MACNAIR
&
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CONSULTING ARBORISTS AND HORTICULTURISTS

MEMORANDUM

DATE:	9/1/2023
TO:	Susie Murray, City of Santa Rosa
CC:	Michelle Zyromski
FROM:	James MacNair
SUBJECT:	1080 2nd Street Bunya Pine
RE:	Response to 8/30/2023 Email Questions

Following are my responses to questions posed in the 8/30/0223 email from Susie Murray regarding the 8/24/2023 Risk Assessment Report.

- The summary says the likelihood of failure over the three-year period is probable. Can you advise what the current risk for failure is?

Response: The shortest time frame recommended by the Risk Assessment BMPs is one year. I typically use three years as a more realistic time frame to capture weather events and the progression of tree defects. Assuming no female cones are maturing currently, the primary risk is a failure of the closely spaced multiple trunks in the upper crown. I believe Fred Frey's inspection of the upper crown did not observe any fissures at the trunk unions, the presence of decay, or cone development. I don't know if Mr. Frey used a sounding hammer or probe to inspect the trunk attachments. As his report states, "*Multiple stems, especially those similar in diameter, which originate in one location, possess an increased likelihood for failure at the attachment point*."

Based on his information, the risk of failure in September 2023 is likely currently low, but the risk of failure could change in severe rain/wind events. However, the risk of stem failure is separate from the risk of falling cones.

- Would annual or bi-annual maintenance, including trimming the branches/foliage and removing the cones, minimize the risk?

Response: If the tree is retained, it will require installing a cabling system with reduction pruning and crown cleaning. Cable systems require annual inspection of the hardware, cable tension, and attachment points. With annual cable inspections, cone development could also be monitored. As the female cones are the most severe risk, removing the cones would reduce this risk.

All of this is technically possible, although at a very high monetary cost. The tree is well over a hundred feet tall, requiring a tall lift truck and climbers. The sharpness of the leaves requires protective clothing. There is also no guarantee that all of the developing cones will be found and removed or that this intensive level of maintenance will occur in the future. I have seen many trees where the prescribed work is not consistently followed as site managers and budgets change over the years.

- Does the subject Bunya Bunya (Bunya Pine) produce male and female cones? If so, how frequently are the male cones produced?

Response: Yes, both male and female cones are produced. The literature suggests that the male cones are produced annually (not positive on this). The female cones take around 17 months to mature after pollination, with cones produced every two to three years. The female cones can drop over three months in late fall and winter. The male cones are slender and about eight inches long.

- If that were my tree, how often would you advise that I have the tree evaluated?

Response: As described above, the tree will require annual inspections at a minimum.

- Can you explain how the occupancy rate is calculated?

Response: Here are the official categories for establishing the occupancy rate for target zones.

Constant occupancy indicates that a target is present at nearly all times, 24 hours a day, 7 days a week. Examples of constant occupancy are static, unmovable targets such as buildings or power lines.

Frequent occupancy indicates that the target zone is occupied for a large portion of a day or week. Suburban streets that receive moderate volumes of traffic, car parks for facilities open only during the daytime, sidewalks in shopping areas, and busy delivery areas are examples of frequent occupancy.

Occasional occupancy describes sites occupied by people or targets infrequently or irregularly. Examples include country roads, low-use footpaths, and low-use sections of parks.

Rare occupancy applies to sites that people do not commonly use. Backcountry trails, fenced areas that are well away from more actively used parts of a site, remote parts of an estate, and gardens that neither workers nor visitors typically pass would all have rare occupancy.

While on-site, I observed five people walking below the tree in 45 minutes. If this rate is representative of typical pedestrian traffic, then I would consider the occupancy rate for the sidewalk to be between the Occasional and Frequent occupancy categories.