

EP-22-0107_1 Northbay at Lake Woodmoor Preliminary Plan PUDSP228
Location: NW ¼ SE ¼ Section 11, T11S, R67W, 6th P.M.
Latitude, Longitude: 38.1047, -104.8561

Colorado Geological Survey has reviewed the Northbay at Lake Woodmoor preliminary plan resubmittal. The applicant proposes to divide 7.23 acres to create 35 townhome lots at the north end of Woodmoor Lake near the intersection of Woodmoor Drive and Deer Creek Road in Monument, Colorado. Included with this referral were the request for CGS review (6/29/22), letter of intent (N.E.S., Inc., June 2022), “Geologic Hazards Evaluation and Preliminary Geotechnical Investigation” report (CTL Thompson, Inc. Project CS18589-115, undated but previously dated 9/29/2016 in previous reviews), “Natural Features, Wetland, Wildfire, Noxious Weeds & Wildlife” report (ecosystem services, LLC., 6/1/2022), Construction Drawings (Kiowa Engineering Corporation, 6/3/2022), and “PUD Development Plan” drawings (14 sheets; N.E.S., Inc., 6/3/2022).

We reviewed this site, provided our letter dated 12/19/2016, and subsequently uploaded comments on 1/6/2020. Per correspondence from the county and applicant in emails from 10/1/2021 to 10/28/2021, it appears that the county was acceptable with the applicant submitting the older report (CTL Thompson, 9/29/2016) provided a discussion of our comments and how they have been addressed was included. However, it appears that CTL’s report is identical to their 9/29/2016 report, although the report’s cover page has been updated (the report states “draft”, is undated, and the development name on the title page has changed). In the review of the referral documents, it does not appear our previous comments have been addressed. Also, it appears that the PUD development plan (N.E.S., Inc., 6/3/2022) has changed and now shows townhomes within the 100-year floodplain designated by FEMA (Map No. 08041C0276G, December 7, 2018). This change has eliminated the 3-retaining walls. **CGS recommends CTL have the opportunity to review the updated PUD development plan and modify their report as applicable.**

Our previous comments remain relevant and are generally repeated herein.

CTL identified the following anticipated geologic hazards and constraints to development: expansive soil and bedrock, shallow groundwater, flooding, erosion, shallow bedrock, regional seismicity, and naturally-occurring radioactive materials. CGS agrees that this list represents the possible geologic hazards and constraints at the site.

Shallow groundwater. CTL reported encountering groundwater at depths ranging from 8 to 28 feet below ground during drilling and 3 to 10 feet below ground surface five days after drilling. Groundwater levels fluctuate seasonally, and water levels commonly rise post-development due to the construction of impermeable ground cover and landscape irrigation. CTL stated (p. 6) that their measurements were collected in the early spring months when groundwater and lake levels are “typically just starting to rise”, suggesting that even shallower water levels should be anticipated. The maximum depth of the lowermost floor levels of habitable space *must* be located at least three feet, preferably five feet, above the shallowest anticipated groundwater levels. CTL suggests (p. 10) that perched groundwater conditions can be mitigated by installing drain systems around below-grade spaces. However, individual foundation perimeter drains are only intended to handle small amounts of intermittent, perched water, and are not to be used to mitigate persistent shallow groundwater conditions such as those suggested by the water levels observed by CTL during and after drilling. Based on our review of the PUD development plan, basements do not appear to be planned. **Full-depth basements should not be considered feasible on this site.**

Flooding and bedrock erosion. As noted by CTL and within the , a mapped FEMA 100-year floodplain crosses through the site. The CTL report and the PUD Development Plan drawings indicate that the existing floodplain will be channelized to create an engineered floodway through the center of the property. Additionally, the PUD Development Plan drawings now show buildings within the proposed floodway. As noted by CTL (p. 9), soil and bedrock at the site are susceptible to wind and water erosion; in particular, as pointed out in the documentation for the Geologic Map of the Monument Quadrangle (Thorson and Madole, 2003), the Dawson Sandstone (TKda5) can be friable and easily eroded on weathered outcrops. If present and left unprotected during extreme flooding events, weathered bedrock exposed along the outside bend of the floodway could be subject to lateral erosion potentially undermining the proposed retaining walls and/or nearby parts of the developed area. CTL noted that they did not observe weathered lenses in their borings, but it is unclear what the conditions are along the edge of the proposed floodway. **The possible presence of erodible weathered bedrock along the edges of the proposed floodway should be evaluated; additional erosion control measures should be designed as necessary by a qualified professional and implemented to reduce potential erosion of weathered bedrock during flood events.**

Comments uploaded to El Paso County Development Application Review by Amy Crandall, P.E., Engineering Geologist (acrandall@mines.edu) on 7/14/2022.