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Potential Impacts of Proposed Development

Prepared for CRH Partners
Park City, Utah

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Tree Risk Assessment Qualification

March 31, 2017

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Summary

On March 1, 2017 myself and another Certified Arborist made an initial site visit to assess the condition and locations of the trees located on lot SA-321 which includes a boundary that is approximately 1201-1299 Lowell Avenue, Park City, UT 84060. We used Tree Plotter to gather data on 12 individual trees (Photos 1-11) which provided base data for a Tree Canopy Assessment of the entire plot as well as areas potentially affected by the development including defensible space using The USDA Forest Service's i-Tree Design v6.0. The canopy analysis and ecosystem benefits were performed by Plan-it Geo.

On March 20, 2017, I made an additional visit for additional photographs.

I conclude that the trees are in fair to poor condition and extreme mitigation such as moving existing trees is not feasible. Many of the trees are 15-25 feet high and 15-25 feet wide, which meets or exceeds the average mature size of a Bigtooth Maple. The evidence of orange and black lichen suggests that growth has slowed or possibly plateaued.

Introduction

Background

CRH Partners, LLC would like an independent, objective opinion regarding the impacts on the existing tree canopy of a proposed development project.

Assignment

1. Provide an objective evaluation of the overall condition of the existing trees affected by the proposed development.

2. Provide an assessment of potential canopy loss as well as ecosystem benefits lost. Also provide assessment of remaining canopy cover.

3. Write a report for CRH Partners and provide the following information:

- Summary of observations as noted on-site.
- Opinion as to overall condition and vigor of trees.
- Recommendations for mitigation of canopy loss.

Limits of Assignment

The recommendations and conclusions provided in this report are based on a Level 2: Basic Assessment. In addition, the observations were limited to those attainable from ground reconnaissance only; no climbing or aerial observations were performed. Snow coverage required use of snowshoes and an avalanche probe. The probe was used to estimate snow depth so an approximate DBH could be determined. There was no foliage on the trees.

Purpose and Use of Report

The purpose of this report is to assess the current structural stability of the subject tree and to provide recommendation for hazard mitigation of this tree.

This report is written for the use of the client, CRH Partners, LLC, to assist with planning and mitigation for a proposed development. This report is not intended to determine culpability or liability of any involved parties regarding the conditions or future outcome of the subject trees.

Observations

Site Location and Conditions

1. The lot is listed by Summit County as SA-321.

2. The lot is a predominantly East facing aspect.

3. The road frontage is Lowell Avenue 1201-1299

4. The total tree coverage of the entire lot is 13.8 acres. (Appendix A)

5. The area potentially impacted by construction has a canopy cover of 0.7 acres. (Appendix A)

Tree Descriptions

1. The trees are predominantly Bigtooth Maple (*Acer grandidentatum*) with some Gambel Oak (*Quercus gambelii*).

2. Many of the trees have codominant stems. (Photos 14-16)

3. Many of the trees are 15’ to 25’ tall.

4. The largest “single” trunk measured 13.5” DBH (Photo 16)

Tree Conditions

1. Many of the trees appear to be “mature.”

2. Many of the trees have dead and broken limbs.

3. Many of the trees have black and orange lichen growing on the bark and branches. (Photos 13-15)

Wildlife Observations

1. No wildlife nor tracks were observed on either site visit.

2. Wildlife scat was observed on the March 20, 2017 visit. (Photos 17 and 18)

Discussion

The Bigtooth Maple is native from southern Idaho south to Mexico and east to Texas, including much of Utah in mountainous locations. This is the common maple that gives Logan Canyon and some other northern Utah locations their outstanding fall color. The Bigtooth Maple withstands high soil pH much better than many introduced maples. It has intermediate shade tolerance.[1]

Bigtooth Maple Bigtooth or canyon maple is a small deciduous tree closely related to the eastern sugar maple as confirmed in part by its sweet sap, brilliant fall colors, and deeply lobed leaves reminiscent of the Canadian flag. Locally it is found along mountain ranges at elevations of 4400-9100 feet. Bigtooth maple is highly variable. Its size ranges from a few feet in height to 60 feet or more and it occurs in short, tall, columnar, periodic seed crops of double winged fruits. It has great potential as a small tree for use in water conserving landscapes.[2]

The Bigtooth Maple has a short life span relative to most other plant species and a moderate growth rate.

The appearance of black and orange lichens suggest that tree growth has slowed and that the trees have previously may have had reduced vigor due to environmental conditions such as prior drought. No core samples were taken to pinpoint exact age.

The Bigtooth Maple readily distributes seeds and reproduces naturally. For landscape uses, the tree is usually grafted to Sugar Maple (*Acer saccharum*) root stock. This has provided some challenges with transplanting new Bigtooth Maple in Utah.

The following Ecosystem benefits were derived using i-Tree Design 6.0. This software tool was developed by the USDA Forest Service and their cooperators and is built upon peer-reviewed science.

Currently, the entire parcel contains 13.8 acres of canopy coverage. Over twenty years, these trees provide: $421,769 of stormwater runoff savings by intercepting 39,058,118 gallons of

rainfall. $181 of air quality improvement savings by absorbing and intercepting pollutants such as ozone, sulfur dioxide, nitrogen dioxide, and particulate matter; reducing energy production needs; and lowering air temperature. $837 of savings are realized by reducing 86,244 lbs. of atmospheric carbon dioxide through carbon dioxide sequestration and decreased energy production needs and emissions.

The proposed building footprint will affect 0.7 acres of tree canopy. Over twenty years, we will lose: $31,915 of stormwater runoff savings from intercepting 2,955,263 gallons of rainfall. $17 of air quality improvement savings by absorbing and intercepting pollutants such as ozone, sulfur dioxide, nitrogen dioxide, and particulate matter; reducing energy production needs; and lowering air temperature. $269 of savings are realized by reducing 27,706 lbs. of atmospheric carbon dioxide through carbon dioxide CO2 sequestration and decreased energy production needs and emissions.

Conclusion

The trees affected by the potential development are mature trees that have reduced vigor due to age, competition, and prior drought conditions. The remaining trees should continue to produce seeds which will allow the tree to naturally restore itself. Bigtooth maple also sprouts from the root crown.

Recommendations

I make the following recommendations:

1. Extraordinary measures such as moving existing trees is not recommended.

2. Replacement trees would be the best way to mitigate the canopy loss. Properly planting, irrigating and maintaining 215- 2” caliper Bur Oaks that could grow to 10” DBH in 15 years would offset the loss of ecosystem benefits. Alternately, properly planting, irrigating and maintaining 186- 2” caliper Autumn Blaze Maples that could grow to 10” DBH in 15 years would offset the loss of ecosystem benefits. ANSI A300 Best Management Practices for Tree Care Operations should be followed.

3. Increase species diversity on the property or other planting sites.

4. Trees on the perimeter that may be affected by construction should be included in a “Tree Protection Plan.” Special attention should be paid to proper irrigation and protection of the Critical Root Zone.

Glossary

Codominant stems- Two or more main stems (or "leaders") that are about the same diameter and emerge from the same location on the main trunk. As the tree grows older, the stems remain similar in size without any single one becoming dominant.

Crown- The upper part of a tree, measured from the lowest branch, including all the branches and foliage.

Critical Root Zone- The CRZ of a tree is defined as an imaginary circle on the ground that corresponds with the "dripline" of the tree. The area of the CRZ may also be determined by allowing 1.5- feet of radius for each inch of trunk diameter at breast height(DBH).

Diameter at Breast Height- DBH is a standard method of expressing the diameter of the trunk or bole of a standing tree. Breast height diameter is measured at a height of 4.5 feet.

Dripline- The width of the crown, as measured by the lateral extent of the foliage.

Vigor-Overall health; the capacity to grow and resist physiological stress.

References Cited

1. http://extension.usu.edu/rangeplants/htm/bigtooth-maple

2. http://extension.usu.edu/files/publications/publication/Horticulture_Trees_2011-03pr.pdf

3. http://www.readyforwildfire.org/Defensible-Space/

Bibliography

American Society of Consulting Arborists. Example Reports for Consulting Arborists 3rd Edition. ASCA. Rockville, MD,2013.

Equipment

Panasonic Toughbook CF-19

Nikon D3200 DSLR

Nikkor AF-S 18mm-300mm 1:3.5-5.6G ED

i-Phone 6

Nikon Forestry Pro Digital Hypsometer

Caliper tape

Lifelink Avalanche Probe

APPENDIX A-SITE PLAN

APPENDIX B

Photo 1-Tree #1.

APPENDIX B

Photo 2- Tree #3.

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Photo 3-Tree #4

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Photo 4- Tree #5

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Photo 5-Tree #6

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Photo 6-Tree #7

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Photo 7-Tree #8

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Photo 8- Tree #9

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Photo 9- Tree #10

APPENDIX B

Photo 10- Tree #11

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Photo 11- Tree #12

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Photo 12- Southeast Corner

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Photo 13- Orange and Black Lichen

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Photo 14- Orange Lichen and Codominant trunks

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Photo 15- Orange and Black Lichen. Codominant trunks

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Photo 16- Codominant trunks-13.5” DBH Bigtooth Maple

APPENDIX B

Photo 17- Unidentified animal scat

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Photo 18- Unidentified animal scat

APPENDIX D

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1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of the information provided by others.

3. The consultant/appraiser shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

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8. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

9. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no guarantee, expressed or implied, that problems and deficiencies of the plants or property in question may not arise in the future.

APPENDIX E

Certificate of Performance

- I, A. Jason Barto, certify that:
- I have personally inspected the subject trees of this report and I have stated my findings accurately;
- That the analysis, opinions, and conclusion stated herein are my own;
- That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices and standards;
- That no one provided significant professional assistance to the author, unless specified herein;
- That my compensation is not dependent upon the reporting of a predetermined conclusion or opinion that favors my cause, my client or any other party;
- I have no current or prospective interest in the trees or the property that is the subject of this report and have no personal interest or bias with respect to the party(ies) involved.

I further certify that I am a member in good standing of the American Society of Arborists (ASCA), The Society of Municipal Arborists (SMA) and the International Society of Arboriculture (ISA). I have been an ISA Certified Arborist since 2010 and ISA Tree Risk Assessment Qualified (TRAQ) since 2014. I have been involved in the practice of arboriculture and the study of trees for over 10 years.

Signed_____

Date_____