

Memorandum

Date: May 21, 2019
To: Gatzke Dillon & Balance LLP
From: Lisa Austin, P.E., Principal, and Adrienne Miller, P.E., Senior Engineer
Subject: San Diego State University Mission Valley Campus Project
Construction Excavation Impacts on Groundwater Storage
Geosyntec Project Number: SW0311

1. BACKGROUND

The City of San Diego submitted comments on the San Diego State University (SDSU) Mission Valley Campus Master Plan Project Initial Study in a letter dated February 19, 2019. Comment No. 3 from John Helminski of the City of San Diego Public Utilities Department stated:

3. The DEIR should evaluate and quantify the potential impacts that construction excavation activities would have on groundwater storage. A list of possible excavation activities, specifying permanent and construction-related excavations and depths should be included. The DEIR should also specify if material will be removed or replaced. One possible permanent excavation is presented on Page 4, Section 1.6.2, Paragraph 1 of the Initial Study, which reads that “[the new stadium will include]...a combination of aboveground seating, and below-grade lower bowl to reduce overall height of the stadium.” Estimate depths of below-grade Project elements should be included in the DEIR.

SDSU’s response to the comment was the following:

3. The comment states that the Draft EIR should evaluate and quantify the potential impacts that construction excavation activities would have on groundwater storage and suggests information that should be included. The Draft EIR will include this groundwater storage analysis consistent with CEQA.

2. PRELIMINARY ANALYSIS

The Project site will be developed in two main phases referred to as *Opening Day* and *Full Build Out*. The *Opening Day* configuration includes the new Aztec Stadium (Stadium), as well as temporary aboveground surface parking surrounding the Stadium and Park Space along the southern and eastern perimeter of the overall Project site. Aboveground surface parking covered

with asphalt concrete or gravel is planned for *Opening Day* in areas north, west, and south of the Stadium (Group Delta, 2019a).

Surface elevations across the new Stadium area vary from about 50 to 95 feet NAVD 88 (Group Delta, 2019a). The ground surface slopes to the southwest to a minimum elevation of about 50 feet and then ascends northeast to an elevation of about 80 feet due to the placement of fill for the existing stadium (Group Delta, 2019a).

During the *Opening Day* phase, the Stadium will consist of the following components:

- Service Level,
- Field Level,
- Main Concourse,
- Upper Seating Bowl, and
- Elevated Club Lounges.

The only below-ground structures planned during *Opening Day* occurs within the Stadium Service Level. The Service Level will be located within the western and southern portions of the Stadium below the Main Concourse. This level will be partially underground, and it will have locker and field club rooms, and a loading dock. It will be constructed using free-standing retaining walls with soil backfill to tie into newly formed fill platforms with temporary slopes. The retaining walls will be up to 30 feet high (Group Delta, 2019a).

For the new Stadium, cut and fill volumes are estimated to be 180,000 cubic yards (CY) and 270,000 CY, respectively, with a net import of 90,000 CY (Group Delta, 2019a). A temporary borrow area is planned south of the Stadium.

Groundwater was measured below the Stadium site at elevations ranging from 37 to 49 feet. The lower measurements are from explorations in the southern area of the Stadium site. Table 1 below summarizes groundwater levels within the development areas (Group Delta, 2019a).

Table 1. Opening Day – New Stadium Levels

Opening Day - New Stadium Levels	Finished Subgrade Elevation, Feet	Measured Elevation of Groundwater ¹ , Feet	Distance between Finished Subgrade and Groundwater Level ¹ , Feet
Field Level	56 (cut)	37 to 49	7 to 19
Service Level – Loading Dock (Partially Underground)	56 (cut)	37 to 49	7 to 19
Service Level – Locker Room (Partially Underground)	60 (cut)	37 to 49	11 to 23

Opening Day - New Stadium Levels	Finished Subgrade Elevation, Feet	Measured Elevation of Groundwater ¹ , Feet	Distance between Finished Subgrade and Groundwater Level ¹ , Feet
Main Concourse	87 (fill)	37 to 49	38 to 50

Notes:

¹ Information for Column 2 above was taken from the Grading Data table on page 3 (Group Delta, 2019a). The measured groundwater elevation given is only a range and not specific to the various Stadium levels. Therefore, the distance between finished subgrade and groundwater level is only an approximate range.

Full Build Out will consist of the development areas listed below:

- Campus Expansion,
- Hotel & Conference Center,
- Residential, and
- Tailgate Park and Park Space.

During *Full Build Out*, the temporary surface parking will be replaced with a Campus Expansion, Hotel & Conference Center, Residential, and Tailgate Park developmental areas.

The only below-ground structures planned occurs within the Campus Expansion development area. The Campus Expansion will occupy about 40 acres, and it consists of a *Campus Zone* south of the Stadium and a *Stadium Zone* east of the Stadium. The Campus Zone will have 14 buildings that range from 3 to 5 stories with plan areas ranging from 17,000 to 28,000 square feet (Group Delta, 2019b). The Stadium Zone will have two 5-story buildings with plan areas of 31,000 square feet each (Group Delta, 2019b). Most of the Campus Zone will have two levels of partially underground parking and most of the Stadium Zone will have a ground level and an underground level of parking (Group Delta, 2019b). The other components of *Full Build Out* (i.e. Tailgate Park, Hotel & Conference Center, and Residential areas), do not have underground parking at this time.

Cut and fill earthwork will reform the Project site to create new streets and building pads and raise it above the 100-year floodplain. Cut and fill volumes are estimated to be 756,000 CY and 1,065,000 CY, respectively, with a net import of 309,000 CY, exclusive of shrinkage and bulkage, and remedial grading (Group Delta, 2019b).

Surface elevations vary across the entire Project site from about 45 to 100 feet NAVD 88 from southeast to northwest (Group Delta, 2019b). Groundwater was measured in all the subsurface explorations at elevations of 47 to 49 feet along the northern portion of the overall site and at elevations of 37 to 40 feet in the southwest portion of the overall site (Group Delta, 2019b). Table 2 below summarizes groundwater levels within the development areas (Group Delta, 2019b).

Table 2. Full Buildout – Development Areas

Full Buildout - Area	Development	Average Finished Subgrade Elevation, Feet	Measured Elevation of Groundwater, Feet	Distance between Finished Subgrade and Groundwater Level, Feet
Campus Expansion – Campus Zone (with Underground Parking)		55 (Cut)	38 to 40	15 to 17
Campus Expansion – Stadium Zone (with Underground Parking)		75 (Cut)	45 to 48	27 to 30
Hotel & Conference Center		85 (Fill)	43 to 49	36 to 42
Residential – North (R1 to R9)		70 (Cut)	44 to 47	23 to 26
Residential – South (R10 to R15)		65 (Cut)	44 to 52	13 to 21

Notes:

¹. Information for Columns 2 and 3 above was taken from the Measured Groundwater Levels table on page 11 (Group Delta, 2019b). The measured groundwater elevation given is specific to the various Development Areas. Therefore, the distance between finished subgrade and groundwater level is an approximate range specific to the Development Areas.

Groundwater may influence deep construction activities, such as piling for the stadium (Group Delta, 2019a). It may also need to be managed during construction of the underground parking for the Campus Expansion – Campus Zones since it was measured to be about 15 feet below the deepest cut (Group Delta, 2019b).

Groundwater may be encountered during construction excavation due to working near or below the groundwater level depending on the location within the Project site, which would necessitate dewatering. Prior to construction, further site-specific testing will occur to further determine groundwater levels, soil conditions, and the need for dewatering. Dewatering BMPs, such as dewatering tanks or weir tanks that will hold the excavated groundwater, may be used during the construction phase. All dewatering would be conducted in compliance with the California NPDES Construction Stormwater General Permit (Order No. 2009-009-DWQ, as amended by Order 2010-0014-DWQ and 2012-006-DWQ) and the San Diego Regional Water Board’s General Waste Discharge Requirements for Groundwater Extraction Discharges to Surface Waters within the San Diego Region (Order No. R9-2015-0013, NPDES No. CAG919003).

Post-construction, no dewatering discharges are expected, as finished subgrades will be designed to be above the groundwater table. If needed, permanent dewatering discharges will be managed to prevent impacts to the San Diego River and groundwater supplies by recharging the dewatering back to groundwater at a suitable location on the Project site. Therefore, construction excavation would not substantially decrease groundwater supplies or interfere with groundwater recharge such that the Project would impede sustainable groundwater management of the basin.

3. REFERENCES

Group Delta, 2019a. Report of Geotechnical Investigation, Aztec Stadium SDSU Mission Valley, San Diego, California. Prepared by Group Delta Consultants, Inc. for Gatzke Dillon & Ballance LLP. April 5, 2019.

Group Delta, 2019b. Report of Geotechnical Investigation Site Development SDSU Mission Valley, San Diego California. Prepared by Group Delta Consultants, Inc. for Gatzke Dillon & Ballance LLP. April 5, 2019.

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