

separate documents to the benefit of professionals who are not familiar with these respective sets of requirements. Information relevant to LID should be included in the LID manual narrative rather than a separate letter. Information intended for flood control (drainage) should be in a separate letter.

Green comments are notes and recommendations
Red comments are suggested edits.



DRAINAGE AND LID SUBMITTAL GUIDANCE



The following provides guidance for drainage and low impact development (LID) submittal requirements for preparing the various drawings, reports, and calculations for applications to the City of Santa Rosa (City). The mention of LID herein refers specifically to the LID requirements in the City's **current National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4) Order No. R1-2015-0030 NPDES No. CA 0025054 (MS4 Permit), or most current version.** LID must also comply with the *Regional Storm Water Low Impact Development Technical Design Manual* dated May 2017 revised December 2020 (Regional LID Manual), or most current version. This guidance is applicable, but not limited, to initial application processes, entitlement processes, and final design submittals.

Move this text to the you want people that this to read the LID n MS4 permit.

which was written to address requirements in the

1. Project Categories

For the purposes of storm drain and LID analysis, all projects proceeding through the City's application process can be classified into one of the categories listed below. Any discussion of "creating or replacing of impervious surface(s)" discussed herein follows the definition in the current regional *Storm Water Low Impact Development Technical Design Manual* (LID Manual).

- a. Small-Scale Projects (<10,000sf): Defined as projects creating or replacing LESS THAN 10,000 square feet (sf) of impervious surfaces.
- b. Medium-Scale Projects (≥10,000 sf; <1 acre): Defined as projects creating or replacing 10,000 sf or more, but LESS THAN one (1) acre, of impervious surfaces.
- c. Large-Scale Projects (≥1 acre): Defined as projects creating or replacing one (1) acre or more of impervious surfaces.

2. Required Documents for each Project Category

- a. SB-9, SB-35, and SB-330 Regulated Projects: These projects need to demonstrate they will have an insignificant impact on the environment including water quality, hydromodification, flooding, and hydraulic capacities. The process to help the City assess this is through the submittal of conceptual drawings and design calculations. Therefore, all SB-9, SB-35, or SB-330 projects must submit the required documents based on the project size classification (Small-, Medium-, or Large-scale project) during the application process.
- b. Small-Scale Projects (<10,000sf): Small-scale projects are not currently required to implement LID per the City's current MS4 Permit. LID design, Draft Storm Water Low Impact Design Submittals (SWLIDS), Final SWLIDS, and Operation and Maintenance Agreements will not be required if the project is not impacting existing LID features. The Project must submit a LID Determination Worksheet with an exhibit delineating the impervious surfaces being added or replaced with their respective areas labeled. If claiming that portions of the replaced impervious surfaces are exempt, the areas considered as exempt shall be clearly delineated with supporting documentation provided (e.g. record drawings, details, boring logs, etc). If the project impacts existing

photographs,

The City attorney previously wanted to call this a declaration rather than an agreement, because the City doesn't want to have to sign it.

Unless Draft will be used in the LID Manual.

LID features, the new LID design, ~~Draft~~ ^{declaration} SWLIDS, Final SWLIDS, and revised Operation and Maintenance ~~Agreement(s)~~ ^{Initial} will need to be submitted. A Preliminary Drainage Technical Memorandum will be required for entitlement approval (if subject to entitlement processes) if a project proposes to alter the existing historic drainage patterns or infrastructure. If the project is not subject to entitlement approval, the Preliminary Drainage Technical Memorandum is required with the initial submittal. A Final Drainage Technical Memorandum must be supplied with the Engineering and/or Building approvals, meet drainage and LID requirements, and reflect the Final approved drawings. The Drainage Technical Memoranda ^{um} must address any ^{significant} changes to existing drainage pattern ^s or infrastructure including existing and proposed altered drainage patterns, ditches, swales, channels, catch basins, and/or pipes. Modifications, other than replacement in kind or maintenance to existing engineered systems including, but not limited to, drainage pipes or culverts 12 inches in diameter or greater, will require Preliminary and Final Drainage Reports developed and signed by a licensed Civil Engineer with an exception given for private driveway culverts where the culvert is replaced or extended matching the existing pipe diameter. Owner builders may draft and submit the drainage technical memoranda ^{um} if these individuals are able to perform the other related activities such as regular (non-engineered) grading or permitted activities allowed to be performed by these individuals as outlined by the California Board for Professional Engineers and Land Surveyors. When the scale or type of activities require design by a licensed Civil Engineer, a licensed Civil Engineer will likely be required to ~~prepare and sign the~~ ^{provide a signed} Drainage Technical Memoranda ^{um}. The Drainage Technical Memoranda ^{um} must include all relevant design assumptions, basis for calculations, ^(if included) existing and proposed tributary watershed maps, comply with the City's current *Storm Drain Design Standards*, and comply with Sonoma Water's current *Flood Management Design Manual* as required by City's *Storm Drain Design Standards*. Relevant requirements of Drainage Reports will be required as applicable. Technical Memoranda shall be standalone documents with relevant attachments included. A few example are given below:

Only significant changes be addressed. e.g. change slope of an existing watershed from 0.010 to .015 is insignificant and should not need to be addressed in Memo or Report.

Can be prepared by subordinate staff and signed by a Civil Engineer

One of the distinctions between Memo and report is needing to be conveyed during the entitlement stage. Existing/proposed by redeveloped and no

- i. A project proposing an accessory dwelling unit that does not ^{significantly alter} modify the following existing features would not require ^{um} drainage technical memoranda: swales; ditches; site topography; drainage inlets; grades, alignment, and/or elevations of gutters/valley gutters; or storm drain pipe alignment, grades, and/or elevations. The project drawings must show the drainage patterns and grading.
- ii. A project proposing ^{conveying more than 1cfs} various site improvements including realigning a ditch or drainage swale would require Drainage Technical Memoranda that would need to supply items such as:
 1. Existing and proposed tributary watershed maps
 2. Hydrology information
 3. Brief overview of existing and proposed on-site drainage
 4. Design assumptions and criteria (e.g. recurrence interval, runoff coefficients, times of concentrations, rainfall data and intensities, etc.)

Moving an existing or conveying stormwater roof downspout from 3ft horizontally should require a tech memo. Recommend setting on this such as 1CF

5. Design calculations (e.g. ditch capacity calculations, culvert capacity calculations, etc.)

iii. A project proposing an accessory dwelling unit requiring the undergrounding of a ditch into piped storm drain system with connection to the City's storm drain infrastructure would require a Preliminary and Final Drainage Report ~~prepared and~~ signed by a licensed Civil Engineer.

Can be prepared by subordinate staff and signed by a Civil Engineer

c. Medium-Scale ($\geq 10,000$ sf; < 1 acre) and Large-Scale (≥ 1 acre): Medium- and large-scale projects are required to implement LID and hydromodification per the City's current MS4 Permit. LID design, Draft SWLIDS, Final SWLIDS, ~~and Operation and Maintenance Agreements~~ will be required and must be signed by a licensed Civil Engineer. Medium-scale projects will be required to develop and submit ~~Preliminary and~~ Final Drainage Reports signed by a licensed Civil Engineer. Based on the site-specific needs, medium-scale project may **reduce the information supplied in the drainage reports** if there is a reduction in runoff tributary to the existing storm drain infrastructure and no significant changes to the existing storm drain infrastructure are proposed. Significant changes would include items such as changes to watersheds, increased tributary flows, reduction of inlet capacities, or decreased times of concentration. ~~Preliminary and~~ Final Drainage Reports are required for entitlement approval. Final Drainage Reports are required for Final approval from Engineering or Building.

The Civil Engineer doesn't sign the Operation and Maintenance Declaration, so this should be reworded.

May only need a Tech Memo rather than a preliminary report. Maybe we can note whether a Tech Memo or Preliminary Report are needed with the pre-application meeting.

^A ~~Preliminary and~~ Final Drainage Reports ^A are required for entitlement approval. Final Drainage Reports ^{is} are required for Final approval from Engineering or Building.
 or Technical Memorandum may be

3. Drainage Reports

Drainage Reports shall ~~include and~~ ^{describe or} address the following sections as applicable:

- a. Introduction (Project Description)
- b. Existing Conditions
 - i. Geographic Location
 - ii. General Setting
 1. Land Use
 2. Topography
 3. Hydrology
 4. Precipitation and Climate
 5. Flood Plains
- c. On-site Drainage
 - i. Introduction
 - ii. Drainage Area Delineation
 - iii. Existing Drainage
 - iv. Proposed Drainage
- d. Drainage Design Criteria
 - i. Recurrence Interval
 - ii. Design Discharge
 - iii. Soil Classification and Hydrological Soil Group
 - iv. Runoff Coefficient
 - v. Time of Concentration
 - vi. Rainfall Data and Intensities

- vii. Grate Interception capacity (inlet capacity), depth of flow in gutters, and gutter spread width (required for all proposed public roads and modifications to Public storm drain infrastructure, curb and gutters, and/or altered roadway grades)
- viii. Culvert Design
- ix. Stormwater Treatment
- x. Hydromodification (if applicable)
- e. Conclusions
- f. References
- g. Appendices
 - i. FEMA Flood Plain Map
 - ii. Existing Drainage Report or Proof of Coordination with Agencies
 - iii. Hydrology Calculations – Existing Conditions
 - iv. Existing ~~Drainage Management Areas/Watersheds~~ Hydrology (Tributary Areas)
 - v. Proposed ~~Drainage Management Areas~~ Hydrology (Tributary Areas)
 - vi. Proposed Drainage Plans
 - vii. Natural Resources Conservation Service (NRCS) Soil Data and/or Geotechnical Information
 - viii. Inlet capacity, depth of flow in gutter, and spread width calculations
 - ix. ~~Hydrology and Hydraulic Calculations for design storm and 100-year flow~~
 - x. Hydromodification Calculations

Use Sonoma Water nomenclature to be consistent.

Consistent with Sonoma Water requirement.

e.g. Civil Engineers won't profile utilities on entitlement drawings. Similar on Construction Drawings they will label small pipes conveying water. Individual downspouts in plan view but generally won't profile them.

4. Drafting

- a. Pipe types for all storm drain pipes shall be labeled on the final improvement plan and profile sheets with ~~acronyms~~ (when included in a drawing set) listed in the ~~acronym~~ list and be consistent with information in the Drainage Report. abbreviations
- b. All storm drain structures shall have a unique identifier (e.g., CB-1, 1a, etc.).
- c. Structure types shall be shown on the plan sheets with the unique identifier.
- d. Creek setback limits must be delineated on the project drawings with creek setbacks.
- e. The electronic computer-aided design (CAD) files with linework for right-of-way, curb, gutter, sidewalk, sewer, water, and storm drain shall be provided with the approved final improvement drawings and record drawings if changes were made from the approved final improvement plans.
- f. Low Impact Development (LID)
 - i. Every LID feature shall have a unique identifying label per feature (e.g., BSW-1, TWF-1, 1a, etc.)
 - 1. The identifiers shall match and be consistent between the drawings and SWLIDS Reports
 - ii. LID features shall be shown and labeled on the drainage plans, drainage profiles, drainage detail sheets, and landscaping plans as applicable.
 - iii. All ~~planting to be installed~~ landscaping specified on the drawings in the LID features shall conform to the species ~~approved in the Regional LID Manual and be specified on the planting (landscaping) drawings, or LID drawings, with notes on the drainage/LID detail drawings referring to the applicable planting drawings.~~ Planting drawings must

The highlighted is only the City is going to ask file.

This is an LID Submittal guidance letter and should not address planting to be installed. It should address planting being specified for installation.

included on the approved plant list within the LID Technical Design Manual.

include the genus name, common name, maximum spacing, total number of plants to be installed, and mature plant size (canopy).

- iv. For LID features with plastic perforated pipe (PPP) underdrains:
 - 1. The size of PPP needs to be called out (and consistently) on detail sheets, SWLIDS Reports, and drawings.
 - 2. A table shall be listed on the detail sheet with a unique identifier for each location, underdrain size (if multiple sizes used on the Project), and total length.
 - 3. Detail sheets shall specify the following “INSTALL UNDERDRAINS WITH HOLES FACING DOWN.”
 - 4. Details must include cleanout(s).
- v. Where LID features vary in depth, bottom width, slopes, orifice diameters, weir height, detail, typical section, or end of swale flowline elevation to top of grate elevations, a table shall be provided ~~on the detail sheet~~ summarizing the details of each swale including the unique drainage identifier, PPP size(s) and lengths, and applicable detail or typical section. These values shall be consistent between the drawings and SWLIDS.
- vi. LID features ~~must be detailed in plan and cross-sectional views on the drainage detail sheets.~~ Details for the LID improvements must be included on the drawings.
- vii. When mulching is included as part of the proposed LID, the details shall note ~~“GROUND-UP, COMPOSTED OR ARBOR MULCHING MATERIAL IS REQUIRED TO PREVENT CLOGGING AND DISCHARGE TO DOWNSTREAM INLETS.”~~

We may prefer to include the table and/or details on the Grading Plan or LID sheet rather than a separate details sheet.

~~“FURNISH AND INSTALL FLOAT RESISTANT MULCH TO PREVENT MULCH FROM ENTERING THE STORMDRAIN SYSTEM”.~~

This is a design requirement and must be specified by the specific mulch meeting this requirement, then including the allows the contractor to install something different than spe avoid this, the note needs to be generic and not reference

5. Design

a. Drainage Design

- i. Existing and proposed tributary area maps need to be included and accounted for including downspouts and building footprints.
- ii. Design calculations need to incorporate any off-site flows that contribute to the on-site storm drain infrastructure including ditches and swales.
- iii. When existing hydraulic grade line (HGL) and energy grade line (EGL) elevations are unavailable through Caltrans (if applicable), Sonoma Water, Sonoma County (for annexation areas), or the City of Santa Rosa for exiting storm drain systems, a HGL of 1.0 feet below the top of grate/rim, or gutter flowline lip of curb opening catch basin, is an acceptable baseline assumption.
 - 1. Project’s proposing use of this assumption will need to demonstrate in their drainage calculations that their proposed design doesn’t negatively impact, ~~even if marginal,~~ the assumed HGL of the existing system.
 - 2. ~~Negative post project impacts to an assumed HGL will not be accepted. In these circumstances, it might behoove a proposed Project to model the existing system instead of utilizing the assumed HGL method.~~
 - 2 3. When an applicant cites that no existing HGL and EGL are available, written (mail or email) responses from Caltrans (if applicable), Sonoma Water, Sonoma County (annexation areas), and the City of Santa Rosa

confirming that the respective agencies do not have existing HGL and EGL data for the existing storm drain system shall be supplied in the Appendices of the Drainage Reports. relevant excerpts from the original →

- iv. Where existing HGLs and EGLs are supplied by a governing agency, ~~a copy of the full Drainage Report (or Hydrologic and Hydraulic Report) and available as-built~~ or final plans shall be supplied as an Appendix to the applicant's Drainage Reports.

If we are tying into a 2,000 unit development, we need to provide the necessary to provide the entire report for the development. It is critical to provide data for the development into.

1. If the Drainage Report supplied with the HGL and EGL information are no longer reflective of the existing conditions, the applicant will be required to either update the calculations of the system as a check if the HGL and EGL are still applicable OR provide a detailed explanation for using the assumed HGL and EGL freeboards. An increase of an overall runoff coefficient of 0.20 or greater for the existing (pre-proposed project) watershed tributary to a storm drain closed conduit would qualify as a data set no longer reflective of existing conditions as this would likely represent a change in the type of drainage area (i.e. change in land use) based on standardized runoff coefficients for developed areas.

- v. Tire Derived Aggregate (TDA) – Based on information provided in the *Evaluation of Tire Derived Aggregate (TDA) as a Media for Stormwater Treatment* developed for CalRecycle by Humboldt State University dated April 18, 2016 and City staff experience, TDA shall not be proposed or used where it is anticipated to be in contact with storm water or groundwater. This includes, but is not limited to, use behind retaining walls, in LID features, along ditches, at locations with known high seasonal groundwater, or within 500 feet of a creek. Within the City's jurisdiction, TDA may only be used when fully encapsulated and in locations where, as a function of the proposed design, would not be anticipated to interface with storm water or groundwater.

These sections don't directly relate to flood control or LID and should be a separate document, or a separate section altogether.

- vi. Asphalt grindings shall not be allowed behind retaining walls, in LID features, along ditches, at locations with known high seasonal groundwater, within 500 linear feet of a creek, or where it conflicts with other City or regulatory standards, such as City Standard Detail 215.
1. An example of when asphalt grindings may be used would be under an impervious paved surface, outside of the utility trenches, outside of an area with known seasonal high groundwater, and 500 linear feet or more from a creek.

- vii. Wooden structures and wooden lids shall not be permitted for use for publicly owned and maintained infrastructure including LID features.
- viii. New "bubble-up" designs shall not be permitted except for where there is an infiltration component to the design, such as LID features where they are designed with PPP and infiltration that eliminates ponding within 72 hours as ~~"bubble-up" designs do not meet the minimum self-cleaning velocity requirements of the City's Public Storm Drain Design Standards~~ and create a

Bubble-up's do not change the velocity in the SD system. $V=Q/A$.

public nuisance by creating a vector breeding environment against California Health and Safety Code’s Division 3. Pest Abatement Chapter 1. Mosquito Abatement and Vector Control Districts, Article 5, Section 2060 et. al. In private development, popup emitters are allowed. However, subdivision back of lot drains, traditionally bubble-up systems, shall be designed to prevent vectors from entering the system (e.g. at the inlet) while allowing the design flows into the system without creating a significant clogging risk and flooding risk (such as with mesh screens). Details shall be provided on the proposed drawings demonstrating how the systems aren’t creating a violation of vector codes.

ix. Storm water infiltration and hydromodification

1. Storm water infiltration shall not be allowed in locations that pose a risk of causing pollutant mobilization, such as at sites identified as open or compromised on environmental regulatory databases (e.g. the State Water Resources Control Board’s GeoTracker), similar files maintained by local agencies, or on properties with other documented environmental concerns.
 - a. Sites located within 500 linear feet of an open or compromised site will have to provide environmental site assessment testing and a licensed engineering report (e.g. Environmental Site Assessment Phase II Report) during entitlement to confirm there is no risk of contamination on the site that could be mobilized from an infiltration feature as part of the environmental clearing. At entitlement, environmental testing for these purposes shall extend to sufficient depth(s) to classify the soil constituents per the design.
2. Storm water infiltration shall not be allowed in locations that pose a risk of causing sewage effluent mobilization from septic pits, leach lines, or other sewage disposal systems.
3. Storm water infiltration shall not be placed on or near slopes that could contribute to or create the potential for slope instability.

- a. Storm water features allowed on slopes ~~will~~ ^{may} require additional design features such as weirs to achieve contact times and retention/infiltration as well as velocity dissipation to prevent erosion. These need to be engineered with calculations provided in the SWLIDS and Drainage Report.
- b. A project shall provide a ~~Geotechnical~~ Certification by a licensed Geotechnical Engineer when the project proposes storm water features on or near slopes when the project requires a Hillside Development Permit **certifying the designed storm water infiltration feature will not contribute or create the potential for slope instability.** The Geotechnical Certification must be included as an attachment in the SWLIDS and Drainage Report.

Priority 1 BMPs are not required to provide contact time.

The Geotech doesn't want to infiltrate water in hillside development and won't state this in these words. They might be willing to include a statement noting "While it is not ideal to infiltrate stormwater on account of it contributing to slope instability, we understand the municipality is requiring this as a condition of their MS4 permit. Therefore reasonable measures have been taken to reduce or minimize slope stability issues."

- c. Storm water infiltration shall not be allowed on or near slopes of projects requiring a Hillside Development Permit on soils documented or known by City staff to have moderate to high erodibility or risk of slope instabilities, such as Goulding cobbly clay loams.
- 4. Storm water infiltration shall be setback at least 5 feet or outside of the 1:1 structural plane drawn up from the bottom of any adjacent foundation when moisture barriers are not supplied as part of the design or a natural function of the design (e.g. large, above ground planter box style rain gardens with sealed sides and bottoms). If stamped documentation from a licensed Geotechnical Engineer is provided, modifications from the above can be made following the licensed Geotechnical Engineer’s design requirements.
- 5. Storm water infiltration shall not be located near utility lines where the introduction of stormwater could cause damage to utilities or settlement of trench backfill. If any utilities are proposed to be directly adjacent to the LID feature, a moisture barrier shall be designed between the storm water infiltration feature and the utility backfill.
- 6. Storm water infiltration is not allowed within 100 feet of any groundwater production wells used for drinking water.

b. LID Design

- i. LID proposed in backyards for MS4 Permit compliance is strongly discouraged within the City of Santa Rosa’s jurisdictional authority. LID in backyards shall only be accepted with a variance from the City Engineer and must be conditioned to grant an easement for access and inspection by City staff upon no less than 24-hour notice to the property owner and occupant.

Should be designed to minimize vector issues and

- ii. ~~Bubble-up designs are only allowed as part of a LID feature and design where they consist of PPP and infiltration eliminates ponded water within 72 hours.~~

There may be other situations where BMPs can be in utility easements, such as a private SD system running between a handful of bioretention areas.

- iii. LID features will not be permitted within utility easements traversing through private properties as the features must remain in functioning order for regulatory compliance, the general design of the features would often prohibit vehicular access and the ability to service the utilities, and utilities easement accesses are required to remain unobstructed. LID features located within an easement provided solely for the purposes outlined in 4.b.i of this Letter of Guidance will be allowed.

public

- iv. LID features are generally not subject to setback requirements. ~~For projects not already approved through entitlement or commented on by entitlement as of the date of this Letter of Guidance, they shall be subject to the Creek Setback requirements.~~ Only projects proposing large-scale LID features with multi-use benefits, such as increasing flood capacity and recreational use, and that obtain approvals of the design and ability to maintain from all related regulatory agencies (e.g., City, North Coast Regional Water Quality Control Board, and Department of Fish and Wildlife) will be considered ~~for a variance.~~ These

The creek setback is often the lowest point on site and the best place to locate BMPs. Some creek setbacks are 200ft. The issue we are trying to avoid is placing infiltration measures too close to the creek bank. Instead of excluding them from the creek setback area, note that they cannot be placed in an area that jeopardizes a creek slope.

Shouldn't use the term Variance unless there is an intent to require a written Engineering Variance.

projects, ~~if granted a variance~~, will be conditioned to obtain approvals from all related regulatory agencies for both the construction and maintenance in perpetuity. ~~A conditional variance under these specific circumstances will have additional requirements including~~ certification of the design and soil stabilities by a Geotechnical Engineer and planting of only native plants from the LID Manual approved plant list appropriate for the specific site.

If authorized, the project will require

We need to clarify that this is only needed with Delta Volume Capture to accommodate the treatment calc. This is not needed for Priority 1 measures proposing 100% volume capture.

v. Contact time calculations and engineered heights/sizes of weirs and/or top of grates shall be supplied in the Draft and Final SWLIDS calculations. Contact times shall be per the requirements in the current LID Manual. Per the LID Manual dated May 17 (Revised Dec. 2020), contact time for vegetated features (e.g., bioretention swales) shall be 5 minutes of contact time if 90% or more of the flow enters at the upstream end. Length of the feature shall be designed to provide 12 minutes of contact time if flow enters uniformly along the length.

One of the issues with requiring this is that the joint trench design comes at a later date (after permit issuance) and the Civil Engineer doesn't know PG&E elected to place a structure in a bioretention area until after they have already done it.

vii. LID calculations, plans, Draft SWLIDS, and Final SWLIDS need to account for utility conflicts or items such as joint trench junction structures when located in a proposed LID feature. The square footage of non-LID structures in a LID facility must be removed from the total credited LID square footage.

viii. Where curb cuts are proposed for the method of flow entry into a LID feature, inlet capacity calculations must be provided to show that the number and size of curb cuts provided are sufficient to hydraulically pass the design inflow into the LID feature.

ix. Tree canopy does not count as part of the 50% of vegetated cover required in the current LID Manual per North Coast Regional Water Quality Control Board guidance.

x. Due to regulations in Attachment F of the City's MS4 Permit, sump pumps specifically for the purpose of LID will not be accepted as publicly owned or maintained infrastructure, or allowed in the public storm drain system.

xi. PPP underdrains

1. Capped cleanouts with sweep bends shall be provided at the upstream end of underdrains to provide access for cleaning of the underdrains.

2. Details such as P2-03, P2-04, P2-05, and P3-04 in the LID Manual dated May 2017 (revised December 2020) list PPP length as "5' (TYP)." However, the PPP length is a function of the design of engineered system related to infiltration flow capacities of the bioretention system, generally matches the length of the LID feature, and the length must be identified for each unique bioretention feature.

3. Cleanouts shall be provided on the upstream end of the PPP and may be needed at regular intervals depending on the length of the feature.

xii. Planting

1. Erosion control and/or landscape drawings must supply sufficient measures, such as ground-up, composted mulch, to stabilize the soil until plant maturity.

Most of this should really be written in the LID manual, rather than in this document.

2. Plant selection must conform to the approved plant list in the current LID Manual and shall provide at least 50% vegetative cover (excluding trees) within three years or at complete plant maturity, whichever is sooner.

6. Final Punch List and Acceptance

- a. LID features may only be used as settling basins or for erosion control during construction when no functional components (e.g., structural soil, PPP underdrains, etc.) of the LID are installed. If the LID feature is installed including PPP, biofiltration soil, structural soil, and plantings and used as a construction settling basin or erosion control feature, all compromised components of the LID feature will be rejected and likely required to replace planting (if needed), biofiltration soil, and structural soil. The project will also be required to clean and make available for inspection the cleaned PPP.
- b. Project owner(s) are responsible for disclosing to the owner(s) or new owner(s) of the property the responsibilities of maintaining LID in perpetuity and regulated compliance.
- c. All final LID documents (e.g., record drawings, Final SWLIDS, Operation and Maintenance agreements, and signed and recorded Maintenance Declarations) must be transmitted to the City's MS4 permit coordinator on Santa Rosa Water's Storm Water and Creeks Team and be consistent with the record drawings and constructed conditions before final acceptance will be granted.
- d. The Owner shall provide certification and supporting documentation from a licensed Civil Engineer that the LID features have been designed in accordance with, and are constructed and functioning per, the current LID Manual and approved Final LID documents.
 - i. If the Final SWLIDS, constructed LID features, record drawings, and Operation and Maintenance ~~agreements~~ ^{declaration} aren't consistent with each other and/or the certification and supporting documentation from the licensed Civil Engineer isn't provided, final acceptance will not be granted until full MS4 permit compliance is achieved.
 - ii. When performance testing is required due to questionable performance, the method of testing permeable pavement performance accepted by the City is ASTM 1701. For other LID features, testing methods outlined in the current related Caltrans Design Guidance manuals will be accepted. The test must be performed to the design and LID Manual required intensities and parameters.
- e. The design in the Final Drainage Report or Drainage Technical Memorandum must match the final approved improvement drawings and constructed record drawings ~~condition~~. A Final Drainage Report or Drainage Technical Memorandum must be updated and resubmitted to reflect the completed field conditions if changes to the storm drain system were made after the improvement drawings were approved.

It would be more appropriate to include the information in item 6 on the permit, because the owner and contractor need to know this.