

Technical Memorandum

Date: August 17, 2018

To: Truman Solar, LLC

From: Ginny Plumeau, REM, M.S., Senior Ecologist, Midwest Director - Natural Resources
Clark Rein, M.S., Senior Ecologist and Project Manager

Subject: Truman Solar, LLC – Tree Protection Plan and Significant Tree Analysis

On behalf of Cypress Creek Renewables, LLC (CCR) and Truman Solar, LLC, TRC Environmental Corporation (TRC) conducted a tree survey for development of a Tree Preservation Plan. The Plan purpose is to satisfy tree clearing ordinance and site development requirements for an approximate 94-acre site in the City of Columbia, Boone County, Missouri). The site is located at 5958 Interstate Drive Southwest, in the City of Columbia, Boone County, Missouri, in Section 11, Township 48 North, Range 12 West. The Study Area contains two parcels (17-313-00-00-001.0001 and 17-303-00-00-001.0001). The land is owned by Mr. Ted Stephenson of Dunlop Development, LLC. Truman Solar, LLC proposes to lease this property to construct a commercial solar facility (“Proposed Project”). Figures 1 and 2 illustrate the proposed Limits of Disturbance (LOD).

Background

Sec. 29-4.4 of the City code requires that 25% or greater of the on-site climax forest would require preservation. Sec. 29-1.11(a) defines a climax forest as a woodland community of over twenty thousand (20,000) square feet, dominated by climax species (oak, hickory, sugar maple, bottomland hardwoods such as river birch, basswood, sycamore and hornbeam) and which includes an area of five thousand (5,000) square feet with a maximum aspect ratio of 4:1. Additionally, the City ordinance requires that 25% or greater of significant trees must be preserved outside of climax forest areas. A “significant tree” is defined as a *“tree that is not diseased, dying, or of a noxious invasive species and that is at least twenty (20) inches diameter at breast height (DBH) for a deciduous tree that is located outside of the tree preservation and stream buffer or utility easement.”*

TRC confirmed a survey approach with David Bauer with the City of Columbia on July 26, 2018. TRC evaluated the presence of “significant trees” within the Project Lease Area, defined as trees 20” DBH that aren’t broken, diseased, insect infested trees, or trees with missing canopies. Preservation of significant trees located within a preserved area of climax forest under Sec. 29-4.4 of the City code do not satisfy this requirement.

Methodology for Significant Tree Inventory

TRC conducted a field survey on August 2 and August 3, 2018. The field survey was led by Clark Rein, M.S., Senior Ecologist and Project Manager with over 18 years of experience in conducting ecological studies, natural resource assessments and permitting. The purpose of the tree survey was to identify the location of significant trees within the

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designated Project Lease Area (93.85 acres) and LOD (69 acres). During the on-site field survey, TRC did not record trees greater than 20 inches DBH if they were broken, diseased, insect-infested trees, or had missing canopies (as these did not meet the City's definition of a significant tree). Trees along the western boundary of the Project Lease Area were omitted from the tree survey, per the City, since the area is located within a future dedicated right of way (ROW).

The survey for significant trees included collecting a GPS coordinate (NAD83 coordinate system) and photograph of each healthy tree, DBH size of the tree, and species. Based on the City Ordinance and discussions with the City on July 26, 2018, diseased, broken, and/or dying trees should be excluded from the survey. TRC also viewed areas that were classified as climax forest by the City arborist.

Results

The survey results are presented in Figure 1, Tree Preservation Plan and Figure 2, Significant Tree Preservation Plan. Both figures illustrate the Project Lease Area (93.85 acres) and LOD (69 acres). Figure 1 illustrates that 1.64 acres (at least 25%) of the total climax forest on-site (6.57 acres) will be preserved. Figure 2 illustrates the geo-located positions of individual significant trees and demonstrates that at least 25% of the total significant trees on-site are preserved outside of the area designated by the Tree Preservation Plan (Figure 1).

Additional details on the significant trees recorded within the Project Lease Area are provided in Table 1, below. Each tree is labeled with an identification number on Figure 2 and may be cross-referenced within Table 1. A Representative Photo Log is provided as Attachment 1. Table 1 summarizes the significant tree identification number, species, DBH, estimated height, and its designation within the Significant Tree Preservation Plan, as described below:

- Total number of significant trees within the Project Lease Area = 114
- Significant Trees to be preserved (51) – Trees that will not be cleared or otherwise disturbed by the Project.
- Significant Trees to be removed (47) – Trees within the LOD and which are planned for removal.
- Significant Trees unlikely to be cleared (16) – Trees located outside the LOD which are anticipated to be avoided by the Project, but are subject to shading considerations and may be cleared at a later date.

Based on the survey and evaluation for preservation, a summary of the findings is presented as follows:

- Climax Community within Project Lease Area = 6.57 acres;
- Tree Preservation Plan Area within Project Lease Area = 1.64 acres (25%);
- Significant Tree Preservation outside of Tree Preservation Plan = 30 (26.3%) of 114 trees; and,
- Significant Tree Preservation including Tree Preservation Plan = 51 (44.7%) of 114 trees.

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TABLE 1: SIGNIFICANT TREE SURVEY RESULTS

Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-02-1557	<i>Carya cordiformis</i> (bitternut hickory)	22	50	Significant tree within Tree Preservation Area
T-02-1559	<i>Carya ovata</i> (shagbark hickory)	26	80	Significant tree within Tree Preservation Area
T-02-1603	<i>Quercus bicolor</i> (swamp white oak)	24	80	Significant tree within Tree Preservation Area
T-02-1618	<i>Carya texana</i> (black hickory)	20	80	Significant tree within Tree Preservation Area
T-02-1621	<i>Carya texana</i> (black hickory)	21	80	Significant tree within Tree Preservation Area
T-02-1624	<i>Carya texana</i> (black hickory)	21	64	Significant tree within Tree Preservation Area
T-02-1628	<i>Carya cordiformis</i> (bitternut hickory)	26	80	Significant tree within Tree Preservation Area
T-02-1635	<i>Platanus occidentalis</i> (American sycamore)	22	80	Significant tree within Tree Preservation Area
T-02-1636	<i>Platanus occidentalis</i> (American sycamore)	20	80	Significant tree within Tree Preservation Area
T-02-1651	<i>Celtis occidentalis</i> (common hackberry)	20	70	Significant tree within Tree Preservation Area
T-02-1654	<i>Carya glabra</i> (pignut hickory)	20	80	Significant tree within Tree Preservation Area
T-02-1746	<i>Carya cordiformis</i> (bitternut hickory)	29	80	Proposed Removal
T-02-1755	<i>Quercus imbricaria</i> (shingle oak)	24	80	Proposed Removal
T-02-1758	<i>Platanus occidentalis</i> (American sycamore)	31	80	Significant tree within Tree Preservation Area
T-02-1759	<i>Platanus occidentalis</i> (American sycamore)	24	80	Significant tree within Tree Preservation Area
T-02-1802	<i>Carya cordiformis</i> (bitternut hickory)	20	80	Significant tree within Tree Preservation Area
T-02-1807	<i>Platanus occidentalis</i> (American sycamore)	34	80	Significant tree within Tree Preservation Area

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Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-02-1813	<i>Quercus bicolor</i> (swamp white oak)	30	100	Proposed Removal
T-02-1815	<i>Quercus bicolor</i> (swamp white oak)	22	80	Proposed Removal
T-02-1817	<i>Quercus bicolor</i> (swamp white oak)	26	80	Proposed Removal
T-02-1822	<i>Quercus imbricaria</i> (shingle oak)	32	80	Potential for Clearing
T-02-1826	<i>Ulmus americana</i> (American elm)	24	80	Potential for Clearing
T-02-1829	<i>Platanus occidentalis</i> (American sycamore)	21	64	Potential for Clearing
T-02-1834	<i>Carya cordiformis</i> (bitternut hickory)	21	80	Potential for Clearing
T-02-1836	<i>Platanus occidentalis</i> (American sycamore)	26	100	Potential for Clearing
T-02-1838	<i>Carya cordiformis</i> (bitternut hickory)	24	100	Potential for Clearing
T-02-1839	<i>Carya cordiformis</i> (bitternut hickory)	26	100	Potential for Clearing
T-02-1843	<i>Quercus alba</i> (white oak)	22	80	Potential for Clearing
T-02-1844	<i>Carya cordiformis</i> (bitternut hickory)	26	100	Significant tree within Tree Preservation Area
T-02-1848	<i>Platanus occidentalis</i> (American sycamore)	36	100	Significant tree within Tree Preservation Area
T-02-1851	<i>Quercus alba</i> (white oak)	24	100	Significant tree within Tree Preservation Area
T-02-1853	<i>Ulmus americana</i> (American elm)	20	80	Significant tree within Tree Preservation Area
T-02-1855	<i>Fraxinus pennsylvanica</i> (green ash)	20	80	Significant tree within Tree Preservation Area
T-02-1857	<i>Fraxinus pennsylvanica</i> (green ash)	20	100	Significant tree within Tree Preservation Area
T-02-1903	<i>Quercus alba</i> (white oak)	26	100	Potential for Clearing

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Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-02-1904	<i>Quercus alba</i> (white oak)	32	100	Potential for Clearing
T-02-1906	<i>Platanus occidentalis</i> (American sycamore)	34	100	Potential for Clearing
T-02-1915	<i>Quercus imbricaria</i> (shingle oak)	24	100	Significant tree to be Preserved
T-02-1916	<i>Quercus imbricaria</i> (shingle oak)	24	100	Significant tree to be Preserved
T-02-1921	<i>Quercus alba</i> (white oak)	21	64	Potential for Clearing
T-02-1925	<i>Quercus palustris</i> (pin oak)	22	80	Significant tree to be Preserved
T-02-1928	<i>Populus deltoides</i> (eastern cottonwood)	22	100	Significant tree to be Preserved
T-03-1011	<i>Platanus occidentalis</i> (American sycamore)	22	64	Proposed Removal
T-03-1013	<i>Quercus imbricaria</i> (shingle oak)	21	80	Proposed Removal
T-03-1028	<i>Quercus alba</i> (white oak)	24	55	Significant tree to be Preserved
T-03-1030	<i>Platanus occidentalis</i> (American sycamore)	28	90	Significant tree to be Preserved
T-03-1031	<i>Platanus occidentalis</i> (American sycamore)	30	90	Significant tree to be Preserved
T-03-1037	<i>Populus deltoides</i> (eastern cottonwood)	36	100	Significant tree to be Preserved
T-03-1038	<i>Populus deltoides</i> (eastern cottonwood)	20	80	Significant tree to be Preserved
T-03-1041	<i>Platanus occidentalis</i> (American sycamore)	22	100	Significant tree to be Preserved
T-03-1042	<i>Platanus occidentalis</i> (American sycamore)	22	100	Significant tree to be Preserved
T-03-1238	<i>Quercus shumardii</i> (Shumard oak)	22	80	Proposed Removal
T-03-1242	<i>Quercus shumardii</i> (Shumard oak)	22	80	Proposed Removal

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TABLE 1: SIGNIFICANT TREE SURVEY RESULTS

Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-03-1247	<i>Quercus shumadrii</i> (Shumard oak)	32	100	Significant tree to be Preserved
T-03-1251	<i>Platanus occidentalis</i> (American sycamore)	28	100	Significant tree to be Preserved
T-03-1257	<i>Celtis occidentalis</i> (common hackberry)	28	80	Significant tree to be Preserved
T-03-1259	<i>Quercus shumadrii</i> (Shumard oak)	36	60	Proposed Removal
T-03-1301a	<i>Quercus shumadrii</i> (Shumard oak)	23	80	Proposed Removal
T-03-1301b	<i>Quercus shumadrii</i> (Shumard oak)	30	60	Proposed Removal
T-03-1306	<i>Platanus occidentalis</i> (American sycamore)	22	64	Significant tree to be Preserved
T-03-1315	<i>Platanus occidentalis</i> (American sycamore)	26	80	Significant tree to be Preserved
T-03-1320	<i>Platanus occidentalis</i> (American sycamore)	30	100	Significant tree to be Preserved
T-03-1325	<i>Quercus alba</i> (white oak)	24	80	Significant tree to be Preserved
T-03-1326a	<i>Quercus alba</i> (white oak)	38	80	Significant tree to be Preserved
T-03-1326b	<i>Quercus alba</i> (white oak)	20	60	Proposed Removal
T-03-1328	<i>Quercus alba</i> (white oak)	38	65	Proposed Removal
T-03-1331	<i>Quercus alba</i> (white oak)	22	64	Significant tree to be Preserved
T-03-1334	<i>Quercus alba</i> (white oak)	22	80	Significant tree to be Preserved
T-03-1335	<i>Platanus occidentalis</i> (American sycamore)	32	80	Significant tree to be Preserved
T-03-1338	<i>Carya cordiformis</i> (bitternut hickory)	26	64	Significant tree to be Preserved
T-03-1341	<i>Quercus imbricaria</i> (shingle oak)	24	80	Significant tree to be Preserved

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TABLE 1: SIGNIFICANT TREE SURVEY RESULTS

Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-03-1344	<i>Quercus imbricaria</i> (shingle oak)	24	80	Proposed Removal
T-03-1345	<i>Celtis occidentalis</i> (common hackberry)	24	64	Proposed Removal
T-03-1352	<i>Quercus imbricaria</i> (shingle oak)	20	64	Proposed Removal
T-03-1353	<i>Quercus imbricaria</i> (shingle oak)	21	64	Proposed Removal
T-03-1354	<i>Quercus imbricaria</i> (shingle oak)	21	64	Proposed Removal
T-03-1357	<i>Quercus imbricaria</i> (shingle oak)	28	64	Proposed Removal
T-03-1400	<i>Quercus alba</i> (white oak)	22	80	Proposed Removal
T-03-1402	<i>Quercus palustris</i> (pin oak)	46	100	Proposed Removal
T-03-1412	<i>Quercus palustris</i> (pin oak)	26	100	Proposed Removal
T-03-1414	<i>Celtis occidentalis</i> (common hackberry)	24	80	Proposed Removal
T-03-1422	<i>Carya ovata</i> (shagbark hickory)	21	80	Proposed Removal
T-03-1424	<i>Gleditsia triacanthos</i> (honey locust)	28	48	Proposed Removal
T-03-1427	<i>Celtis occidentalis</i> (common hackberry)	23	48	Proposed Removal
T-03-1429	<i>Quercus imbricaria</i> (shingle oak)	28	100	Proposed Removal
T-03-1431	<i>Quercus alba</i> (white oak)	24	100	Proposed Removal
T-03-1433	<i>Quercus palustris</i> (pin oak)	26	60	Proposed Removal
T-03-1434	<i>Carya texana</i> (black hickory)	22	60	Proposed Removal
T-03-1436	<i>Quercus nigra</i> (water oak/pin oak)	24	100	Proposed Removal

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Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-03-1437	<i>Quercus nigra</i> (water oak/pin oak)	32	120	Proposed Removal
T-03-1438	<i>Carya cordiformis</i> (bitternut hickory)	21	80	Proposed Removal
T-03-1440	<i>Quercus imbricaria</i> (shingle oak)	21	80	Proposed Removal
T-03-1447	<i>Quercus imbricaria</i> (shingle oak)	22	64	Proposed Removal
T-03-1453	<i>Ulmus americana</i> (American elm)	28	80	Significant tree to be Preserved
T-03-1457	<i>Quercus shumadrii</i> (Shumard oak)	22	80	Significant tree to be Preserved
T-03-1458	<i>Quercus imbricaria</i> (shingle oak)	24	64	Significant tree to be Preserved
T-03-1500	<i>Gleditsia triacanthos</i> (honey locust)	24	80	Significant tree to be Preserved
T-03-1502	<i>Celtis occidentalis</i> (common hackberry)	26	80	Significant tree to be Preserved
T-03-1504	<i>Gleditsia triacanthos</i> (honey locust)	22	64	Proposed Removal
T-03-1505	<i>Populus deltoides</i> (eastern cottonwood)	26	80	Significant tree to be Preserved
T-03-1506	<i>Populus deltoides</i> (eastern cottonwood)	22	80	Potential for Clearing
T-03-1517	<i>Gleditsia triacanthos</i> (honey locust)	22	84	Potential for Clearing
T-03-1521	<i>Quercus imbricaria</i> (shingle oak)	28	80	Potential for Clearing
T-03-1524	<i>Carya illinoensis</i> (pecan/soft shelled hickory)	26	64	Proposed Removal
T-03-1529	<i>Ulmus americana</i> (American elm)	21	80	Proposed Removal
T-03-1532	<i>Quercus alba</i> (white oak)	21	64	Proposed Removal
T-03-1544	<i>Juniperus virginiana</i> (red cedar)	21	48	Proposed Removal

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Tree ID	Species	DBH (in)	Estimated Height (ft)	Tree Preservation Plan Status
T-03-1546a	<i>Ulmus americana</i> (American elm)	20	64	Proposed Removal
T-03-1546b	<i>Ulmus americana</i> (American elm)	22	64	Proposed Removal
T-03-1548	<i>Gleditsia triacanthos</i> (honey locust)	22	80	Proposed Removal
T-03-1554	<i>Populus deltoides</i> (eastern cottonwood)	26	64	Proposed Removal
T-03-1559	<i>Carya cordiformis</i> (bitternut hickory)	28	64	Potential for Clearing
T-03-1602	<i>Celtis occidentalis</i> (common hackberry)	22	80	Proposed Removal
T-03-1603	<i>Celtis occidentalis</i> (common hackberry)	22	64	Proposed Removal

ATTACHMENT 1

**REPRESENTATIVE TREE
PHOTO LOG**

T-02-1557, *Carya cordiformis* (bitternut hickory)

Created	2018-08-02 15:56:10 EDT by Clark Rein
Updated	2018-08-02 15:57:34 EDT by Sam Edmonds
Location	38.9545692632755, -92.2417847804209
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 15:57:28
Tree ID	T-02-1557
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	22
Height - Approximate (feet)	50
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1603, Quercus bicolor (swamp white oak)

Created	2018-08-02 16:02:39 EDT by Clark Rein
Updated	2018-08-02 16:03:40 EDT by Sam Edmonds
Location	38.9546698083268, -92.2418785480604
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 16:03:39
Tree ID	T-02-1603
Species	Quercus bicolor (swamp white oak)
DBH (in)	24
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

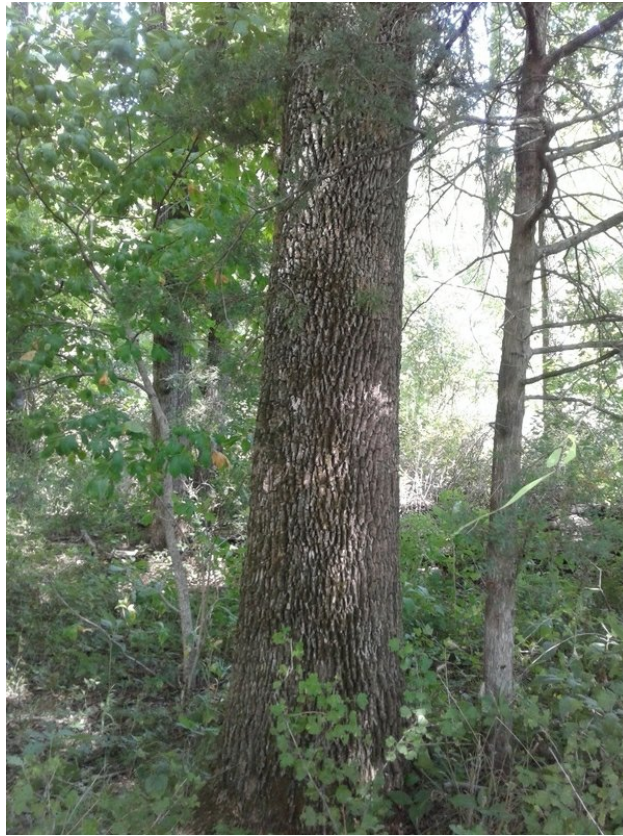
Photos



T-02-1618, *Carya texana* (black hickory)

Created	2018-08-02 16:16:01 EDT by Clark Rein
Updated	2018-08-02 16:19:20 EDT by Sam Edmonds
Location	38.9547629144809, -92.2417865533553
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 16:18:46
Tree ID	T-02-1618
Species	<i>Carya texana</i> (black hickory)
DBH (in)	20
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1628, *Carya cordiformis* (bitternut hickory)

Created	2018-08-02 16:26:33 EDT by Clark Rein
Updated	2018-08-02 16:28:58 EDT by Sam Edmonds
Location	38.9549602747775, -92.2418472239679
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 16:28:56
Tree ID	T-02-1628
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	26
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1651, *Celtis occidentalis* (common hackberry)

Created	2018-08-02 16:48:39 EDT by Clark Rein
Updated	2018-08-02 16:51:29 EDT by Sam Edmonds
Location	38.9550648075183, -92.2418551852916
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 16:51:27
Tree ID	T-02-1651
Species	<i>Celtis occidentalis</i> (common hackberry)
DBH (in)	20
Height - Approximate (feet)	70
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1654, *Carya glabra* (pignut hickory)

Created	2018-08-02 16:52:50 EDT by Clark Rein
Updated	2018-08-02 16:54:14 EDT by Sam Edmonds
Location	38.9551637450422, -92.2417622520315
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 16:54:12
Tree ID	T-02-1654
Species	<i>Carya glabra</i> (pignut hickory)
DBH (in)	20
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1746, *Carya cordiformis* (bitternut hickory)

Created	2018-08-02 17:42:36 EDT by Clark Rein
Updated	2018-08-02 17:46:43 EDT by Sam Edmonds
Location	38.9554252881435, -92.2418701523602
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 17:46:42
Tree ID	T-02-1746
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	29
Height - Approximate (feet)	80
Tree Status	Proposed Removal

Photos



T-02-1759, *Platanus occidentalis* (American sycamore)

Created	2018-08-02 17:58:46 EDT by Clark Rein
Updated	2018-08-02 17:59:09 EDT by Sam Edmonds
Location	38.9552567550827, -92.2416516395169
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 17:59:07
Tree ID	T-02-1759
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	24
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1802, *Carya cordiformis* (bitternut hickory)

Created	2018-08-02 18:00:20 EDT by Clark Rein
Updated	2018-08-02 18:02:39 EDT by Sam Edmonds
Location	38.9553112464473, -92.2417229582788
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:02:25
Tree ID	T-02-1802
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	20
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

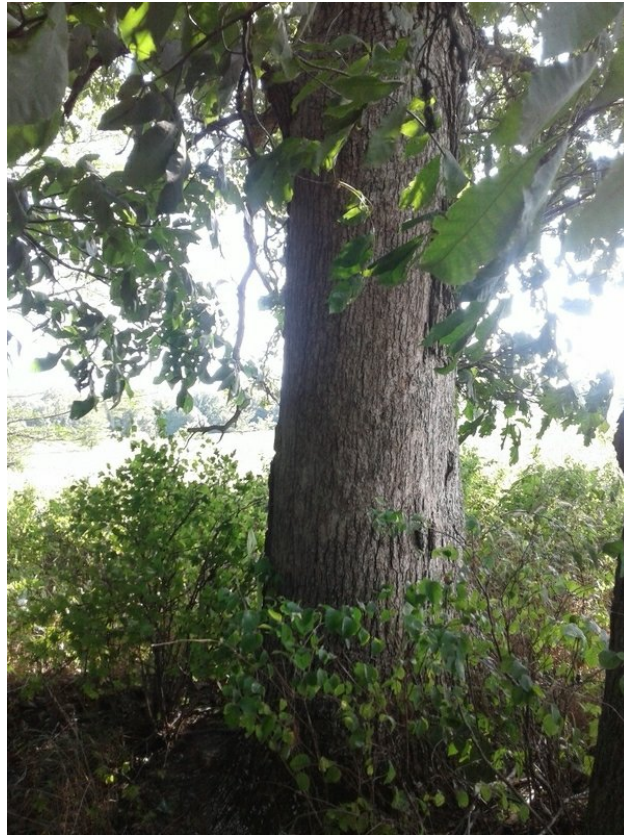
Photos



T-02-1817, Quercus bicolor (swamp white oak)

Created	2018-08-02 18:16:48 EDT by Clark Rein
Updated	2018-08-02 18:17:17 EDT by Sam Edmonds
Location	38.9559377568903, -92.2418940616717
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:17:14
Tree ID	T-02-1817
Species	Quercus bicolor (swamp white oak)
DBH (in)	26
Height - Approximate (feet)	80
Tree Status	Proposed Removal

Photos



T-02-1822, Quercus imbricaria (shingle oak)

Created	2018-08-02 18:20:37 EDT by Clark Rein
Updated	2018-08-02 18:22:39 EDT by Sam Edmonds
Location	38.9557792336827, -92.2416482224689
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:22:30
Tree ID	T-02-1822
Species	Quercus imbricaria (shingle oak)
DBH (in)	32
Height - Approximate (feet)	80
Tree Status	Potential for Clearing

Photos



T-02-1829, *Platanus occidentalis* (American sycamore)

Created	2018-08-02 18:28:53 EDT by Clark Rein
Updated	2018-08-02 18:30:08 EDT by Sam Edmonds
Location	38.9557105543479, -92.2415354847908
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:29:59
Tree ID	T-02-1829
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	21
Height - Approximate (feet)	64
Tree Status	Potential for Clearing

Photos



T-02-1853, *Ulmus americana* (American elm)

Created	2018-08-02 18:52:39 EDT by Clark Rein
Updated	2018-08-02 18:53:46 EDT by Sam Edmonds
Location	38.9554413054766, -92.241122308973
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:53:44
Tree ID	T-02-1853
Species	<i>Ulmus americana</i> (American elm)
DBH (in)	20
Height - Approximate (feet)	80
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1857, *Fraxinus pennsylvanica* (green ash)

Created	2018-08-02 18:56:55 EDT by Clark Rein
Updated	2018-08-02 18:57:46 EDT by Sam Edmonds
Location	38.9553898661657, -92.2411244362593
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 18:57:45
Tree ID	T-02-1857
Species	<i>Fraxinus pennsylvanica</i> (green ash)
DBH (in)	20
Height - Approximate (feet)	100
Tree Status	Significant tree within Tree Preservation Area

Photos



T-02-1906, *Platanus occidentalis* (American sycamore)

Created	2018-08-02 19:05:08 EDT by Clark Rein
Updated	2018-08-02 19:06:09 EDT by Sam Edmonds
Location	38.955807612957, -92.2412602408949
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-02 19:06:08
Tree ID	T-02-1906
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	34
Height - Approximate (feet)	100
Tree Status	Potential for Clearing

Photos



T-03-1030, *Platanus occidentalis* (American sycamore)

Created	2018-08-03 10:28:52 EDT by Clark Rein
Updated	2018-08-03 10:30:14 EDT by Sam Edmonds
Location	38.9590636143502, -92.2379544004798
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 10:30:11
Tree ID	T-03-1030
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	28
Height - Approximate (feet)	90
Tree Status	Significant Tree to be Preserved

Photos



T-03-1037, Populus deltoides (eastern cottonwood)

Created	2018-08-03 10:34:25 EDT by Clark Rein
Updated	2018-08-03 10:37:03 EDT by Sam Edmonds
Location	38.9591728514094, -92.2379275783896
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 10:37:00
Tree ID	T-03-1037
Species	Populus deltoides (eastern cottonwood)
DBH (in)	36
Height - Approximate (feet)	100
Tree Status	Significant Tree to be Preserved

Photos



T-03-1038, Populus deltoides (eastern cottonwood)

Created	2018-08-03 10:37:24 EDT by Clark Rein
Updated	2018-08-03 10:38:16 EDT by Sam Edmonds
Location	38.959191101021, -92.2378343716264
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 10:38:07
Tree ID	T-03-1038
Species	Populus deltoides (eastern cottonwood)
DBH (in)	20
Height - Approximate (feet)	80
Tree Status	Significant Tree to be Preserved

Photos



T-03-1238, Quercus shumardii

Created	2018-08-03 12:36:03 EDT by Clark Rein
Updated	2018-08-03 12:38:41 EDT by Sam Edmonds
Location	38.957063278056, -92.24126267475
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 12:38:37
Tree ID	T-03-1238
Species	Quercus shumardii
DBH (in)	22
Height - Approximate (feet)	80
Tree Status	Proposed Removal

Photos



T-03-1251, *Platanus occidentalis* (American sycamore)

Created	2018-08-03 12:50:51 EDT by Clark Rein
Updated	2018-08-03 12:51:16 EDT by Sam Edmonds
Location	38.9572918360009, -92.2411448457497
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 12:51:15
Tree ID	T-03-1251
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	28
Height - Approximate (feet)	100
Tree Status	Significant tree to be preserved

Photos



T-03-1257, *Celtis occidentalis* (common hackberry)

Created	2018-08-03 12:54:50 EDT by Clark Rein
Updated	2018-08-03 12:57:37 EDT by Sam Edmonds
Location	38.9571067054421, -92.24094006622
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 12:57:35
Tree ID	T-03-1257
Species	<i>Celtis occidentalis</i> (common hackberry)
DBH (in)	28
Height - Approximate (feet)	80
Tree Status	Significant tree to be preserved

Photos



T-03-1301, *Quercus shumadrii*

Created	2018-08-03 13:00:44 EDT by Clark Rein
Updated	2018-08-03 13:01:37 EDT by Sam Edmonds
Location	38.9570684868359, -92.2411509319718
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:01:34
Tree ID	T-03-1301
Species	<i>Quercus shumadrii</i>
DBH (in)	30
Height - Approximate (feet)	60
Tree Status	Proposed Removal

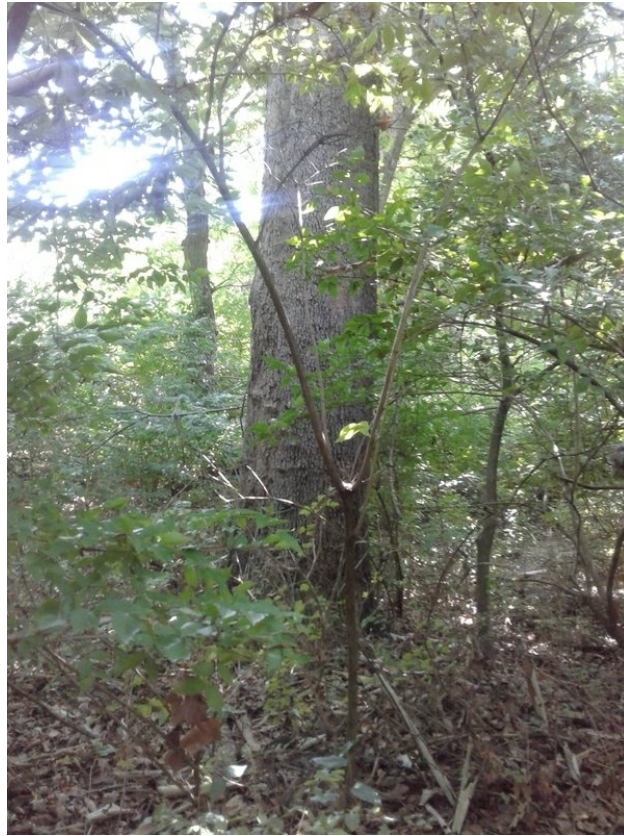
Photos



T-03-1320, *Platanus occidentalis* (American sycamore)

Created	2018-08-03 13:19:13 EDT by Clark Rein
Updated	2018-08-03 13:20:38 EDT by Sam Edmonds
Location	38.9573033130782, -92.2408464970576
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:20:37
Tree ID	T-03-1320
Species	<i>Platanus occidentalis</i> (American sycamore)
DBH (in)	30
Height - Approximate (feet)	100
Tree Status	Significant tree to be preserved

Photos



T-03-1325, Quercus alba (white oak)

Created	2018-08-03 13:21:55 EDT by Clark Rein
Updated	2018-08-03 13:25:13 EDT by Sam Edmonds
Location	38.9573463368915, -92.240791515198
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:25:12
Tree ID	T-03-1325
Species	Quercus alba (white oak)
DBH (in)	24
Height - Approximate (feet)	80
Tree Status	Significant tree to be preserved

Photos



T-03-1326b, Quercus alba (white oak)

Created	2018-08-03 13:26:28 EDT by Clark Rein
Updated	2018-08-03 13:26:54 EDT by Sam Edmonds
Location	38.9573983720975, -92.2406502010235
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:26:54
Tree ID	T-03-1326b
Species	Quercus alba (white oak)
DBH (in)	20
Height - Approximate (feet)	60
Tree Status	Proposed Removal

Photos



T-03-1338, *Carya cordiformis* (bitternut hickory)

Created	2018-08-03 13:36:03 EDT by Clark Rein
Updated	2018-08-03 13:38:51 EDT by Sam Edmonds
Location	38.9575549416977, -92.2413351226824
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:38:48
Tree ID	T-03-1338
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	26
Height - Approximate (feet)	64
Tree Status	Significant tree to be preserved

Photos



T-03-1341, *Quercus imbricaria* (shingle oak)

Created	2018-08-03 13:40:27 EDT by Clark Rein
Updated	2018-08-03 13:41:50 EDT by Sam Edmonds
Location	38.9575481120719, -92.2413499153645
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 13:41:49
Tree ID	T-03-1341
Species	<i>Quercus imbricaria</i> (shingle oak)
DBH (in)	24
Height - Approximate (feet)	80
Tree Status	Significant tree to be preserved

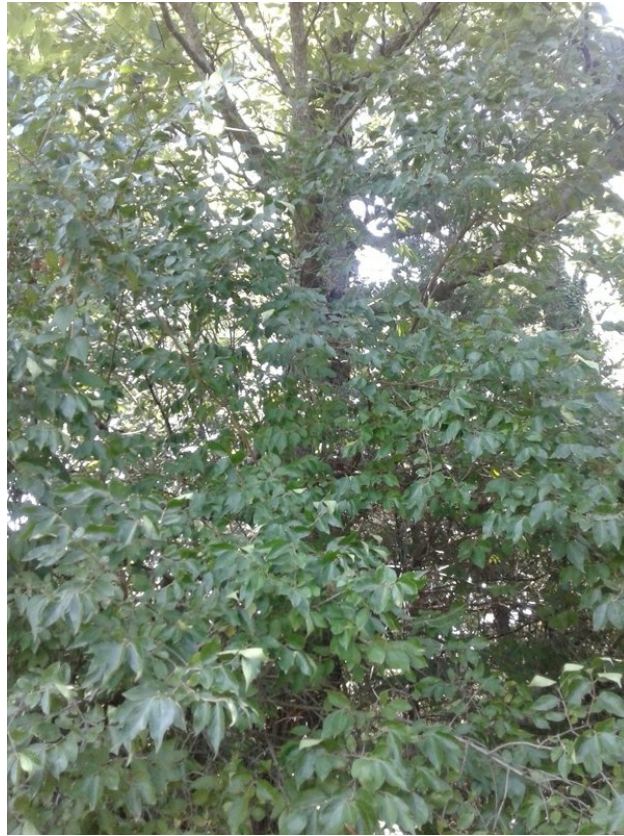
Photos



T-03-1427, *Celtis occidentalis* (common hackberry)

Created	2018-08-03 14:26:30 EDT by Clark Rein
Updated	2018-08-03 14:27:07 EDT by Sam Edmonds
Location	38.9580716090037, -92.242384403944
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 14:27:07
Tree ID	T-03-1427
Species	<i>Celtis occidentalis</i> (common hackberry)
DBH (in)	23
Height - Approximate (feet)	48
Tree Status	Proposed Removal

Photos



T-03-1433, Quercus palustris (pin oak)

Created	2018-08-03 14:32:29 EDT by Clark Rein
Updated	2018-08-03 14:33:12 EDT by Sam Edmonds
Location	38.9578296670912, -92.2417145222426
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 14:33:12
Tree ID	T-03-1433
Species	Quercus palustris (pin oak)
DBH (in)	26
Height - Approximate (feet)	60
Tree Status	Proposed Removal

Photos



T-03-1438, *Carya cordiformis* (bitternut hickory)

Created	2018-08-03 14:37:32 EDT by Clark Rein
Updated	2018-08-03 14:38:13 EDT by Sam Edmonds
Location	38.9577758846872, -92.2416043951998
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 14:38:11
Tree ID	T-03-1438
Species	<i>Carya cordiformis</i> (bitternut hickory)
DBH (in)	21
Height - Approximate (feet)	80
Tree Status	Proposed removal

Photos



T-03-1453, *Ulmus americana* (American elm)

Created	2018-08-03 14:48:30 EDT by Clark Rein
Updated	2018-08-03 14:53:59 EDT by Sam Edmonds
Location	38.9576990494006, -92.2411271184683
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 14:53:59
Tree ID	T-03-1453
Species	<i>Ulmus americana</i> (American elm)
DBH (in)	28
Height - Approximate (feet)	80
Tree Status	Significant tree to be preserved

Photos



T-03-1505, Populus deltoides (eastern cottonwood)

Created	2018-08-03 15:05:09 EDT by Clark Rein
Updated	2018-08-03 15:05:46 EDT by Sam Edmonds
Location	38.9584261775554, -92.2411918267608
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 15:05:45
Tree ID	T-03-1505
Species	Populus deltoides (eastern cottonwood)
DBH (in)	26
Height - Approximate (feet)	80
Tree Status	Significant tree to be preserved

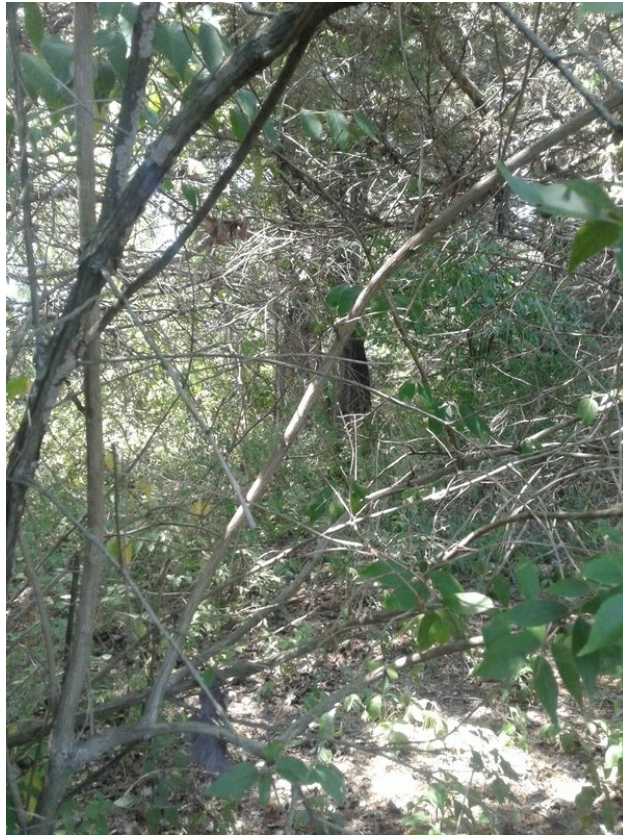
Photos



T-03-1529, *Ulmus americana* (American elm)

Created	2018-08-03 15:29:06 EDT by Clark Rein
Updated	2018-08-03 15:29:51 EDT by Sam Edmonds
Location	38.9582820039392, -92.2408662736416
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 15:29:51
Tree ID	T-03-1529
Species	<i>Ulmus americana</i> (American elm)
DBH (in)	21
Height - Approximate (feet)	80
Tree Status	Proposed Removal

Photos



T-03-1544, *Juniperus virginiana*

Created	2018-08-03 15:43:41 EDT by Clark Rein
Updated	2018-08-03 15:44:54 EDT by Sam Edmonds
Location	38.9586240845529, -92.2433847354241
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 15:44:52
Tree ID	T-03-1544
Species	<i>Juniperus virginiana</i>
DBH (in)	21
Height - Approximate (feet)	48
Tree Status	Proposed Removal

Photos



T-03-1546b, *Ulmus americana* (American elm)

Created	2018-08-03 15:46:08 EDT by Clark Rein
Updated	2018-08-03 15:46:49 EDT by Sam Edmonds
Location	38.9586529962132, -92.2432427108288
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 15:46:48
Tree ID	T-03-1546b
Species	<i>Ulmus americana</i> (American elm)
DBH (in)	22
Height - Approximate (feet)	64
Tree Status	Proposed Removal

Photos



T-03-1554, Populus deltoides (eastern cottonwood)

Created	2018-08-03 15:52:15 EDT by Clark Rein
Updated	2018-08-03 15:54:14 EDT by Sam Edmonds
Location	38.9580463198554, -92.2430110350251
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 15:54:13
Tree ID	T-03-1554
Species	Populus deltoides (eastern cottonwood)
DBH (in)	26
Height - Approximate (feet)	64
Tree Status	Proposed Removal

Photos



T-03-1603, *Celtis occidentalis* (common hackberry)

Created	2018-08-03 16:03:28 EDT by Clark Rein
Updated	2018-08-03 16:03:47 EDT by Sam Edmonds
Location	38.9584382319508, -92.2427188930342
Project	CCR – Truman Parcel Significant Tree Survey
Timestamp	2018-08-03 16:03:47
Tree ID	T-03-1603
Species	<i>Celtis occidentalis</i> (common hackberry)
DBH (in)	22
Height - Approximate (feet)	64
Tree Status	Proposed Removal



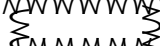



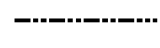
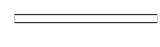


Photos

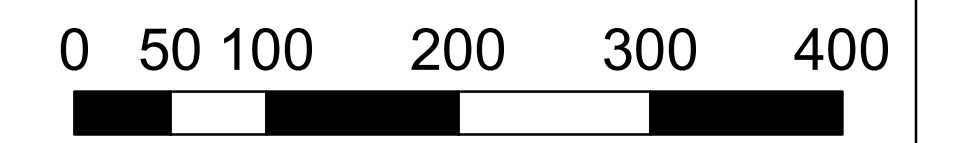


**TRUMAN SOLAR, LLC
COLUMBIA, MISSOURI**

**FIGURE 1
Tree Preservation Plan**

Legend

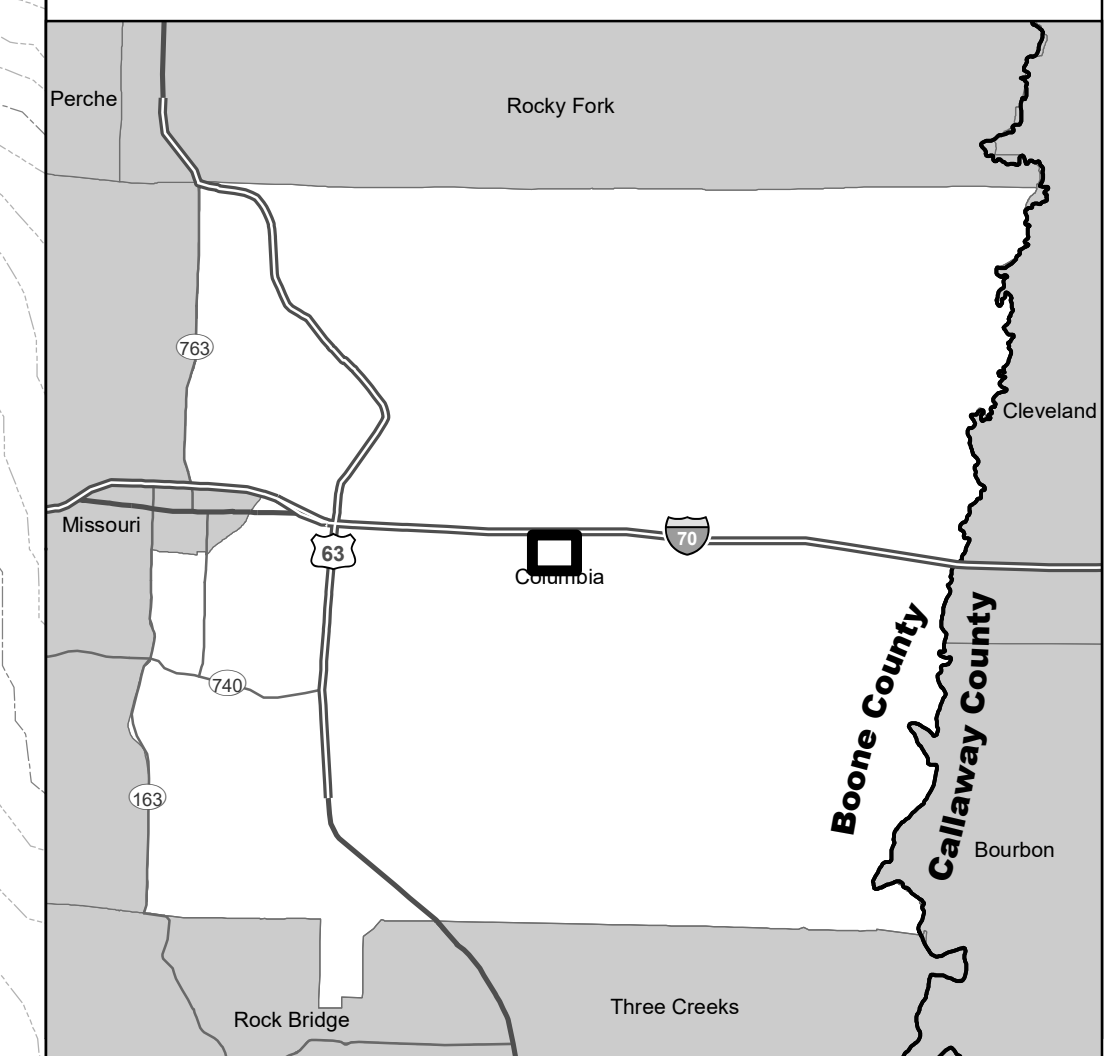
-  Project Lease Area
-  Limit of Disturbance (LOD)
-  Climax Community
-  Tree Preservation Plan Area
-  Property Line
-  Adjacent Property Line
-  Existing Access Road
-  Delineated Stream
-  Contour (10 ft)
-  Contour (2 ft)



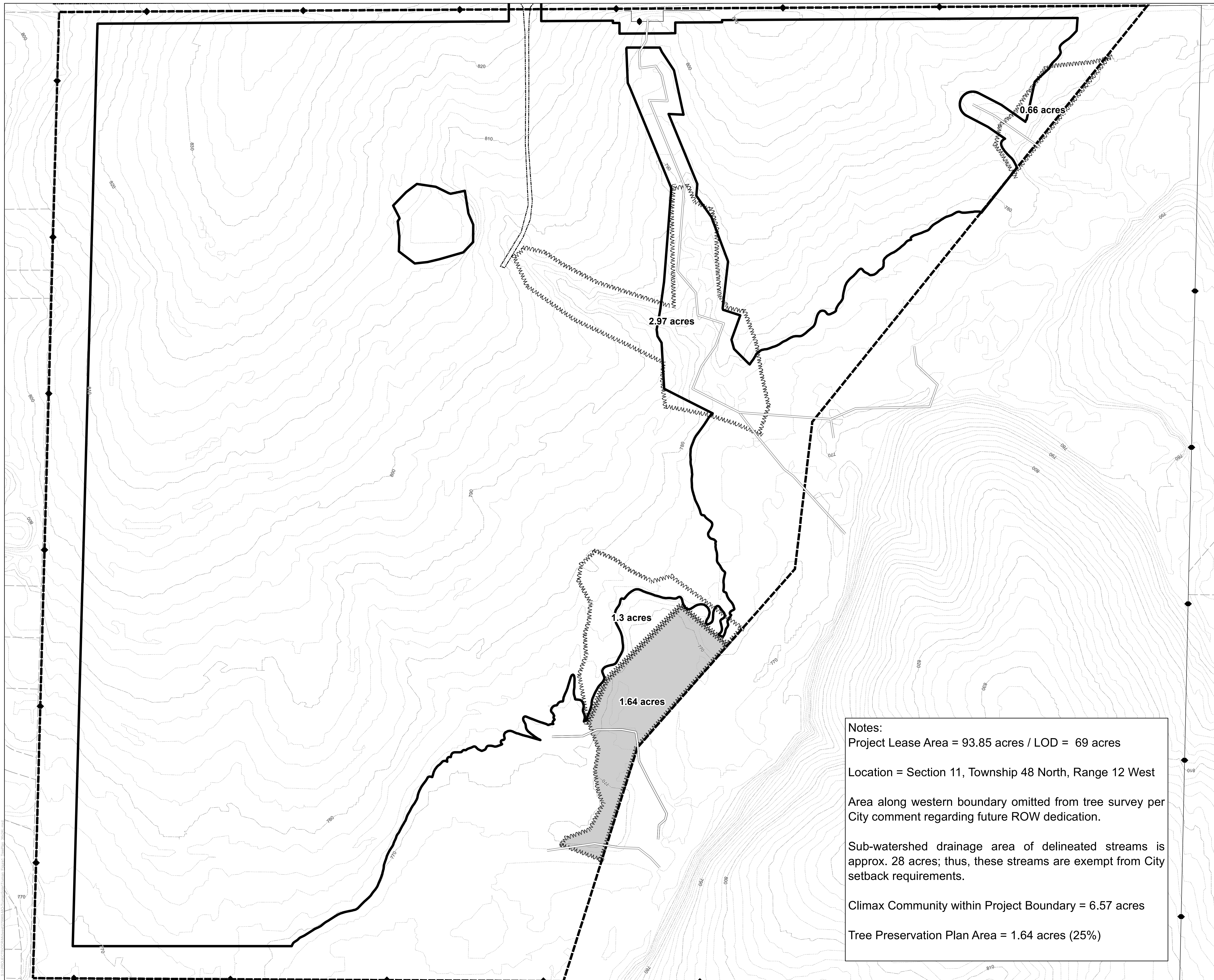
Feet
1 inch = 100 feet
1:1,200

Coordinate System:
NAD 1983 StatePlane Missouri Central FIPS 2402 Feet

DRAWN BY: S. Edmonds
CHECKED BY: G. Plumeau
APPROVED BY: S. Stratton
DATE: August 17, 2018



Notes:
 Project Lease Area = 93.85 acres / LOD = 69 acres
 Location = Section 11, Township 48 North, Range 12 West
 Area along western boundary omitted from tree survey per City comment regarding future ROW dedication.
 Sub-watershed drainage area of delineated streams is approx. 28 acres; thus, these streams are exempt from City setback requirements.
 Climax Community within Project Boundary = 6.57 acres
 Tree Preservation Plan Area = 1.64 acres (25%)



**TRUMAN SOLAR, LLC
COLUMBIA, MISSOURI**

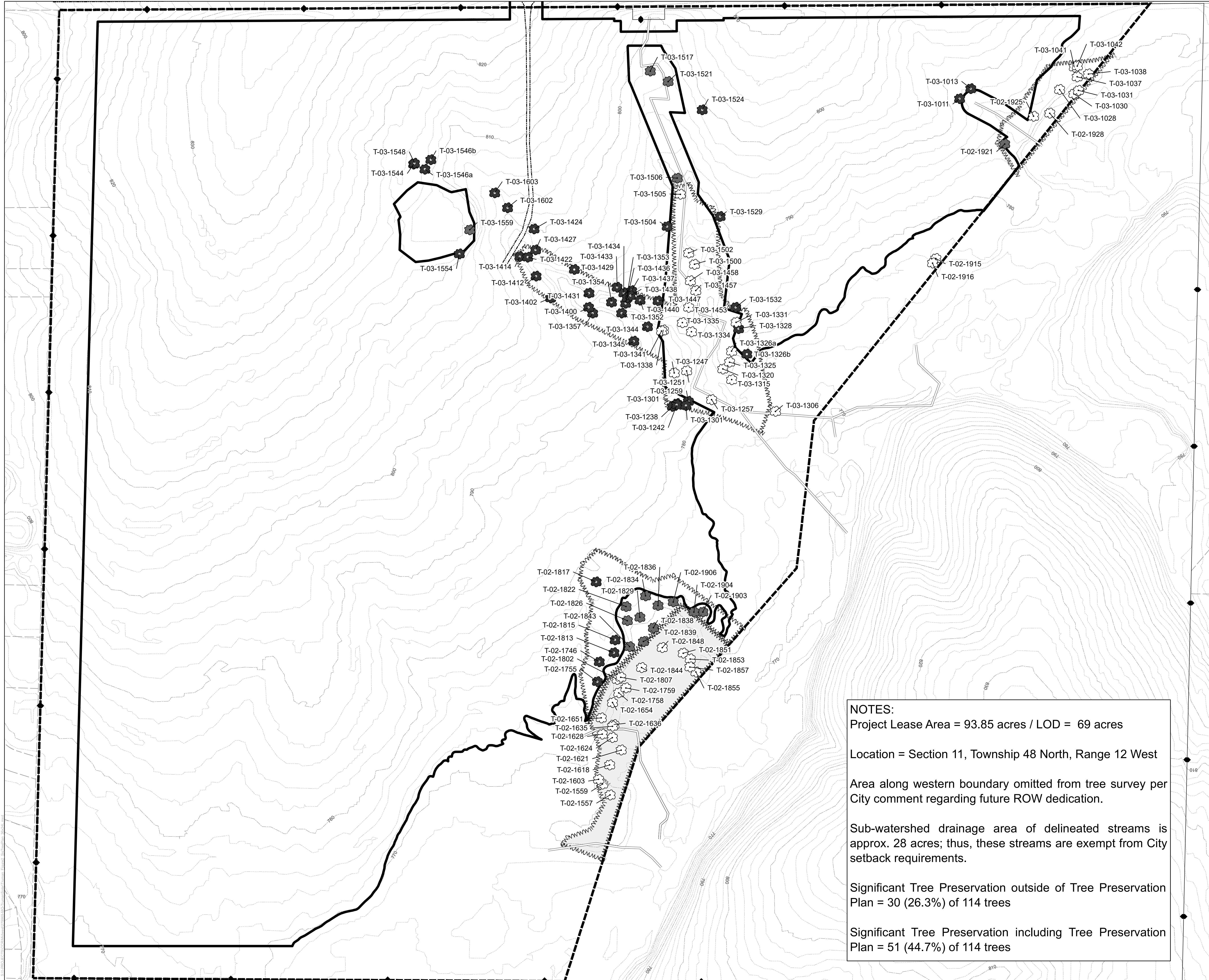
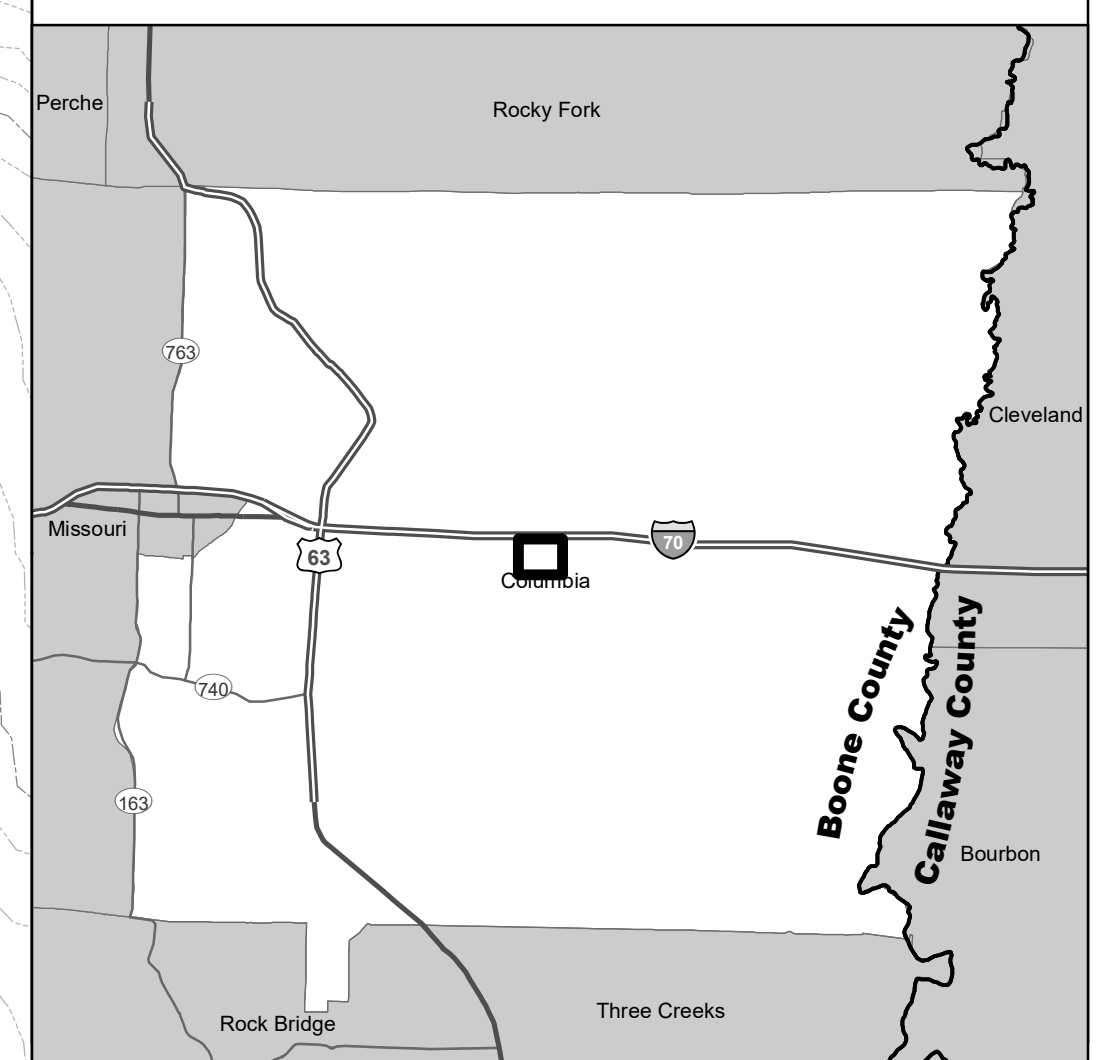
**FIGURE 2
Significant Tree
Preservation Plan**

Legend

- Significant Tree Survey (114 trees)
 - Significant tree to be preserved (51)
 - Significant tree unlikely to be cleared (16)
 - Significant tree to be removed (47)
- Project Lease Area
- Limit of Disturbance (LOD)
- Tree Preservation Plan Area
- Climax Community
- Property Line
- Adjacent Property Line
- Existing Access Road
- Delineated Stream
- Contour (10 ft)
- Contour (2 ft)

0 50 100 200 300 400
Feet
1 inch = 100 feet
1:1,200
Coordinate System:
NAD 1983 StatePlane Missouri Central FIPS 2402 Feet

DRAWN BY: S. Edmonds
CHECKED BY: G. Plumeau
APPROVED BY: S. Stratton
DATE: August 17, 2018



NOTES:
 Project Lease Area = 93.85 acres / LOD = 69 acres
 Location = Section 11, Township 48 North, Range 12 West
 Area along western boundary omitted from tree survey per City comment regarding future ROW dedication.
 Sub-watershed drainage area of delineated streams is approx. 28 acres; thus, these streams are exempt from City setback requirements.
 Significant Tree Preservation outside of Tree Preservation Plan = 30 (26.3%) of 114 trees
 Significant Tree Preservation including Tree Preservation Plan = 51 (44.7%) of 114 trees