

1. Storm Drain Criteria and Assumptions

The City of San José has developed a preliminary storm drain model that represents the piping system, integrated riverine system, and overland flows throughout the City. The City provided the model to Schaaf & Wheeler in January 2020 for the purpose of analyzing the storm drain system in the Diridon Area. Existing, revised existing, and proposed condition scenarios were developed in order to assess the storm drain needs in the Diridon Area.

Pipes that are found to have capacity deficiencies are considered for improvements that will meet current standard design guidelines described in The Santa Clara County Drainage Manual and The City of San Jose's 2002 Development Manual (Development Manual).

Backbone improvements are those that have broad benefit to large areas of the Diridon Project Area or add place-making value, and should be constructed in a comprehensive manner, rather than incrementally with each development. Individual developments will still be obligated to construct frontage improvements, storm drain services and localized storm drain improvements beyond those listed in this study consistent with City policies and as required by conditions of approval.

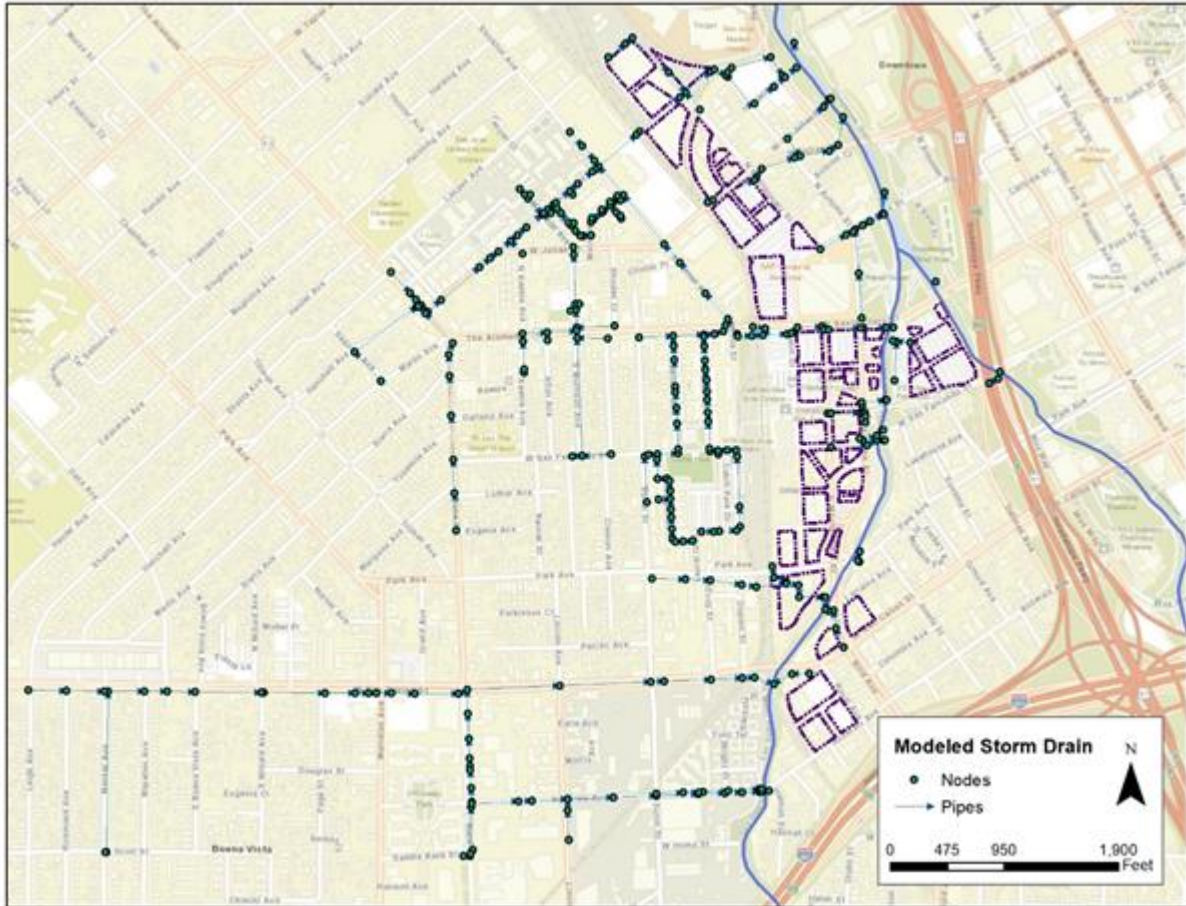
The criteria below will be applied to backbone storm- drain systems. The Diridon Project Area ground generally slopes from west to east toward Guadalupe River at approximately 0.005 ft/ft. The storm drain system includes three pump stations at depressed roadway underpasses and has seven outfalls to the river and creek. Backbone storm drain lines in the Diridon Project Area vary in size from 18 inches to 54 inches in diameter. Backbone line slopes generally follow the ground profile. Backbone facilities within the Diridon Project Area that were modeled in this analysis are shown in Figure 1. Other pipes and laterals are assumed to be upgraded if required as a condition of the adjacent development and are not included in this analysis.

a. Existing Facility Capacity Criteria

Existing potential capacity deficiencies are identified as defined by the City of San José's level of service (LOS) criteria described below:

- During a 10-year event: hydraulic grade line (HGL) shall reside below street elevation
- During a 100-year event: prevent structure flooding

Figure 1: Modeled Storm Drain System



b. Conditions Assessment

Currently the City of San José does not maintain an on-going storm drain assessment program to identify existing conditions of storm drain pipes. Given the inherent resilience of reinforced concrete pipe, no conditional deficiencies are anticipated or addressed in this analysis.

c. Design Criteria

The design criteria for proposed storm drain pipes are consistent with the Development Manual:

- The storm drain system shall be designed to convey the 10-year storm event with the HGL below street elevation.
- The minimum inside diameter for storm drain mains is 15 inches.
- The minimum inside diameter for storm drain laterals from inlets is 12 inches. Slopes of these laterals shall be one percent minimum.
- Manholes shall be installed at:
 - All connections of laterals from storm water inlets located in the public right-of-way

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- All changes in type of pipe material
- All changes in direction
- All changes in pipe size
- At all intersections of mains
- 400' maximum spacing
- Storm drain pipe materials shall be reinforced concrete pipe (RCP) unless alternate materials are specifically approved.
- Outfalls to Los Gatos Creek or Guadalupe River shall be constructed according to Santa Clara Valley Water District (SCVWD) requirements. All work performed within SCVWD Rights of Way are subject to approval and issuance of a permit by SCVWD and may be subject to requirements from additional agencies such as the Regional Water Quality Control Boards, U.S. Army Corps of Engineers, and California Fish and Wildlife.

2. Storm Drain and Flood Control

The storm drain system in the Diridon Project Area is owned and maintained by the City of San José. The system in the area drains to Los Gatos Creek and Guadalupe River which are under the jurisdiction of the Santa Clara Valley Water District (SCVWD).

a. Existing Facilities

The Diridon Project Area is relatively flat with gradual slopes to the east toward Los Gatos Creek and Guadalupe River. It is served by 3.5 miles of backbone storm drain pipe 18 inch in diameter and larger. There are 7 total backbone outfalls to receiving waters, with 2 outfalls to Los Gatos Creek and 5 outfalls to Guadalupe River. There are 3 pump stations which drain the railway underpass at Julian Street, Santa Clara Street, and Park Avenue.

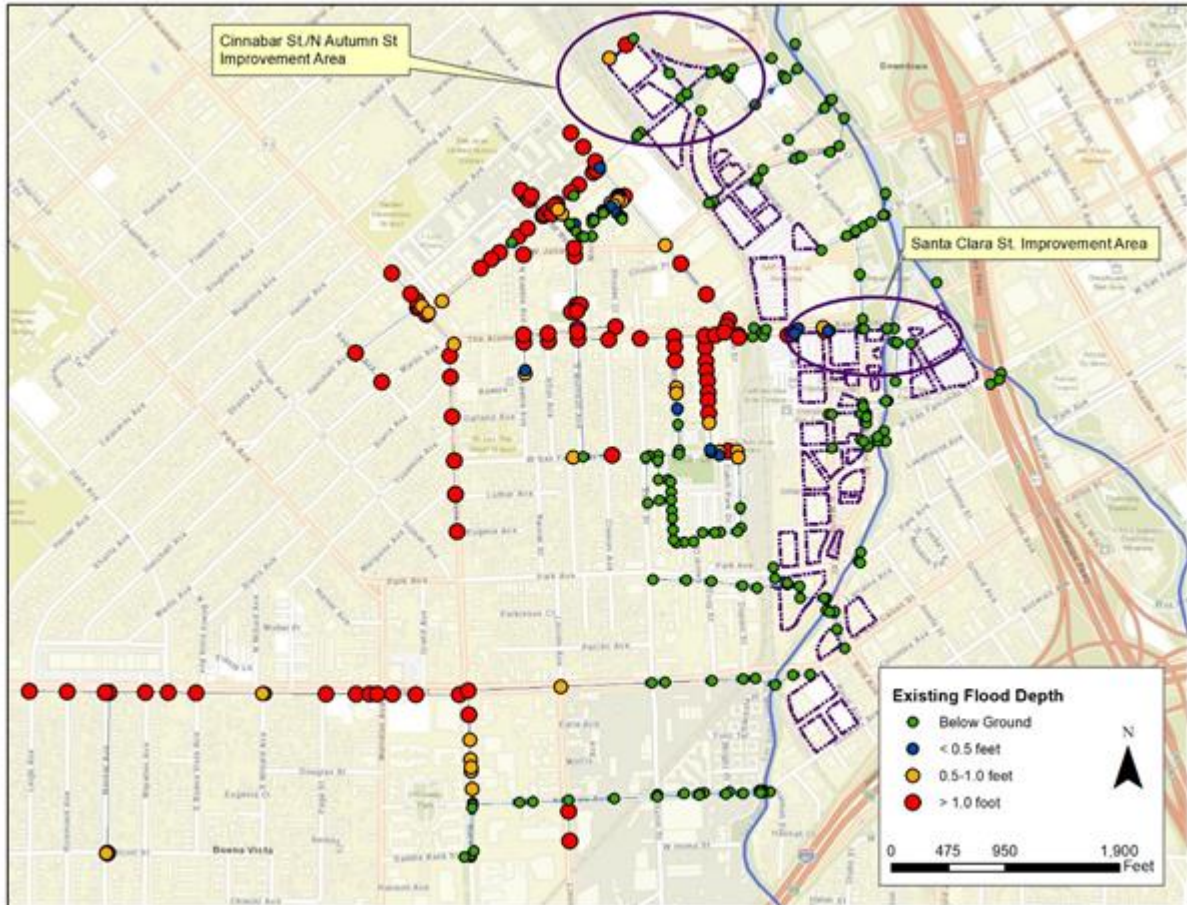
b. Operational Deficiencies

Results from the model indicate that improvements are required to eliminate flooding within the Diridon Project Area during a 10-year, 24-hour storm with existing and proposed land uses. The trunk line storm drain system in the Diridon Project Area conveys water generated in the larger watershed outside the area to Los Gatos Creek and the Guadalupe River.

Areas within the Diridon Project Area that experience flooding during the 10-year 24-hour storm with existing land use include the pipe connecting to Cinnabar Street at Montgomery Street and along Santa Clara Street between Cahill Street and Autumn Street. Existing modeled flood locations are identified in Figure 2.

Localized flooding over one foot was modeled on San Carlos Street from Leigh Avenue to Race Street. This flooding is caused by insufficiently sized pipes downstream. Improvements to the downstream pipes will alleviate the flooding. However the flooding is not identified in the Diridon Project Area.

Figure 2: Modeled Existing Storm Drain System 10-year Flooding



3. Storm Drain Improvements

The City of San Jose provided the 10-year storm existing conditions storm drain model for the Diridon Area. This model was updated using survey data and as-built plans and recent improvement projects to develop the revised existing model scenario. For the proposed condition the model was updated with survey data, as-built plans, as well as development land use data for the proposed developments. The existing 10-year flows provided from the City were used in the revised existing and proposed condition models.

To mitigate flooding near the proposed Diridon developments two improvements were modeled in the Proposed Condition Scenario which are summarized in Table 1 and shown in Figure 3. Upsizing the pipes in Cinnabar Street and N. Autumn Street from Montgomery Street to just past the railroad will mitigate the flooding along the pipe connecting the Cinnabar Street at Montgomery Street as shown in Figure 4.

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The proposed larger pipes in Santa Clara Street will eliminate flooding in that area as shown in Figure 4. This project will add a new outfall to Los Gatos Creek and will require a flap gate to control exit conditions.

With these mitigation measures, 10-year flooding in the Diridon Project Area will be less than significant.

Pipe Location	(E) Pipe Diameter	Length	Proposed Pipe Diameter
Cinnabar St – Montgomery St to Railroad	27" RCP	475'	30" RCP
Santa Clara St - Diridon Station to Guadalupe River	18" RCP	670'	24" RCP

Figure 3: Proposed Pipe Improvements

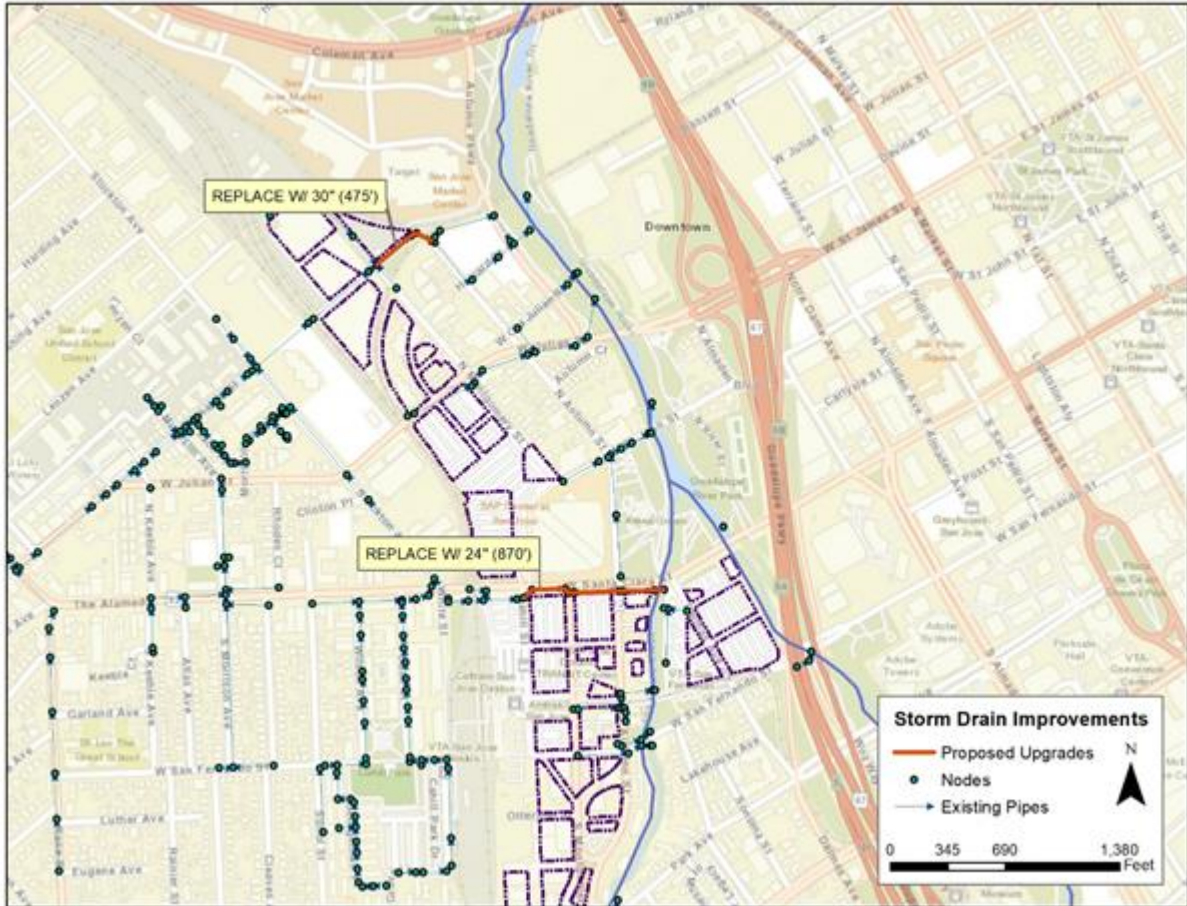
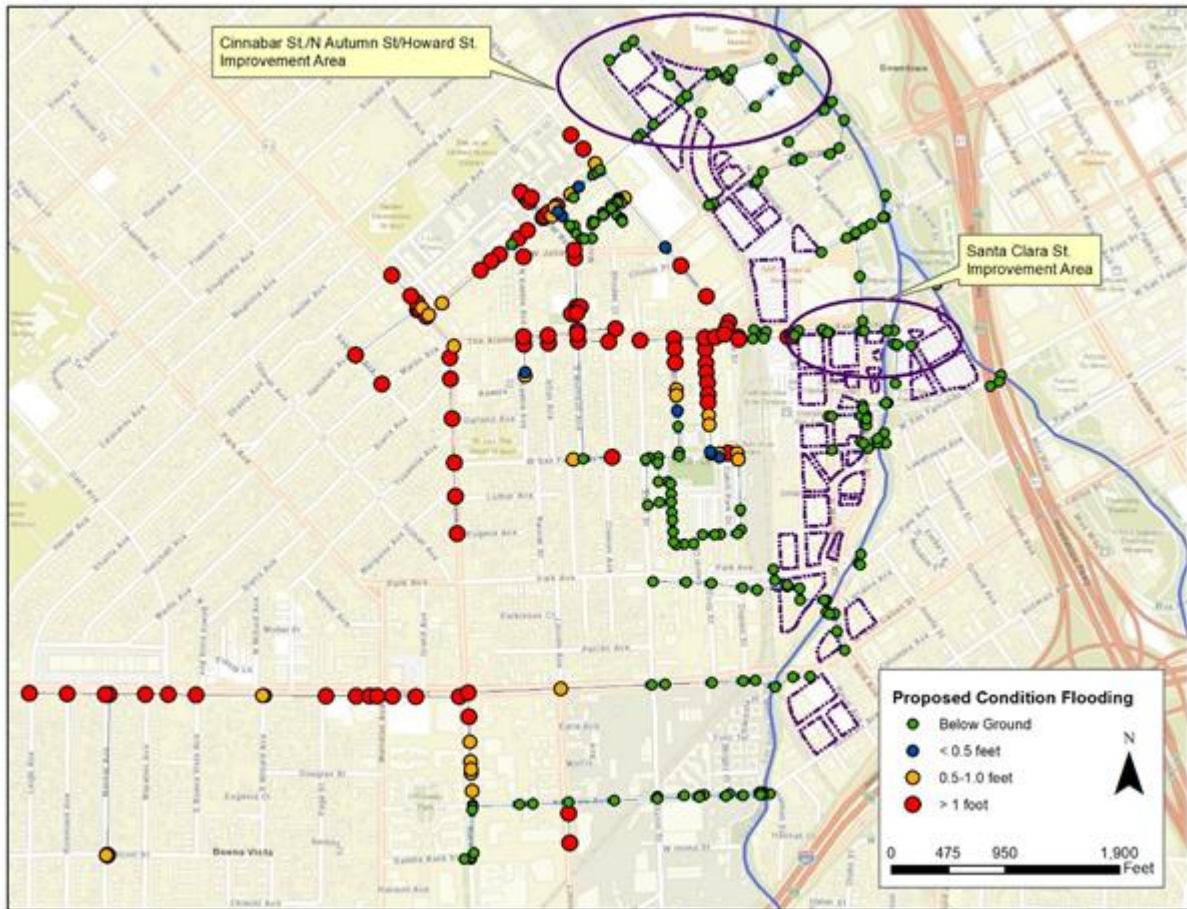


Figure 4: 10-year Storm Drain Flooding w/ Proposed Pipe Improvements



Northern Variant

The changed land use and densities associated with the “northern variant” land use option does not change the mitigation measures and pipe improvement sizes identified within this study.

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The Park Street Pump Station is located in a planned building footprint at Park Avenue and Montgomery Street (location shown in Figure 5 is approximate) and may need to be relocated during project design. The pump station drains the Park Avenue railroad underpass as shown in Figure 5. It consists of two pumps and has a capacity of approximately 4 cubic feet per second. It pumps a peak flow of 2 cubic feet per second during the 10-year storm event.

Figure 5: Park Pump Station Location

