfathered in under the previous data or need to be updated?	Rainfall data will be posted with a date. If the project was submitted prior to an updated rainfall date, it will use the older data.
Chapter 3 - Hydrology	3.6	Dori Sabeh (Withers Ravenel)	3.Section 3.6 Time of Concentration. We understand removing the Kirpich method for drainage design similar to NCDOT's requirement. However, can it still be accepted for evaluation of large areas?	No change has been made. Some analyses for NCDOT also require analysis of larger areas.
Chapter 3 - Hydrology	3.2.1	Hunter Freeman (McAdams)	3.2.1 - for runoff rate control these were called POI in Chapter 2, now they're POA.	The document has been updated.
Chapter 3 - Hydrology	3.2.1	Hunter Freeman (McAdams)	3.2.1 - the second paragraph is confusing, makes it sound like we need to document peak flow pre/post at every inlet when I think you mean that the designer needs to delineate a drainage area and land use to each inlet, which is fine. Although technically correct, no one I've worked with would consider an inlet a "point of analysis", but they would delineate drainage areas to each inlet. Consider using a different phrase.	The document has been updated.
Chapter 3 - Hydrology	3.5.2	Dori Sabeh (Withers Ravenel)	2.Section 3.5.2 Land Use/Land Cover. The wording of the section indicates that all design would need to be sized for full build out of offsite areas, so any offsite runoff onto a site or through an scm in existing conditions would have to be sized to accommodate for full build out. However, future development will be required to provide onsite runoff control/treatment. This will result substantial oversizing of bypass piping systems that do not provide added value to the community.	Your concern is noted; however, this is an infrequent situation. Typically the off-stie runoff is either from a small drainage area or is conveyed via a jurisdictional stream.
Chapter 3 - Hydrology	3.7.1	Hunter Freeman (McAdams)	3.7.1 - a little confusing to list Rational Method under "hydrographs" since it's a peak flow, not a volume. I do agree that modified Rational should be prohibited/discouraged though. You may want to state that Modified Rational is not allowed (or was it just removed, but is still allowed?)	The document has been updated.
Chapter 3 - Hydrology	Table 3.2	Suzanne Harris (Home Builders Association)	Are the Rational Method Coefficients (Table 3.2) meant to be minimum requirements or are these to be the standard across a site?	If the designer chooses to deviate from these values, the SCR needs to document the reason for the adjustment. The values in Table 3.2. are definitely required for future conditions analysis of off-site areas.
Chapter 3 - Hydrology		Ryan Brown (AutoDesk)	Please considering including InfoDrainage under the examples of software that can be used for conveyance and SCM design. XPSWMM is a product from Autodesk/Innovyze that is no longer being actively developed, whereas InfoDrainage is being actively developed and is intended to replace XPSWMM for the purpose of designing drainage systems. InfoDrainage provides the same functionality and meets the design requirement paid out in the proposed manual. Additionally, InfoDrainge uses the latest EPASWMM engine. More information can be found here on InfoDrainage: https://www.autodesk.com/products/infodrainage/overview. As a resident of Raleigh, an employee of Autodesk/Innovyze, and a technical resource for drainage design products, I'm happy to answer any questions or address any concerns about this suggestion at ryan.brown@autodesk.com. Thank you for the consideration.	The document has been updated.
Chapter 3 - Hydrology		Travis Tyboroski (JAECO)	Entire section is clear and concise. I cannot emphasize enough how well organized this is.	Thanks.
Chapter 4 - Conveyance	4.2.2	Hunter Freeman (McAdams)	4.2.2 - consider some variance or provision for pumping. With climate change, more development, and recent research, stormwater pumping is becoming more common. I know we're not at the coast, but hybrid pumping & nature based systems are something that NCSU is researching.	This is a hard rule and a industry best practice. We see entities struggle to maintain their gravity-based systems, so there are series concerns about maintenance of a more complicated system that has much higher risks with failure. The City does allow pumping for rainwater harvesting systems, which would fall under the nature based systems umbrella.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 4 - Conveyance	4.2.2	Suzanne Harris (Home Builders Association)	4.2.2 - What about pumping for SCM maintenance? If required to gravity drain all SCMs this could increase costs by having to build-up SCMs higher, or lose density to get more available room for the SCM upstream to gravity drain entirely. Pumping should be allowed for maintenance, and be on the burden of the owner/HOA	Using a temporary pump to dewater an SCM for maintenance is allowed. There is a limit on the peak discharge from the pump - see this Manual Section 6.5.3.H.
Chapter 4 - Conveyance	4.2.3	Hunter Freeman (McAdams)	4.2.3 - I assume that the attenuation of upstream SCMs can be included before modeling the HGL in existing roadway systems	Yes.
Chapter 4 - Conveyance	4.2.3	Suzanne Harris (Home Builders Association)	4.2.3 - This could lead to certain situations where new pipes that are not being disturbed have to be upsized, leading to larger pipes discharging to smaller pipes downstream	This requirement has been clarified to only apply to Tier 3 site plans. We recognize that this could lead to larger pipes upstream of smaller pipes, a scenario addressed in Section 4.2.6.
Chapter 4 - Conveyance	4.2.3	Suzanne Harris (Home Builders Association)	4.2.3 - Why are projects going to be required to replace existing infrastructure that was designed under completely different requirements than are being proposed? This includes pipe size, capacity, cover, material, or even gutter spread calculations, which are all being made more stringent than ever before. Please explain. No applicability statement, could this be applied to single family?	This requirement has been clarified to only apply to Tier 3 site plans.
Chapter 4 - Conveyance	4.2.3	Travis Tyboroski (JAECO)	Section 4.2.3: this will be a theme but the "private" portion of this feels like overreach. Should the City's authority extend to private property in these instances? If a licensed Engineer certifies a design is safe (as the Engineer's primary charge is the health safety and welfare of the public) the Engineer then accepts the responsibility for that design and its viability.	Your concern is noted. No change has been made to the language.
Chapter 4 - Conveyance	4.2.4	Hunter Freeman (McAdams)	4.2.4 - consider some exemptions, especially in highly urban areas with existing development	There are multiple issues and risks associated with conveyance systems under a building, so that will not be an approved pratice per the Manual. While not an exemption, we do have a Design Exception process.
Chapter 4 - Conveyance	4.2.4	Suzanne Harris (Home Builders Association)	4.2.4 - Pipes certainly should be allowed to be in closer proximity to retaining walls as they can often be part of an SCM. Outfalls from sites and SCM also typically extend through retaining walls and design professionals make design accommodations for such. This restriction simply restricts common engineering practice. Please explain.	Retaining walls may seek a Design Exception. See Chapter 7.
Chapter 4 - Conveyance	4.2.6	Hunter Freeman (McAdams)	4.2.6 - seems to contradict 4.2.3	This is not a contradiction. We are requiring the immediately adjacent pipe in ROW to be addressed, but not the pipes downstream of that.
Chapter 4 - Conveyance	4.2.7	Hunter Freeman (McAdams)	4.2.7 - just sidewalks? maybe add the curbline as well?	This language has been updated.
Chapter 4 - Conveyance	4.2.8	Suzanne Harris (Home Builders Association)	4.2.8 - This section states that connections to structures and to the gutter through the curb shall be performed in accordance with the City of Raleigh Details - Does this include driveway connections? Will we be required to provide gutter spread calculations for driveway connections?	The language has been updated to indicate this section is about stormwater conveyances, not driveways.
Chapter 4 - Conveyance	4.3	Travis Tyboroski (JAECO)	Section 4.3: Again building on the above, and the issue taken in chapter 1, properly gasketed pipes are capable of passing flows with HGLs above the crown of pipe without detriment to the pipes themselves, and an Engineer willing to certify to the same should be allowed to do so. NCDOT is willing to accept this scenario. While JAECO understands this desire, and frankly is unable to strongly object to pipes in the public right-of-way as they ultimately will be the City's "property" and responsibility, the extension of these standards to private infrastructure is an unnecessary burden; the Public is not better protected by the extension of these standards.	We would counter that the public, including future homeowners, are better protected by these standards.
Chapter 4 - Conveyance	4.3.1	Suzanne Harris (Home Builders Association)	4.3.1 - Ideally all storm systems should be designed with the HGL within the system, however there should be a consideration for o-ring pipe in certain situations where the HGL cannot be kept within the system. For example, there could be a system that has to buck grade for a long run and the invert into the pond becomes deeper than the normal pool elevation. This could be analyzed on a case-by-case	The concern is noted. A Design Exception could be on option in the situation listed.
Chapter 4 - Conveyance	4.3.4	Dori Sabeh (Withers Ravenel)	4.Section 4.3.4 Inlet And Gutter Sizing Criteria. Is the NCDOT standard 4 in/hr intensity for spread calculations inadvertently omitted, or is the City opting to use a 10-year storm event instead?	The City does not use the NCDOT standard for rainfall instensity for spread calculations. Since 2002, the City has used the 2-year storm. With this manual, the requirement is being changed to the 10-year storm.
Chapter 4 - Conveyance	4.3.4	Hunter Freeman (McAdams)	4.3.4 - 10-yr design storm for gutter spread, and not 4 in/hr?...but then limited to 4' if there's a shoulder?	The City does not use the NCDOT standard for rainfall instensity for spread calculations. Since 2002, the City has used the 2-year storm. With this manual, the requirement is being changed to the 10-year storm. For the shoulder situation, a Design Exception could be considered.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 - Gutter spread for private streets - is this meant to cover alleys? If so, why?	This is not intended to cover private alleys.
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 - Are private yard inlets subject to the same design standards as shown in Table 4.4?	Yes, as written this applies to yard inlets on private property.
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 - The design storm for gutter spread is far more stringent than NCDOT currently requires. NCDOT utilizes 4”/hr storm, you’re increasing that to 7.22in/hr, then requiring the design to consider the inlets 50% blocked. That’s nearly a 180% increase over NCDOT. Why?.	The City does not use the NCDOT standard for rainfall instensity for spread calculations. Since 2002, the City has used the 2-year storm. With this manual, the requirement is being changed to the 10-year storm. For a 5-minute time of concentration, this is a shift from 5.53 in/hr to 7.04 in/yr at RDU.
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 - This only specifies the grate inlet blockage, should it also include open throat inlets?	The language has been updated to clarify that the 50% blockage applies to the grate but not the open throat.
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 - Why require additional inlets at sag locations if they aren’t needed? This seems to add unnecessary costs	We are not requiring additional inlets at sags. We require that there be an inlet at the sag and that the 50% blockage be applied to the grate portion.
Chapter 4 - Conveyance	4.3.4	Suzanne Harris (Home Builders Association)	4.3.4 Inlet Blockage - This states we’re to assume the inlets are 50% blocked when grate inlets are required. Clarify when they’re required.	Grate inlets will be required in ROW. The City is working to update the Standard Details and will refer to NCDOT Details in
Chapter 4 - Conveyance	4.3.4	Travis Tyboroski (JAECO)	Section 4.3.4.: does the 50% blockage requirement extend to combination inlets (i.e. NCDOT 840.02) or grate *only*?	The language has been updated to clarify that the 50% blockage applies to the grate but not the open throat.
Chapter 4 - Conveyance	4.3.4	Travis Tyboroski (JAECO)	Section 4.3.4: This is another dead horse I will continue to beat. Again acknowledging this is ultimately the City's infrastructure to accept and the "standard" as it were is different (and more difficult to object to) these requirements are overkill. Even accounting for storm shape/intensity changes as a result of climate change the designs resulting from these standards will be too conservative.	Your response is noted. The requirement has not been changed.
Chapter 4 - Conveyance	4.3.4/Table 4.4	Kelly Hefner and Erica Wangelin (ADS Pipe)	Clarify inlet blockage for combination inlets. Does 50% blockage only apply to grate?	The language has been updated to clarify that the 50% blockage applies to the grate but not the open throat.
Chapter 4 - Conveyance	4.4	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Might be helpful to reference the NCDOT handling and Storage Guideline here (attached to our email response)?	Section 4.4 has been removed. The handling requirements for RCP are included below.
Chapter 4 - Conveyance	4.5	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Trench Width Discrepancy - here you call for NCDOT trench width and on Std. Detail 10.14 it says minimum 6" - 12"....outside O.D. each side.	The table has been updated to reference City details. The City is in the process of updating our details.
Chapter 4 - Conveyance	4.5	Hunter Freeman (McAdams)	Table 4.5 Cover - manufacture should be manufacturer (also fix spelling in the trench width section)	Addressed.
Chapter 4 - Conveyance	4.5	Kelly Hefner and Erica Wangelin (ADS Pipe)	First paragraph - be clear about the applicability. What does it mean to connect to public ROW?	The applicability section has been clarified.
Chapter 4 - Conveyance	4.5	Travis Tyboroski (JAECO)	Section 4.5: does "connect to City infrastructure" mean the entire upstream system connecting to City infrastructure, or just the "first/last" run connecting to the City's infrastructure?	The applicability section has been clarified.
Chapter 4 - Conveyance	4.5.1/Table 4.5	Kelly Hefner and Erica Wangelin (ADS Pipe)	Installation Trench Width - be aware that NCDOT varies from manufacturer's specs and is sometimes less stringent.	The table has been updated to reference City details. The City is in the process of updating our details.
Chapter 4 - Conveyance	4.5.2	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	If you wish to refer them to COR option, much work must be completed on the COR Standard Detail SW 10.14	The City is in the process of updating our details. That work will be completed before the effective date of this Manual.
Chapter 4 - Conveyance	4.5.2	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Should also list Tongue and groove with single offset spigot as larger diameter pipe may be straight wall (no bell)	We don't fully understand this comment. Dan Clinton is following up with CCPPA
Chapter 4 - Conveyance	4.5.2	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Second bullet point - consider this language for clarification - or single offset or tongue and groove joint with Conseal (ASTM C990) sealant with the addition of filter fabric wrap on exterior for pipe 42" diameter and larger. NOTE to COR - NCDOT only requires exterior joint wrap for pipe 42" and larger.	The language has been updated.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 4 - Conveyance	4.5.2	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	PLEASE REVISE - Pipe Strength class shall be based upon the Indirect Design Method as found in Section 12 of the AASHTO LRFD Bridge Design Specification. Direct Design methodology for RCP is typically only used for special design cases when the load on the pipe (caused by extremely high cover or unusual Live Load condition) exceeds the standard strength class of RCP as noted in ASTM C-76.	This requirement has been updated.
Chapter 4 - Conveyance	4.5.2	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Much simpler to refer to AASHTO R-73 to determine acceptance of RCP at time of delivery or anytime prior to the pipe being backfilled. Keep 72 Hour delivery...and acceptance of the pipe at point of delivery... bullet points if you wish.	The language has been updated.
Chapter 4 - Conveyance	4.5.2	Kelly Hefner and Erica Wangelin (ADS Pipe)	"Use Conseal and Wrap Joint Externally with geotextile" - capitalization issue	The language has been updated.
Chapter 4 - Conveyance	4.5.3	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Installation trench width should follow NCDOT trench details or a COR trench detail needs to be created by COR -	The City is in the process of updating our details. That work will be completed before the effective date of this Manual.
Chapter 4 - Conveyance	4.5.3	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Pipe to structure connection for Polyethylene or Polypropylene should be made with a resilient water tight connector. Resilient connectors shall meet ASTM C923, ASTM C1478, and ASTM F2510. As flexible pipe deflects out of round the grout will crack and possibly dislodge allowing embedment backfill to enter pipe/structure and lead to settlement of pavement and or even failure in extreme conditions or left unchecked. At a very minimum the pipe to structure connection should have a filter fabric - geotextile Jacket installed/provided at the connection. See MarMac.com website for example of geotextile jacket.	The language has been updated.
Chapter 4 - Conveyance	4.5.3	Kelly Hefner and Erica Wangelin (ADS Pipe)	Is City really requiring mandrel testing for private pipe?	The cost concerns have been noted. The requirement has not been changed.
Chapter 4 - Conveyance	4.5.3	Kelly Hefner and Erica Wangelin (ADS Pipe)	Bullet that begins "Certification..." is really 2 bullets. Start new bullet with "Double..."	The language has been updated.
Chapter 4 - Conveyance	4.5.3	Kelly Hefner and Erica Wangelin (ADS Pipe)	Clarify that "Installation trench minimum width shall be per manufacturer's specifications" - inconsiste with language in Table 4.5	The language has been updated.
Chapter 4 - Conveyance	4.5.3	Kelly Hefner and Erica Wangelin (ADS Pipe)	Bullet that begins "PP shall..." is really 2 bullets. Start new bullet with "Transition..."	The language has been updated.
Chapter 4 - Conveyance	4.5.3	Kelly Hefner and Erica Wangelin (ADS Pipe)	Bullet that begins "PP shall..." - clarify the backfill?	The language has been updated.
Chapter 4 - Conveyance	4.7	Suzanne Harris (Home Builders Association)	4.7 - “Dump No Waste - Drains to River” - This is not currently on all of your standard details, so I assume the details would be updated.	The City is in the process of updating our details. That work will be completed before the effective date of this Manual.
Chapter 4 - Conveyance	4.6.1	Travis Tyboroski (JAECO)	Section 4.6.1: "vegetated" conveyance confusion again. If the channel is otherwise armored do the same criteria apply?	See the text at the beginning of 4.6 - That applies unless otherwise specified below.
Chapter 4 - Conveyance	4.7.1	Travis Tyboroski (JAECO)	Section 4.7.1: on theme, a number of these criteria (i.e. minimum drops) don't necessarily find basis in "engineering" judgement, especially as it relates to the extension to private infrastructure.	Your response is noted. The requirement has not been changed.
Chapter 4 - Conveyance	4.8	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Imperitive COR includes some guidance to EOR as to how to evaluate issues of concern found during PII. ASTM C 1840 and or NCDOT Evaluation Guidelines are both good reference for but if you do not require measurement of defects those are not applicable. The AASHTO "Guide Specifications for Highway Construction" Appendix X5 would be best option if you are not going to require measurement of defects by the Inspection companies.	Recommend resources for the repair plan will be provided outside of the Manual.
Chapter 4 - Conveyance	4.8	Al Hogan and Tiffany Ferrell (American Concrete Pipe Association and CCPPA)	Might want to consider allowing Laser Profiler and Mandrel Test as options for deflection verification of flexible pipe?	Laser profiling has been added as an alternate to mandrel testing.
Chapter 4 - Conveyance	4.8	Kelly Hefner and Erica Wangelin (ADS Pipe)	How does pipe pass or fail CCTV inspection?	Section 4.8.3.2 has been added to state the criteria for acceptance.
Chapter 4 - Conveyance	4.8	Suzanne Harris (Home Builders Association)	4.8 - CCTV - Another increase for private infrastructure. Are there acceptable tolerances or criteria?	Section 4.8.3.2 has been added to state the criteria for acceptance.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 4 - Conveyance		Karen Rindge (Designer)	Chapter 4, Stormwater Conveyance Design - I work in the landscape industry and deal with homeowners' stormwater problems on a regular basis. It is common to see that a neighbor's downspouts have been piped underground to flow downhill directly onto their nextdoor neighbor's yard. This was probably done by the developer when the home was built. One egregious example was a property that had piped all 5 downspout pipes (from a very large home) to the same spot at the bottom of their property, resulting in massive flooding onto the neighbor's yard. Downspouts should drain onto the homeowner's property, not their nextdoor neighbors, thus creating an expensive and mosquito stormwater problem for others. This is simply unfair as the impacted property owner has no recourse against the neighbor	The City is aware of this on-going issue with infill development. We have created requirements for projects that are exempt from the peak discharge requirements under UDO Section 9.2.2.A. Those have been further clarified/strengthened with the 11/27/23 version. See the Draft Manual Section 2.1.2.
Chapter 4 - Conveyance		Suzanne Harris (Home Builders Association)	There is a need to allow smaller pipe sizes entering the ROW to aid with downspout and yard drain connections. Please provide clarity here that does not require an encroachment permit and large insurance policy.	This type of connection is addressed in the Draft Manual Section 4.2.8. When the purpose of the private pipe in the ROW is to tie-into the City's conveyance system, no encrachment agreement (or associated insurance policy) is required.
Chapter 4 - Conveyance		Suzanne Harris (Home Builders Association)	When using HDPP or HDPE pipe for detention purposes, a common connection is an insert-a-tee and should be allowable without requiring cleanouts at each connection location as this causes additional unnecessary fittings at the connection. Please consider.	The bullet point in Table 4.6 has been updated to clarify that SCM access locations are addressed in Chapter 6.
Chapter 4 - Conveyance		Travis Tyboroski (JAECO)	Thank you for the reconsideration of the erosion hazard setback. As noted in the City's responses the easement and buffer requirements adequately address the same concern elsewhere; less redundancy.	Thank you.
Chapter 5 - Stormwater Management Calculations	5.1	Hunter Freeman (McAdams)	Table 5.1 - can we pervious = managed pervious? Let's talk with the state	Yes, any pervious area that is not in a conservation easement should be counted as managed pervious for existing and proposed conditions.
Chapter 5 - Stormwater Management Calculations	5.2	Travis Tyboroski (JAECO)	section 5.2: UDO 9.2.2.E.2.b allows a 10% increase in post development flow where the manual reads "shall not have any".	The document has been updated to reflect the UDO.
Chapter 5 - Stormwater Management Calculations	5.2.2	Hunter Freeman (McAdams)	5.2.2 - as I mentioned earlier, it's confusing to use the term "point of analysis" in the stormdrainage design as well.	The document has been updated.
Chapter 5 - Stormwater Management Calculations	5.2.3	Suzanne Harris (Home Builders Association)	5.2.3 - Design professionals are made aware of structural flooding at first contact with the City (i.e. sketch plan or site review).	Yes, that is correct.
Chapter 5 - Stormwater Management Calculations	5.2.3	Suzanne Harris (Home Builders Association)	5.2.3 - The list of documented structural flooding must be made public. We don't need a map, just addresses.	As explained by Ben Brown, there are legal issues with publishing a list. Designers may contact the review team at any time to check for documented structural flooding downstream.
Chapter 5 - Stormwater Management Calculations	5.3	Hunter Freeman (McAdams)	5.3 - as noted earlier, Storm-EZ was taken off the State's website. Let me know if you need a version specific to Raleigh, minor updates would not be difficult	We are not looking for a Raleigh-specific version, but will be pursuing clarifications from the State.
Chapter 5 - Stormwater Management Calculations	5.3.1	Suzanne Harris (Home Builders Association)	5.3.1 - Common Plan of Development is far too broad. This should be much better defined vs. allowing subjectivity from staff.	The definition in the Design Manual and the UDO is based on the State's definition. The City was required to use this definition.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 5 - Stormwater Management Calculations		Karen Rindge (Designer)	The Chapter on Stormwater Management Calculations should consider reducing the amount of impervious surface a property is permitted to have without requiring a Green Stormwater Infrastructure device. One of the largest negative impacts new development in Raleigh has is the amount and volume of stormwater runoff that is created by increasing impervious surface that comes with development. I work in the landscape industry, and I hear repeatedly from homeowners complaints about stormwater runoff generated from new buildings, driveways, patios etc. For example, new infill development maximizes impervious exactly to 65% and is not required to include a SCM. Both neighbors and the waterways would benefit greatly from requiring a rain garden or other GSI device with high percentages of impervious. 65% for R-10 is too high, without a GSI requirement. I'm not against density, but we need to make dense development work better at reducing stormwater runoff.	The % impervious allowed in UDO Section 9.2.2.A.4 is not being changed with this update. We recommend that proposals to reduce the % impervious allowed be taken to Planning Commission or City Council. / This Design Manual update has added requirements for infill development in Section 2.1, which is aimed at addressing lot to lot draiange issues. Please let us know if you have feedback on these options. / We are updated UDO Section 9.2.2.A.4.b.ii, which currently results in many properties being able to exceed the % impervious without a SCM. The proposed requirement will require a SCM to meet the standard.
Chapter 5 - Stormwater Management Calculations		Suzanne Harris (Home Builders Association)	more to be submitted...	NA
Chapter 6 - SCMs	6.3.1	Hunter Freeman (McAdams)	6.3.1 B - consider allowing this if the State rules/guidance changes	We will not be allowing pumping, except for rainwater harvesting.
Chapter 6 - SCMs	6.3.1.B	Suzanne Harris (Home Builders Association)	6.3.1.B - Does this include pumping for maintenance? Some ponds which can not gravity flow through the riser rely on pumps for maintenance	Using a temporary pump to dewater an SCM for maintenance is allowed. There is a limit on the peak discharge from the pump - see this Manual Section 6.5.3.H.
Chapter 6 - SCMs	6.3.1.E	Suzanne Harris (Home Builders Association)	6.3.1.E - Does this supersede the 1” WQV if also providing peak attenuation? Could have cost implications if the WQV exceeds 1” for the design storm	The document will be clarified.
Chapter 6 - SCMs	6.3.10	Jacob Dorman (on behalf of ConTech)	1) 6.3.10 Requirements for All Underground SCMs: Recommend clarifying that access in accordance with OSHA standards and requirements includes access to all captured sediment and other pollutants of concern in order to facilitate proper maintenance.	The document has been updated.
Chapter 6 - SCMs	6.3.14	Jacob Dorman (on behalf of ConTech)	(2) 6.5.14 Proprietary SCMs: 2nd bulleted item under Additional Requirements Beyond MDC stipulates that "devices that meet the MDC for Silva Cell Suspended Pavement with Bioretention may be used in lieu of Silva Cell." We discourage this language and recommend that only allow systems properly vetted through the NCDEQ's NEST process be used. The MDC for Silva Cell was developed following robust field monitoring and contains elements, like material specifications, flow distribution, and storage capacity, among others, that can impact overall system performance if alternatives are allowed. It is not appropriate to allow a like for like switch without appropriate technical justification.	We have included this language because it is our understanding that NCSU has conducted suspended pavement research on systems other than Silva Cells. I am familiar with the mechanism in Silva Cells and know that these can be reproduced within other structures. We are not included this language for any other proprietary device type (e.g. StormFilters or Filterra) as we know they have specific media and configurations. We do not conudct our own evaluations and rely on the NEST program.
Chapter 6 - SCMs	6.3.2.B	Suzanne Harris (Home Builders Association)	6.3.2.B - Does this apply to all SCM types for the 100-yr storm? Additionally this will increase costs of all SCMs if required to handle the 100-yr event storm. Ponds will become larger as a result.	Section 6.3.2. applies only to constructed embankments (in fill) where water is ponded more than 3 feet.
Chapter 6 - SCMs	6.3.3	Hunter Freeman (McAdams)	6.3.3 - reference this section in the conveyance part of the manual since there are exceptions from the 10' rule.	This is referenced in Chapter 4.
Chapter 6 - SCMs	6.3.3.D	Suzanne Harris (Home Builders Association)	6.3.3.D - An additional letter from the design engineer is completely unnecessary and redundant. Engineering ethics and standards require us to consider all factors of our design.	Typically, the stormwater report only reflects the design by the civil engineer (or landscape architect) and not design by the structural engineer. If the structural design is done by the same person that stamps the SCR this would be fine, but typically the SCR author is not qualified in structural design.
Chapter 6 - SCMs	6.3.3.E	Suzanne Harris (Home Builders Association)	6.3.3.E - Unnecessary for an additional letter from the owner. The Stormwater Covenants are already executed by the Owner and include the O&M. If you want more language, then it should be included in the O&M.	It is unknown to the reviewer that the owner understands that there will be higher maintenance costs associated with the deisgn decision to place a SCM under a building.
Chapter 6 - SCMs	6.3.4.B	Suzanne Harris (Home Builders Association)	6.3.4.B - An additional letter from the design engineer is completely unnecessary and redundant. Engineering ethics and standards requires us to consider all factors of our design including ponded water against a wall.	Typically, the stormwater report only reflects the design by the civil engineer (or landscape architect) and not design by the structural engineer. If the structural design is done by the same person that stamps the SCR this would be fine, but typically the SCR author is not qualified in structural design.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 6 - SCMs	6.3.5	Anonymous	(6.3.5) I would suggest making the "embankment" text a hyperlink to a definition clearly defining what is and what is not considered an embankment. Same with the word "woody vegetation" and I would question if small woody plants with a mature height no more than +/-5' should be acceptable. I'm wondering if you consider a "butterfly bush" a woody plant. Thank you for not excluding non clumping grass like some UDO's do. However, you do exclude it in (6.5.9) level spreader and maybe elsewhere which is probably a mistake since all native deep rooted grass in clumping.	We will be adding hyperlinks back into the final version of the Manual - they provided to be problematic during editing. In terms of woody vegetation, it is standard engineering practice to exclude all woody vegetation on the fill portion of a pond embankment. This does not exclude the use of woody vegetation on the other slopes of ponds or wetlands or within practices such as bioretention.
Chapter 6 - SCMs	6.5.15	Suzanne Harris (Home Builders Association)	6.5.15 - UG Detention Orifice size of 3” will not work on small sites. Adjustable valves sounds like a guessing game.	The document has been updated to broaden the options.
Chapter 6 - SCMs	6.5.15.E	Travis Tyboroski (JAECO)	6.5.15.E: is this requirement necessary? With proper trash rack is the City seeing significant/widespread clogging? That has not been our office's experience.	This is viewed as a safety issue.
Chapter 6 - SCMs	6.5.2.A	Travis Tyboroski (JAECO)	Section 6.5.2.A: The State accepts without forebay which would lead us to believe that the device functions properly without a forebay. Understand this as a recommendation to improve the water quality, but worried this additional footprint area will squeeze out areas that may otherwise be well served by a bio.	Forebay requierments have been updated.
Chapter 6 - SCMs	6.5.3	Anonymous	(6.5.3) Can docks with posts or floating docks be added to wet ponds to increase their usability with kayaking, fishing, etc?	This is a possiblility. Pilings or other structures would require review to ensure the SCM function remains intact.
Chapter 6 - SCMs	6.5.3	Dori Sabeh (Withers Ravenel)	.Section 6.5.3 Wet Pond. B) Wet pond additional requirements call for a turned down elbow. An upturn elbow inside the riser provides for easier maintenance and inspection. Can the verbiage be revised to just say draw from below normal pool, without specifying the detail? C) Use of anti-seep collar has been minimized and replaced with filter diaphragms. Consider adding a cradle under the principal spillway barrel.	B) Yes, the option of an upturned elbow inside the riser was intended to be allowed. This has been clarified. C) Thank you, this has been updated. Thank you for the suggestion regarding cradles.
Chapter 6 - SCMs	6.5.3.	Travis Tyboroski (JAECO)	Section 6.5.3.G.b: is the intent that without SHWT within 6", essentially wet ponds with less than 25 ac DA will not be allowed?	Wet ponds will still be allowed, but will require more documentation and analysis.
Chapter 6 - SCMs	6.5.4	Travis Tyboroski (JAECO)	Section 6.5.4: same	Wetlands will still be allowed, but will require more documentation and analysis.
Chapter 6 - SCMs	6.5.6	Suzanne Harris (Home Builders Association)	6.5.6 - Detention in Sand Filters - What data was used to state that detention should not be allowed in the sediment chamber. The first flush of runoff contains the vast majority of contaminants, therefore additional flow will not significantly alter the maintenance.	Detention is allowed in connected chambers, but there needs to be a defined sediment chamber for maintenance purposes. It is dififcult for maintenance crews to gather the sediment from a very large area unless many manholes are provided.
Chapter 6 - SCMs		Dori Sabeh (Withers Ravenel)	; 6.For drainage areas between 5 and 10 acres with deep SHWT, a lined wet pond or wetland are not allowed and a sand filter implementation with a maximum width of 20 feet is not practically implementable. Is the intent of the requirement to eliminate/minimize the use of these SCMs in such conditions?	The intent is for designers to consider matching their site conditions with the most appropriate SCM. If a site has sufficient infiltration a infiltration practice should be considered. Also, we haven't totally banned ponds, but have required more analysis. Above ground sand filters are not being limited in width.
Chapter 6 - SCMs		Hunter Freeman (McAdams)	General - what are the City's GSI devices credited as? Bioretention?	Many of the City's GSI devices are bioretention. We also have green roofs, permeable pavement, rainwater harvesting, and suspended pavement systems.
Chapter 6 - SCMs		Hunter Freeman (McAdams)	Should you include the City's GSI standards in this chapter?	Yes, we have tried to integrate the City's GSI standards into Chapter 6.
Chapter 6 - SCMs		Karen Rindge (Designer)	Stormwater Control Measure Design - The chapter should include rain gardens in the list of SCMs. Also, I strongly recommend that the design of rain gardens be reviewed with the goal of reducing the overall construction cost. Current requirements have made rain gardens increasingly expensive to build, and if they cost less, many more rain gardens would be constructed. The City is to be commended for its Rainwater Rewards program, and the funds would go further if construction guidelines were changed.	Chapter 6 of the Manual reflects the NCDEQ Stormwater Design Manual and the associated "Minimum Design Criteria" (MDCs) that are in State code. We cannot allow rain gardens that do not meet the MDCs to be used for regulatory purposes. Your comment will be shared with the staff working on the R3 program.
Chapter 6 - SCMs		Suzanne Harris (Home Builders Association)	When using HDPP or HDPE pipe for detention purposes, a common connection is an insert-a-tee and should be allowable without requiring cleanouts at each connection location as this causes additional unnecessary fittings at the connection. Please consider.	The bullet point in Table 4.6 has been updated to clarify that SCM access locations are addressed in Chapter 6.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 7 - Easements	7.2	Suzanne Harris (Home Builders Association)	7.2 - Downstream Discharge Easements are unrealistic. Developers will have to purchase easements even after complying with every other requirement, even after providing for non erosive velocities and dissipated flow. Please explain how to discharge an SCM without making the flow more concentrated than the existing condition. This is especially true for sites that currently sheet flow with no defined conveyance. Additional criteria needed here.	We understand that this puts an onus on developers to acquire an easement. However, this requirement addresses a real and on-going issue that has the attention of City Council. For residential infill development, other options are provided in Section 2.1 of the Manual.
Chapter 7 - Easements	7.2	Travis Tyboroski (JAECO)	Section 7.2: "more concentrated than existing conditions" is ambiguous; concentrated depth? Concentrated flow rate? Additional clarity please.	The document has been updated for clarification.
Chapter 7 - Easements	Table 7.2	Suzanne Harris (Home Builders Association)	Table 7.2 - there seems to be a large jump from 5ac-<25ac to 25ac+. Why go from 10’ each side to 50’ each side? A 24 acre drainage area is 20’ wide and a 25 acre drainage area is 100’ wide, why, this seems excessive?	The channel easements in Draft v3 were simplied from the Draft v2 and the "Erosion Hazard Setback" was eliminated. For channels under 25 acres, the widths were substantially reduced. We rarely see channels serving 25 acres - which roughly matches the drainage area to small streams on the soil map.
Chapter 7 - Easements	Table 7.3	Suzanne Harris (Home Builders Association)	Table 7.3 - requiring 25’ easements for access may push developments to trigger individual permits when multiple stream crossings are required. There should be consideration for sharing the burden of wetland and stream impacts as required by larger COR street types.	These easements will not increase the impact - the easements are not part of the roadway. They will often be on commericial or HOA property.
Chapter 7 - Easements	Table 7.4	Anonymous	Table 7.4 - Why would decks/porches not be allowed in a drainage easement? They can be pervious and even be elevated to allow for flow underneath + they could also have underground SCM beneath it. A pool could also technically have an underground SCM beneath it like the building that is allowed so why would it not be allowed when a building is?	Drainage easements are required along swales or above pipes that serve multiple properties. The issue is not whether flow could pass under a deck - the issue is that it permenantly obstructs access, which is an issue not just for the property owner who wants to build the deck but for all the properties served by the pipe or swale. Conversely, SCMs under a building are allowed only when the SCM serves solely the building in question.
Chapter 7 - Easements	Table 7.4	Travis Tyboroski (JAECO)	Table 7.4 is an excellent resource; well thought out.	Thank you.
Chapter 7 - Easements		Travis Tyboroski (JAECO)	Will the design alternate option be available on easements? I don't think we often run into the situation, and the manual as written does take a common sense approach to the required widths, but there may be times/scenarios where reduction is appropriate and/or necessary.	We will continue to allow the submittal of Design Exception requests with supporting documentation.
Chapter 7 - Easements		Vinicius Taguchi (Designer)	Would like to see stronger emphasis on consideration of downstream impacts (conveying the spirit of the law more so than the letter) to minimize harm even when regulations are followed.	This is a very broad comment. If you wish to see changes to the Manual, please provide specific examples.
Chapter 8 - ESC	8.4.3	Suzanne Harris (Home Builders Association)	8.4.3 - Why is there a cut/fill analysis for 20+ ac. Sites required? What is going to be done with this analysis?	Cut fill analysis to required on large sites where stockpiling material and/or spoiling material is necessary. The analysis will be used to verify ample area is required for stockpile areas. In addition, when hauling material off-site it will be used to verify that material is hauled to permitted site, when necessary (this has been included in this secction).
Chapter 8 - ESC		Karen Rindge (Designer)	Erosion and Sediment Control - Current control measures required during development often fail, allowing large amounts of dirt/sediment to flow off site. I recommend requiring more frequent site visits by stormwater staff to ensure builders measures are working properly. Perhaps the silt fences should be combined with coir logs to further prevent runoff. Movable coir etc. logs could also be required at property entrances where silt fencing can't be up all the time.	The City currently inspects active construction sites once every two weeks or more depending on the the compliance status of the site. If we determine that silt fence alone is not sufficient on the project then we have the authority through the UDO to require additional measures or require a plan revision to install additional measures that may required design calcs.
Chapter 8 - ESC		Karen Rindge (Designer)	Under Stabilization Process - Artificial turf should NOT be an option for post construction stabilization. Artificial turf is 100% impervious! Also, there are other natural alternatives for stabilizing property other than grass seed and sod (which also do a poor job of reducing runoff). Planting a seed mix or plugs of native sedges would be more useful, or planting shrubs, trees and perennials, especially on banks that flow into streams. In fact, if a property is next to the 50' riparian buffer, native plantings should be required for erosion control. Given the drive for infill development, properties in Raleigh are being developed right up to the 50' buffer. The construction and development is putting our streams at significant risk.	Artificial turf is being used throughout the City of Raleigh and is considered a method for stabilization as is gravel, concrete or other impervious surface. This section on artificial turf is not to require that it should be used to stabilzed a site. This is just to make sure that when proposed to be used that the City approves before installation. Artificial turf is considered 100% impervious unless approved by the City as a permanent SCM in which case it can be demostrated that it is not 100% impervious. We have added a section on native plants in the stabilzation section of this chapter.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Chapter 8 - ESC		Suzanne Harris (Home Builders Association)	Comments to be submitted.	NA
Chapter 9 - Floodplain	9.2.4	Suzanne Harris (Home Builders Association)	9.2.4 - How far does adjacent apply? This should only be applicable if there is surface water runoff or discharge into the adjacent stream. Same applies for 9.5.1	Changed from "stream adjacent to the site" to "stream intersecting the site".
Chapter 9 - Floodplain		Dori Sabeh (Withers Ravenel)	7.Section 9.5.2 – "A CLOMR is required when a proposed project will, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source, thus, resulting in the modification of the existing regulatory floodway, the effective Base Flood Elevation (BFE), or extents of the SFHA." Please clarify that this section applies only for projects that are located within the regulatory floodplain/floodway. The current wording implies that any development requires a CLOMR because it ultimately impacts the hydrologic characteristics of a flooding source.	This is noted in first sentence of Sec. 9.5.2 which states that it is "to make changes to the adopted maps within FEMA flood-prone areas"
Chapter 9 - Floodplain		Suzanne Harris (Home Builders Association)	How much of this chapter overlaps with the UDO and recent text changes?	There is some overlap but most of this chapter is to provide clarification on permitting, flood study, map changes, and substantial damage/improvement processes.
Chapter 9 - Floodplain		Suzanne Harris (Home Builders Association)	Comments to be submitted.	NA
Overall		A Pierce (citizen)	are the revisions being made to the manual introducing more or less restrictions and requirements to developers to ensure that they do not introduce stormwater runoff that floods and damages downstream residential structures and yards? what safeguards and recourse do residents have downstream from a development to ensure that their home will not be flooded, and their yards washed out?	The Manual update process seeks to address issues that have arisen with increased amounts of infill development. In this version (Draft v4), we have included more specific requirements for the new Lot Grading Plan. See Section 2.1
Overall		Carla Helms	I would love to see incentives for builders to use GSI in new construction. Often, we are creating rain gardens at brand new houses, where the builder had done grading or directed downspouts where they would cause almost immediate problems. An incentive for pervious driveways would be fantastic! It would be more cost efficient to build rain gardens in during the construction rather than afterwards, and that way the downspouts could all be connected and directed to the rain garden, rather than being retrofitted later.	This Design Manual update has added requirements for infill development in Section 2.1, which is aimed at addressing lot to lot draiange issues. We are adding rain gardens as one of the options. Please let us know if you have feedback on these options. / We are updating UDO Section 9.2.2.A.4.b.ii, which currently results in many properties being able to exceed the % impervious without a SCM. The proposed requirement will require a SCM to meet the standard. / There are some incentives for permeable pavement use - if it is designed to the NCDEQ Manual, it may be counted as pervious area.
Overall		Don Procopio (Citizen)	I must admit that I have not had the opportunity to review this document as thoroughly as I would have liked during the open comment period, but my general comment is to insure that the following conditions are covered in the final document: 1)That any new development (including additions, etc.) not be allowed to increase the storm water runoff to an adjacent property within at least a 25-year storm event (minimum) or preferred 100-year storm event. 2)That all storm water regulations be specified to comply to least a 25-year storm event (minimum) or preferred 100-year storm event. This in recognition of the now inevitable expected future conditions.	1) We have added specific requirements that address lot to lot drainage in infill development. See the Draft Manual Section 2.1. This applies to projects that do not meet the threshold for requiring compliance with the full stormwater control regualations in UDO Sections 9.2.2.B through H. If you would like to see lower thresholds for the peak discharge rules to apply, you could raise this with Planning Commission or City Council. We are proposing an update to UDO Section 9.2.2.A.4.b.ii, which currently results in many properties being able to exceed the % impervious without a SCM. The proposed requirement will require a SCM to meet the standard. We have also added a requirement in the draft Manual Section 7.2 that prevent new concentrated flow from entering a adjacent property without obtaining an easement - this will apply to development of all sizes. 2) The stormwater peak discharge regulations are based on the 2-year fand 10-year design storms. The 10-year design storm aligns with the requirement for sizing storm drain pipes and channels. So, the peak discharge requirement is designed so that the downstream stormwater conveyance systems will continue to have capacity. Floodplain regulations are based around the 100-year storm, and when flood studies are conducted they must be based on future conditions (build-out zoning). This helps to ensure that development will not occur in the floodplain.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Overall		Hunter Freeman (McAdams)	there's a lot here, and I tried to get through everything. I am happy to discuss this with Staff anytime, just	Thank you.
Overall		Jacob Dorman (on behalf of Contech)	I'm submitting comments on behalf of Contech Engineered Solutions. We greatly appreciate the opportunity to be involved in the Manual update process. Thanks in advance for your consideration.	THank you.
Overall		Karen Rindge (Designer)	Given Raleigh's sustainability goals in the UDO, Comprehensive Plan and Sustainability Plan, given the increased pressures from new development (that comes with our city's growth), and given our dependence on surface drinking water supplies, Raleigh's (and North Carolina's) stormwater regulations should be tougher and more forward looking. If we are going to have denser development, we must have better and more environmentally sustainable stormwater control measures, specifically Green Stormwater Infrastructure. We should incentivize developers to incorporate GSI into new development. We should reduce the amount of impervious surface allowed in R 6 and R 10 before requiring the use of SCMs like GSI. We should make rain gardens cheaper to build so more people will install them. In addition, the City should ensure that all its rain gardens are properly planted with effective native plants. Some of our rain gardens (like at Union Station) are almost devoid of plants. Please train staff to understand native plants and rain gardens!	The % impervious allowed in UDO Section 9.2.2.A.4 is not being changed with this update. We recommend that proposals to reduce the % impervious allowed be taken to Planning Commission or City Council. / In terms of incentivizing GSI, Raleigh Stormwater is working on several projects outside of the Design Manual prcoess. In the 11/28/23 meeting of Council Growth and Natural Resources Committee, the Council members directed staff to work on two presented ideas related to incentivizing GSI: (a) develop reiumbursement tables and work with upcoming projects to utilize UDO Section 8.6.5., which authorizes the City to reiumburse private developers for GSI. (b) work with cross-department teams to determine how the City could allow developers to meet regulatory requirements through constructing GSI in ROWs. / In terms of plantings, (a) in section 6.3.5 of this Design Manual, invasive plants have been prohibited in SCMs. This is a more enforceable path than requiring native plants. See the 11/28/23 GNR Committee meeting for a discussion around requiring native plants in general. (b) We are aware that there some City GSI practices outside of Parks that have not been ideally maintained. Raleigh Stormwater is collaborating with PRCR to develop a SCM/GSI maintenance team that will maintain GSI
Overall		Karen Rindge (Designer)	Thanks to our stormwater staff for all your hard work and caring!	Thank you.
Overall		Keri Hamlin (Citizen)	Language needs more uniformly and clearly defined standards for the physical application of of silt fencing and other pre and post construction runoff mitigation tactics used to protect adjoining property owners from damage to their property. Should be language which addresses that flood mitigation tactics need to evolve with the grading and excavation process and be held to more clearly defined standards unique to each phase.	Requirements for erosion and sediment control can be found in UDO Section 9.4, in Design Manual Chapter 8, in the NCDEQ Erosion and Sediment Control Planning and Design Manual, and in the CIty's Standard Details. The NCDEQ Manual and the Standard Details contain very detailed instructions for silt fence and other practicies.
Overall		Peyote (West Raleigh CAC	We discussed the design manual as a group and the consensus among our members is that Raleigh should adopt stricter controls for stormwater runoff than proposed in the draft design manual. We believe controlling for 25 year storms should be the minimum for development.	The stormwater peak discharge regulations are based on the 2-year fand 10-year design storms. The 10-year design storm aligns with the requirement for sizing storm drain pipes and channels. So, the peak discharge requirement is designed so that the downstream stormwater conveyance systems will continue to have capacity. Floodplain regulations are based around the 100-year storm, and when flood studies are conducted they must be based on future conditions (build-out zoning). This helps to ensure that development will not occur in the floodplain.
Overall		Peyote (West Raleigh CAC	We also wondered why the stormwater Control Measures use the 2 - 10 -25 - 50 years storm as their benchmarks. We feel it's easier to understand if you referred to storm intensity by number of inches of rain per hour. Is there a reason we use the current system?	Thank you for this comment. This has been standard practice for engineering criteria for some time, but it doesn't mean that it is the only way to do things! In some cases it is beneficial to refer to the storm frequency (2-year, etc) because different calculation methodogies require different inputs. For example, the two most commonly used methods use different inputs: Rational Method uses peak intensity in in/hr but the NRCS method uses total rainfall duirng the storm in inches. Also, there is some variability in historic rainfall data across the City, but this could be considered
Overall		Suzanne Harris (Home Builders Association)	Overall there are missing references, and multiple typos throughout the document.	Noted. We will continue to improve the document's format and editing.
Overall		Travis Tyboroski (JAECO)	Consolidation of the “small” and “large” development, as well as the removal of the “designer’s letter” will streamline the process for smaller developments.	Thank you.

Chapter/Overall	Section/Topic	Commentor(s)	Comment/Question	Comment Response 11/27/2023-12/06/2023
Overall		Travis Tyboroski (JAECO)	Additional flexibility allowed with the elimination of the GLDA grading and retaining wall setbacks will again allow for a more streamlined process; less design adjustments.	Thank you.
Overall		Travis Tyboroski (JAECO)	Well organized, clear, and concise. While we don't necessarily agree with every point, and we think the private/public scoping delineation needs to shift (more "engineering judgement" should be allowed on private side), it is clear the City had a goal to improve runoff quality and the manual is trending in that direction. Sincerely appreciate the opportunity to offer input at each step in the process and look forward to discussing in person.	Thank you. We understand your overall concern and strive to balance interests.
Overall		Vinicius Taguchi (Designer)	Great improvements over version 2	Thank you.