



Terrestrial Solutions Inc. _____ Geotechnical Services

To: United Walnut Taxpayers

October 6, 2017
Project No.: 17-088

Attention: Mr. Dennis G. Majors

Subject: Geotechnical Review of Converse Response Reports and Leighton Review Report concerning the West Parcel Solar Project, Mt. San Antonio College, Walnut, California.

Terrestrial Solutions Inc. (TSI) previously conducted a geotechnical review of the referenced 2014, 2017a Converse Consultants (Converse) documents and an EIR document which did not have an designated author (TSI, 2017c). Subsequently, Converse responded to the three TSI review reports (Converse 2017b, c, and d). In addition, a report was prepared by Leighton Consulting, Inc. (Leighton) reviewing the site conditions, including the information presented in the Converse reports and a draft document prepared by the United Walnut Taxpayers (2017). This review report by TSI is supplemental to the previous reviews conducted by TSI (2017 a, b, and c) regarding the referenced 2014, and 2017a Converse reports. The purpose of this report is to summarize and respond to comments presented by Converse (2017b, c, and d) and Leighton (2017). A summary of the Leighton's report is provided prior to responding to Converse's comments.

Leighton Investigation:

Leighton was authorized by Mount San Antonio College to conduct an independent geotechnical study and review of the previous reports regarding the West Parcel Solar project. Leighton did not review any of the reports from TSI. According to Leighton they were unable to conduct the complete field investigation they had proposed. Their field work primarily included excavation of a single hollow stem boring in the northern canyon near Grand Avenue. This boring was excavated to a total depth of 45 feet. The upper 40 feet was alluvium below which was bedrock to the total depth. Leighton conducted liquefaction analysis of the conditions encountered in this boring and determined that the alluvial deposits were not liquefiable. They also concluded that there could be up to 0.9 inches of seismic settlement. Based on this boring Leighton estimated that a minimum of approximately 20 feet of alluvial removals would be necessary in this area. Leighton did not provide a discussion of the potential settlement of the left in place alluvium beneath the proposed additional fill in this area. This is also an issue that Converse has not addressed and could impact proposed structures.

Leighton also conducted very preliminary slope stability analysis of the proposed 35 feet high 2:1 proposed cut slope below the existing homes along Regal Canyon Drive. Their analysis indicated that the slope was not stable as designed, assuming out-of-slope bedding and representative bedrock strength parameters. Their analysis indicated that a 40-foot wide, 5 feet deep key would be necessary to stabilize this slope.

Leighton emphasized throughout their report the requirement for additional subsurface investigations in order to properly model the landslide and the other proposed slopes and geologic conditions at the site. Their recommendations include the requirement for conducting slope stability analysis to determine the appropriate size of proposed keys and buttresses. Leighton also indicated that they could not evaluate the recommended key that Converse had recommended for the landslide along Grand Avenue because Converse had not conducted slope stability analysis.

Summary of Converse's Three Response Reports:

Converse provided three separate letters (2017b, c, and d) responding to the three review reports conducted by TSI. Each of the response reports followed similar formats. A quote is provided from the subject TSI report followed by a Converse response. Most of the quotes that Converse chose to respond to are a single sentence out of an entire paragraph and therefore, do not convey the entire message of that review comment. It would very time consuming and repetitive to provide a response comment to each of the responses made by Converse. However, several themes are common to the various responses provided and are discussed herein.

General Comments

In TSI's initial review (2017a) of the Converse 2014 and 2017a reports (Sections 3.0 and 4.0) the primary concern identified was the lack of sufficient subsurface information in the key areas of the site using the correct investigative tools. Leighton's report also indicated that additional subsurface information was necessary to conduct proper modelling and analysis of the site. Converse's responses to TSI's review comments indicate that they also recommended additional field investigation and analysis for the site. The recommendation for additional investigation and/or analysis was not mentioned in either of the initial Converse reports (2104 & 2107a) reviewed or the EIR document reviewed. In Converse's responses to many of the comments they also indicate that the grading activities will be conducted in accordance with current codes and that it will be properly monitored and appropriate mitigation be conducted. Prior to conducting grading activities Converse must provide geotechnical reports which meet or exceed industry standards and demonstrate that they understand the underlying geologic conditions and have relied on engineering analysis to provide the appropriate mitigation measures. The recommendation for additional investigations and analysis provided in the response reports (2107a, b and c) is not consistent with their statement in the response letter (Page 3, third paragraph, Converse 2017d) concluding that their recommendations would "improve overall site stability" prior to grading. In addition, it does not address if conditions during remedial removals will create less stable conditions or if the final conditions meet the code required 1.5 factor of safety.

TSI's specific concerns that were raised in review of the initial documents, that still need to be addressed, are primarily related to creating a geologic model of the site that explains the observed conditions throughout the site. This includes providing a complete geologic map, geologic cross-sections, and text explanations which take into account all the information gathered in the field. The



current information from the regional maps, the hollow stem borings, the test pits and the field mapping show that differing soil and bedrock types are present within the site. The geologic map must show the lateral distribution of the differing soil and bedrock materials. This includes showing geologic contacts between surficial soils and bedrock materials and the contact between conglomeratic bedrock units and siltstone bedrock units, if possible. The maps, cross-sections, and information provided to date do not meet agency requirements and/or the standards of practice. The response to comments from Converse did not provide significant clarification or address these deficiencies, other to say that additional information was necessary.

Modeling the Bedrock Structure

One of the key elements in creating a geologic model is the geologic structure of the bedrock including the bedding orientations. The regional bedding attitudes (Dibblee, 1989) indicate a general east to northeast dipping bedrock in the subject area. Boring BH-13 (Converse 2014) indicates a general west to northwest dip. The test pits and surface mapping show northeasterly to northwesterly dipping bedrock. The hollow stem boring logs (Converse, 2014) describe horizontal to near vertical bedding. This data clearly demonstrates that there is variability of the bedding at the site, which demands significantly more bedrock information to properly model the bedrock conditions.

The statements in the Converse's original and response reports are conflicting in their message. The statements in the two initial reviewed reports (2014 & 2017a) indicate that bedding is consistent and dipping to the west northwest (into most of the slopes). The information in the test pits excavated and logged indicate that many bedding attitudes in the bedrock dip to the northeast (out of most of the slopes). One of the bedding attitudes in Test Pit No. 2 has an eastward dip (N10W, dip 30 east). In one of Converse reports (2017b, page 3) they stated "the undisturbed bedding attitudes were not measured to be dipping to the east". Leighton's report (based primarily on the Converse information) indicates that bedding is generally dipping out of slope for the slopes at the site.

Clearly the bedding planes are variable throughout the site. In Converse's response reports (2017b, page 3 and 4), they attempt to explain that attitudes measured in the test pits (2017a) were the same as those measured in BH-13 (2014). Yet in the same paragraph say that bedding should not be expected to be exactly the same throughout the site. Because bedding changes throughout the site, investigations need to be sufficient to model the entire site especially below the existing homes (along Regal Canyon Drive) that are above north to northeast facing slopes and where remedial removals are potentially 20 feet or greater in depth and might create unstable temporary conditions.

Regal Canyon Drive Slope

One of the proposed slopes that is of greatest concern to TSI is the proposed 35 high cut slope below the three existing homes along Regal Canyon Drive. Leighton conducted a preliminary slope stability



analysis of this slope that indicated a 40-foot wide and 5 feet deep key and buttress would be required to stabilize this slope. Neither of the three response reports prepared by Converse (2017b, c, and d) addressed this slope area. TSI's review of Leightons preliminary analysis indicates that a 40 feet wide by 5 feet deep key would be required to stabilize this slope. To construct this key would require an approximately 40 feet high 1:1 temporary slope. This slope would have to be initiated within 5 feet of the property line behind these three homes and would likely expose out of slope weak bedding conditions. This temporary slope would be required to have a minimum factor of safety of 1.25. This temporary stability condition has not been addressed by Converse. Large diameter borings should be excavated in the immediate area of the proposed slope and directly behind the offsite properties to properly model the geologic conditions in this slope area. Bedrock strength parameters should be based on direct laboratory testing and/or conservative bedrock strengths. This is how Leighton analyzed this slope however, they did not address temporary stability issues. It needs to be emphasized that Converse did not, and has not specifically address the stability of this slope area in their response reports even though it was highlighted in TSI's review report in Sections 3.0 and 4.0 and other locations throughout the review report. In addition, Converse has not addressed the temporary stability of any of the perimeter natural slopes along the southern and western edge of the property. They also have not indicated that additional investigations are proposed in the area of the Regal Canyon Drive or below any of the other homes.

Grand Avenue Landslide

The stability of the existing landslide and adjacent slope along Grand Avenue has not been established. To establish the existing and proposed stability of the landslide additional subsurface geologic information is required, geologic cross-sections must be generated, and slope stability analysis must be performed. This was also the conclusion reached by Leighton. The proposed slope areas to the south of and north of the landslide must also be investigated and analyzed to determine if weak out of slope bedding conditions are present. To the south of Test Pit No. 1 the proposed design includes a relatively flat area that cuts into the existing hill and then ascends 60 feet to the proposed pad. No key and/or buttress are shown in this area (2014, 2017a) which is partially underlain by the landslide.

The additional work that must be conducted for the landslide area should determine if there are landslide planes or weak clay beds within the bedrock below the excavations that have been conducted to date. Converse's characterized their 4 test pits as being near the toe of the landslide, yet Test Pit No. 1 is clearly in the central portion of the landslide. They also indicate that no attitudes of the slip surface were taken because it was not a well developed slip plane. The trench logs show a discrete surface and no other significant details are provided on the logs regarding these slip planes. At the very least the trench logs should indicated the orientation and/or dip trend across the trench. Logs of excavations should also record other important characteristics (plastic clay gouge, thickness, continuity, variability, parallel to bedding, across bedding, etc.) of the slide plane so that accurate



models can be constructed, and proper stability analysis completed. Pictures are often useful to verify the trench logs. As indicated previously, TSI's picture of the Test Pit No. 4 does not match the log of this excavation as presented by Converse. Since this excavation is still open it would be easy for Converse to take independent photo's and observations to verify their test pit log. This latter difference is relatively minor compared to the issues that remain for other portions of the site however, point to the ability of the consultant to properly observe and document geologic conditions. This concern is also illustrated at the top of the hill above this landslide where Converse only recorded a couple of bedrock attitudes that matched those from BH-13. In this same area there were out crops exposing out of slope bedding attitudes that were easily observed and documented by TSI during our brief site visits. These observations apparently led Converse to the false statement that bedding throughout the site was similar to BH-13 and into the proposed slope. Because Converse logged TP-4 as a landslide, their Drawing No. 1 (2017a) indicates a possibly separate landslide that, according to the map, may go all the way up to the top of the slope and includes the area of the similar bedding attitudes. The map is most likely incomplete because the geologic contacts are not continuous and do not close or terminate on other contacts as they should. This incomplete map illustrates why TSI is concerned regarding the accuracy and competency of the information presented by Converse.

Converse has made statements regarding the current activity of the Grand Avenue Landslide in the response report that are contrary to each other. Converse stated (On Page 6 of 2107d), that "There has been no observed evidence of ground movement or displacement observed along the sidewalk and street surface on the west side of Grand Avenue below the road cut landslide". Converse also stated (Page 6 of 2017b) that "the landslide has moved and crept down slope to the edge of the sidewalk and fence along the west side of Grand Avenue. Utility companies have had to clear away the fallen landslide materials off the tops of their buried vaults which run along the sidewalk." These statements appear to be in conflict with each other. The first statement conflicts with Converse's conclusion that "the landslide represents a continued hazard to Grand Avenue that needs to be repaired".

Liquefaction

Leightons investigation included excavation of a single hollow stem boring in the northern valley area. Converse should state that they agree with the findings and analysis conducted by Leighton and include their information in any reports they provide in the future. Converse should also address whether or not 0.9 inches of seismic settlement is significant and utilize the data provided from the Leighton boring regarding remedial removals and potential settlement related to leaving over 20 feet of alluvial deposits in place beneath nearly 60 feet of fill materials.

Conclusions and Recommendations:

The responses to TSI's overall comments and primary concerns have not been addressed to date by Converse. Leighton did address the issue of Liquefaction. In their response reports, Converse has



recommended additional investigation and analysis is necessary for the site. This is appropriate however, Converse has still made conclusionary statements regarding the project, indicating that the site will improve overall site stability than existing conditions. These conclusions are not appropriate as they are not supported by the existing information and analysis. In addition, providing improved stability is not the agency requirement where structures are proposed. The consultant must meet code requirements.

It was Leightons opinion and is also TSI's opinion that significant additional investigation and analysis are necessary to properly characterize/model site conditions. These investigations must include direct observation of geologic features by a competent Professional Geologist and Engineering Geologist. A qualified Civil/Geotechnical Engineer is required by State guidelines for school sites and to provide slope stability, settlement, and other necessary geotechnical engineering analysis. Based on the EIR document

It is our understanding that the City of Walnut is the reviewing agency for obtaining a grading permit at the site. In addition, Geotechnical reports for school owned properties that have significant geologic and geotechnical issues must go through the California Geologic Survey. Based on the pages 152 and 153 of the draft EIR documents, the previous reports by Converse and/or Leighton were not submitted to the California Geologic Survey for review. Considering the existing landslide, the potential slope stability and other geotechnical issues at the site, it should be required that this agency be provided the opportunity to review the site conditions and the geotechnical reports.

Terrestrial Solutions Inc. appreciates the opportunity to present this response report. Should you have any questions, please contact the undersigned at (949) 201-3388.

Respectfully submitted,
Terrestrial Solutions Inc.



Don Terres CEG 1362
Reg. Exp.: 01-31-19



References

Converse Consultants, 2014, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, Mount San Antonio College, Walnut, California, Project No. 13-31-339-01, dated December 19, 2014.

Converse Consultants, 2017a, West Parcel - Landslide Toe Test Pit Trench Study, Mt. San Antonio College West Parcel Solar Project, Walnut, California, Converse Project No. 13-31-339-30, dated July 27, 2017.

Converse Consultants, 2017b, Response to Terrestrial Solutions Inc. (TSI) Draft Environmental Impact Report Review Comments-Landslide Toe Test Pit Trench Study, West Parcel Mt. San Antonio College West Parcel Solar Project, Walnut, California, Converse Project No. 13-31-339-30, dated September 20, 2017.

Converse Consultants, 2017c, Response to Terrestrial Solutions Inc. (TSI) Draft Environmental Impact Report Review Comments – DEIR Planning Session Comments dated August 31, 2017 West Parcel Mt. San Antonio College West Parcel Solar Project, Walnut, California, Converse Project No. 13-31-339-30, dated September 21, 2017.

Converse Consultants, 2017d, Response to Terrestrial Solutions Inc. (TSI) Draft Environmental Impact Report Review Comments-Geotechnical Review of proposed grading of the West Parcel site dated June 29, 2017, West Parcel Mt. San Antonio College West Parcel Solar Project, Walnut, California, Converse Project No. 13-31-339-30, dated September 25, 2017.

Leighton Consulting, Inc. 2017, Geotechnical Review, Mount San Antonio College South Campus-West Parcel, west of Grand Avenue and approximately 500 feet Southeast of Temple Avenue/Amar Road, City of Walnut, California, Project No. 11672.001, dated September 11, 2017.

Terrestrial Solutions Inc., 2017, Geotechnical Review of proposed Grading of the West Parcel Site for Mount San Antonio College, Walnut, California. Project No. 17-088, Dated June 29, 2017.

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United Walnut Taxpayers (UTW), 2017 Preliminary Review of negative Geotechnical and Geologic Aspects of Constructing Earthfill Pad for a Solar Farm on the West Parcel – Draft dated May 8, 2017.

