



LAKE COUNTY FOREST PRESERVES
www.LCFPD.org

Preservation, Restoration, Education and Recreation

DATE: May 2, 2016

MEMO TO: Bonnie Thomson Carter, Chair
Planning and Restoration Committee

S. Michael Rummel, Chair
Finance and Administrative Committee

FROM: James L. Anderson
Director of Natural Resources

Agenda Item# 9.6

RECOMMENDATION: Recommend approval of a Resolution awarding a Contract for Analysis of Canopy Thinning Strategies for Woodland Habitat Restoration at Southern Des Plaines River Forest Preserves to the Morton Arboretum in the Contract Price of \$80,000.00.

STRATEGIC DIRECTIONS SUPPORTED: Leadership; Conservation

FINANCIAL DATA: This project was approved as part of the adopted FY 2015/2016 Capital Improvement Plan in the amount of \$712,001.00. This portion of the project was estimated at \$80,000.00. The actual cost of \$80,000.00 will be charged to the Southern Des Plaines River Woodland Habitat Restoration Project Account (69644100-803200-65004).

BACKGROUND: The Lake County Forest Preserve District (District) completed baseline monitoring in 2008/09 to establish vegetation conditions and to inform decision making on future canopy restoration treatments for the Woodland Habitat Restoration Project. In 2012, in partnership with the Morton Arboretum, the District initiated invasive species removal and canopy thinning as part of a long term habitat restoration and enhancement project to restore biological and structural diversity of dry-mesic woodlands, northern flatwoods and mesic forest plant communities in six preserves along the Southern Des Plaines River in Lake County. Continuing the partnerships with Morton Arboretum this analysis of Canopy Thinning Strategies will provide two years of assistance to District staff in monitoring canopy conditions, ground layer, and oak seedling response to the thinning treatments, provide recommendations for additional thinning in four of the seven strategies being studied, and result in manuscripts for publication.

REASON FOR RECOMMENDATION: Committee recommendation and Board approval are required in accordance with District policy.

REVIEW BY OTHERS: Chief Operations Officer, Director of Finance, Corporate Counsel

PRESENTER: James L. Anderson

**LAKE COUNTY FOREST PRESERVE DISTRICT
LAKE COUNTY, ILLINOIS**

**A RESOLUTION AWARDING A CONTRACT FOR ANALYSIS OF
CANOPY THINNING STRATEGIES FOR WOODLAND HABITAT RESTORATION
AT SOUTHERN DES PLAINES RIVER FOREST PRESERVES TO
THE MORTON ARBORETUM**

WHEREAS, the Lake County Forest Preserve District (the "District") desires to retain a firm to perform Analysis of Canopy Thinning Strategies for Woodland Habitat Restoration at Southern Des Plaines River Forest Preserves (the "Services"); and

WHEREAS, the Director of Natural Resources and the Purchasing Manager have determined that the Services require personal confidence; and

WHEREAS, the Purchasing Manager has solicited a proposal for the Services; and

WHEREAS, the District's staff, the Purchasing Manager, the Director of Natural Resources, the Planning and Restoration Committee, and the Finance and Administrative Committee have reviewed the proposal and recommend that the Board of Commissioners (i) find that the proposal submitted by the Morton Arboretum be determined to be the proposal that is most advantageous to the District; and (ii) award a contract for the Services to the Morton Arboretum (the "Contract") in the amount of \$80,000.00 (the "Contract Price"); and

WHEREAS, the Board of Commissioners hereby finds that the proposal for the Services submitted by the Morton Arboretum is the proposal that is most advantageous to the District;

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Lake County Forest Preserve District, Lake County, Illinois THAT:

Section 1. Recitals. The recitals set forth above are incorporated as a part of this Resolution by this reference.

Section 2. Award of Contract. The Contract in the amount of the Contract Price, in substantially the form attached hereto, is hereby awarded to the Morton Arboretum.

Section 3. Execution of Contract. The Executive Director of the District is hereby authorized and directed to execute the Contract for the Services in the amount of the Contract Price.

Section 4. Payments. The Treasurer shall make payments under the Contract only pursuant to and in accordance with the Contract terms.

Section 5. Effective Date. This Resolution shall be in full force and effect from and after its passage and approval in the manner provided by law.

PASSED this ____ day of _____ 2016

AYES:

NAYS:

APPROVED this ____ day of _____ 2016

Ann B. Maine, President
Lake County Forest Preserve District

ATTEST:

Julie Gragnani, Secretary
Lake County Forest Preserve District

Exhibit # _____

Lake County Forest Preserves

www.LCFPD.org



CONTRACT BETWEEN

LAKE COUNTY FOREST PRESERVE DISTRICT

AND

THE MORTON ARBORETUM

FOR THE

ANALYSIS OF
CANOPY THINNING STRATEGIES FOR
WOODLAND HABITAT RESTORATION

SOUTHERN DES PLAINES RIVER FOREST
PRESERVES

PROJECT NO. 65004-134-831

TABLE OF CONTENTS

ARTICLE I - THE SERVICES.....	1
1.1 Performance of the Services.....	1
1.2 Commencement and Completion Dates.....	1
1.3 Required Submittals.....	2
1.4 Review and Incorporation of Contract Provisions.....	2
1.5 Financial and Technical Ability to Perform	2
1.6 Time	2
1.7 Consultant’s Personnel and Sub-Consultants	2
1.8 Owner’s Responsibilities	3
1.9 Owner’s Right to Terminate or Suspend Services for Convenience	3
ARTICLE II - CHANGES AND DELAYS.....	4
2.1 Changes	4
2.2 Delays.....	4
2.3 No Constructive Change Orders	4
ARTICLE III - CONSULTANT’S RESPONSIBILITY FOR DEFECTIVE SERVICES	5
3.1 Representation of Compliance	5
3.2 Corrections	5
3.3 Risk of Loss	5
ARTICLE IV - INSURANCE; INDEMNIFICATION.....	5
4.1 Insurance.....	5
4.2 Indemnification.....	6
ARTICLE V - PAYMENT	6
5.1 Contract Price.....	6
5.2 Taxes, Benefits and Royalties.....	6
5.3 Progress Payments.....	6
5.4 Final Acceptance and Final Payment.....	7
5.5 Deductions.....	7
5.6 Accounting.....	7

ARTICLE VI - REMEDIES.....	8
6.1 Owner’s Remedies.....	8
6.2 Terminations and Suspensions by Owner Deemed for Convenience	8
ARTICLE VII - LEGAL RELATIONSHIPS AND REQUIREMENTS.....	8
7.1 Binding Effect.....	8
7.2 Relationship of the Parties	9
7.3 No Collusion	9
7.4 Assignment.....	9
7.5 Confidential Information	9
7.6 No Waiver.....	10
7.7 No Third Party Beneficiaries	10
7.8 Notices.....	10
7.9 Governing Laws.....	11
7.10 Changes in Laws	11
7.11 Compliance with Laws and Grants.....	11
7.12 Ownership of Documents.....	11
7.13 Time	11
7.14 Severability	11
7.15 Entire Agreement.....	12
7.16 Amendments.....	12

ATTACHMENT A – SUPPLEMENTAL SCHEDULE OF CONTRACT TERMS

ATTACHMENT B – CONSULTANT’S SCOPE OF WORK

ATTACHMENT C – KEY PERSONNEL

**CONTRACT BETWEEN
LAKE COUNTY FOREST PRESERVE DISTRICT
AND
THE MORTON ARBORETUM
FOR THE
ANALYSIS OF CANOPY THINNING STRATEGIES
FOR WOODLAND HABITAT RESTORATION
SOUTHERN DES PLAINES RIVER FOREST PRESERVES**

In consideration of the agreements set forth below, the Lake County Forest Preserve District, a body corporate and politic and unit of local government organized and existing under the Downstate Forest Preserve District Act, 70 ILCS 805/.001 et seq., 1899 West Winchester Road, Libertyville, Illinois 60048, ("Owner") and the Morton Arboretum a non-governmental organization, 4100 Illinois Route 53, Lisle, IL 60532, ("Consultant") make this Contract as of 6/1/2016 and hereby agree as follows:

ARTICLE I - THE SERVICES

1.1 Performance of the Services

Consultant shall, at its sole cost and expense, provide, perform, and complete all of the following professional data collection, data analysis, and reporting services, all of which is referred to in this Agreement as the "Services":

- A. Professional Services. Provide, perform, and complete, in the manner described and specified in this Contract, all professional services necessary to accomplish the "Project," as defined in Attachment A, in accordance with the Scope of Services attached hereto as Attachment B.
- B. Approvals. Procure and furnish all approvals and authorizations specified in Attachment A.
- C. Insurance. Procure and furnish all required certificates and policies of insurance specified in Attachment A.
- D. Standard of Performance. Provide, perform, and complete all of the foregoing in full compliance with this Contract, in a professional manner, and in accordance with the standards of professional practice, care, and diligence in existence at the time of performance of the Services applicable to recognized and qualified consulting firms in the Chicago Metropolitan Area (the "Standard of Performance").

1.2 Commencement and Completion Dates

Consultant shall commence the Services not later than the "Commencement Date" set forth in Attachment A, and shall diligently and continuously prosecute the Services at such a rate as will allow the Services to be fully provided, performed and completed in full compliance with this Contract not later than the "Completion Date" or, if the Services are to be performed in separate phases, the "Completion Dates," set forth in Attachment A. The time of commencement, rate of progress, and time of completion are referred to in this Contract as the "Contract Time."

1.3 Required Submittals

A. Submittals Required. Consultant shall submit to Owner all reports, documents, data, and information required to be submitted by Consultant under this Contract (“Required Submittals”).

B. Time of Submission and Owner’s Review. All Required Submittals shall be provided to Owner no later than the time, if any, specified in Attachment A, or otherwise in this Contract. If no time for submission is specified for any Required Submittal, then that Submittal shall be submitted within a reasonable time in light of its purpose and, in all events, in sufficient time, in Owner’s opinion, to permit Owner to review that Submittal same prior to the commencement of any part of the Services to which that Submittal may relate. Owner shall have the right to require such corrections as may be necessary to make any Required Submittal conform to this Contract. No Services related to any Required Submittal shall be performed by Consultant until Owner has completed review of such Required Submittal with no exception noted. Owner’s review and approval of any Required Submittal shall not relieve Consultant of the entire responsibility for the performance of the Services in full compliance with, and as required by or pursuant to this Contract, and shall not be regarded as any assumption of risk or liability by Owner. The Consultant shall not be held liable for claims of delay caused by the Owner’s failure to timely review and approve any Required Submittal.

C. Responsibility for Delay. Consultant shall be responsible for any delay in the Services resulting from Consultant’s, or its Sub-consultant’s, delay in providing Required Submittals conforming to this Contract.

1.4 Review and Incorporation of Contract Provisions

Consultant represents and declares that it has carefully reviewed, and fully understands, this Contract, including all of its Attachments, all of which are by this reference incorporated into and made a part of this Contract.

1.5 Financial and Technical Ability to Perform

Consultant represents and declares that it is financially solvent, and has the financial resources necessary, and has sufficient experience and competent, and has the necessary capital, facilities, organization, and staff necessary to provide, perform, and complete the Services in full compliance with, and as required by or pursuant to, this Contract.

1.6 Time

Consultant represents and declares that the Contract Time is sufficient time to permit completion of the Services in full compliance with, and as required by or pursuant to, this Contract for the Contract Price.

1.7 Consultant’s Personnel and Sub-Consultants

A. Consultant’s Personnel. Consultant shall provide all personnel necessary to complete the Services, including without limitation, the “Key Project Personnel” identified in Attachment C. Consultant shall provide to Owner telephone numbers at which the Key Personnel can be reached on a 24-hour basis. Consultant and Owner may, by mutual agreement, make changes and additions to the designations of Key Project Personnel. Consultant shall have no claim for a Change Order, for compensation in excess of the Contract Price, or for a delay or extension of the Contract Time as a result of any such termination, reassignment, resignation, or substitution of Key Project Personnel.

B. Approval and Use of Sub-Consultants. Consultant shall perform the Services with its own personnel and under the management, supervision, and control of its own organization unless otherwise approved by Owner in writing. All sub-consultants and subcontracts used by Consultant shall be acceptable to, and approved in advance by, Owner. Owner's approval of any sub-consultant or subcontract shall not relieve Consultant of full responsibility and liability for the provision, performance, and completion of the Services in full compliance with, and as required by or pursuant to, this Contract. All Services performed under any subcontract shall be subject to all of the provisions of this Contract in the same manner as if performed by employees of Consultant. Every reference in this Contract to "Consultant" shall be deemed also to refer to all sub-consultants of Consultant. Every subcontract shall include a provision binding the sub-consultant to all provisions of this Contract.

C. Removal of Personnel and Sub-Consultants. If any personnel or sub-consultant fails to perform the part of the Services undertaken by it in compliance with this Contract or in a manner reasonably satisfactory to Owner, Consultant, immediately upon notice from Owner, shall remove and replace such personnel or sub-consultant. Consultant shall have no claim for damages, for compensation in excess of the Contract Price, or for a delay or extension of the Contract Time as a result of any such removal or replacement.

1.8 Owner's Responsibilities

Owner shall, at its sole cost and expense: (i) designate in writing a person with authority to act as Owner's representative and on Owner's behalf with respect to the Services except those matters that may require approval of Owner's Board of Commissioners; (ii) provide to Consultant all criteria and full information as to Owner's requirements for the Project or work to which the Services relate, including Owner's objectives and constraints, schedule, space, capacity and performance requirements, and budgetary limitations relevant to the Project; (iii) provide to Consultant all existing studies, reports, and other available data relevant to the Project; (iv) arrange for access to and make all provisions for Consultant to enter upon public and private property as reasonably required for Consultant to perform the Services; (v) provide surveys describing physical characteristics, legal limitations, and utility locations for the Project and the services of geotechnical engineers or other consultants when such services are reasonably requested by Consultant and are necessary for the performance of the Services, and are not already provided for in this Contract; (vi) provide structural, mechanical, chemical, air and water pollution tests, test for hazardous materials, and other laboratory and environmental tests, inspections, and reports required by law to be provided by Owner in connection with the Project; (vii) review Required Submittals and other reports, documents, data, and information presented by Consultant as appropriate; (viii) except as otherwise provided in Attachment A, provide approvals from all governmental authorities having jurisdiction over the Project when such services are reasonably requested by Consultant; (ix) attend Project related meetings; and (x) give prompt written notice to Consultant whenever Owner observes or otherwise becomes aware of any development that affects the scope or timing of the Services, provided, however, that failure to give such notice shall not relieve Consultant of any of its responsibilities under this Contract.

1.9 Owner's Right to Terminate or Suspend Services for Convenience

A. Termination or Suspension for Convenience. Owner shall have the right, at any time and for its convenience, to terminate or suspend the Services in whole or in part at any time by written notice to Consultant. Every such notice shall state the extent and effective date of such termination or suspension. On such effective date, Consultant shall, as and to the extent directed, stop Services under this Contract, cease all placement of further orders or subcontracts, terminate or suspend Services under existing orders and subcontracts, and cancel any outstanding orders or subcontracts that may be canceled.

B. Payment for Completed Services. In the event of any termination pursuant to Subsection 1.9A above, Owner shall pay Consultant (i) such direct costs, including overhead, as Consultant shall have paid or incurred for all Services done in compliance with, and as required by or pursuant to, this Contract up to the effective date of termination; and (ii) such other costs pertaining to the Services, exclusive of overhead and profit, as Consultant may have reasonably and necessarily incurred as the result of such termination. Any such payment shall be offset by any prior payment or payments and shall be subject to Owner's rights, if any, to withhold and deduct as provided in this Contract.

ARTICLE II - CHANGES AND DELAYS

2.1 Changes

Owner shall have the right, by written order executed by Owner, to make changes to the timing or scope of the Services to be provided pursuant to this Contract (a "Services Change Order"). When a Change Order causes an increase or decrease in the amount of the Services, an equitable adjustment in the Contract Price or Contract Time may be made. No decrease in the amount of the Services caused by any Change Order shall entitle Consultant to make any claim for damages, anticipated profits, or other compensation. Consultant shall not undertake any change in the Services without receipt of an executed Change Order from Owner.

2.2 Delays

For any delay resulting from a cause that Consultant could not reasonably avoid or control, Consultant, upon timely written application, shall be entitled to issuance of a Change Order providing for an extension of the Contract Time for a period of time equal to the delay resulting from such unavoidable cause. No extension of the Contract Time shall be allowed for any other delay in completion of the Services.

2.3 No Constructive Change Orders

No claims for equitable adjustments in the Contract Price or Contract Time shall be made or allowed unless embodied in a Change Order. If Owner fails to issue a Change Order including or fully including an equitable adjustment in the Contract Price or Contract Time to which Consultant claims it is entitled or, if Consultant believes that any requirement, direction, instruction, interpretation, determination or decision of Owner entitles Consultant to an equitable adjustment in the Contract Price or Contract Time that has not been included or fully included in a Change Order, then Consultant shall submit to Owner a written request for the issuance of or revision of a Change Order including the equitable adjustment or the additional equitable adjustment in the Contract Price or Contract Time that Consultant claims has not been included or fully included in a Change Order. Such request shall be submitted before Consultant proceeds with any Work for which Consultant claims an equitable adjustment is due and shall, in all events, be submitted no later than two (2) business days after receipts of such Change Order or receipt of notice of such requirement, direction instruction, interpretation, determination or decision. Notwithstanding the submission of any such request, Consultant shall, unless otherwise directed by Owner within two (2) business days after receipt by Owner of such request, proceed without delay to perform the Work in compliance with the Change Order or as required, directed, instructed, interpreted or decided by Owner, and shall, pending a final resolution of the issue, keep a daily record of such Work. Unless Consultant submits such a request within two (2) business days after receipt of such Change Order or receipt of notice of such requirement, direction, instruction, interpretation, determination or decision, Consultant shall be conclusively deemed (i) to have agreed that such Change Order, requirement, direction, instruction, interpretation, determination or decision does not entitle Consultant to an equitable adjustment in the Contract Price or Contract Time; and (ii) to have waived all claims based on such Change Order, requirement, direction, instruction, interpretation, determination or decision.

ARTICLE III - CONSULTANT'S RESPONSIBILITY FOR DEFECTIVE SERVICES

3.1 Representation of Compliance

A. Scope of Representation. Consultant shall perform all Services in conformance with this Contract, free from defects and flaws in design, and in accordance with the Standard of Performance (the "Representation of Compliance").

B. Opinions of Cost. It is recognized that neither Consultant nor Owner has control over the costs of labor, material, equipment or services furnished by others or over competitive bidding, market or negotiating conditions, or construction contractors' methods of determining their prices. Accordingly, any opinions of probable Project costs or construction costs provided for herein are estimates only, made on the basis of Consultant's experience and qualifications and represent Consultant's best judgment as an experienced and qualified professional, familiar with the industry. Consultant does not guarantee that proposals, bids or actual Project costs or construction costs will not vary from opinions of probable cost prepared by Consultant.

3.2 Corrections

Consultant shall be responsible for the quality, technical accuracy, completeness and coordination of all Services under this Contract. Consultant shall correct and remedy all of its errors, omissions, and negligent acts related to the Services, promptly and without charge.

3.3 Risk of Loss

The Services shall be provided, performed, and completed at the risk and cost of Consultant. Consultant shall be responsible for any and all damages to property or persons as a result of Consultant's errors, omissions, or negligent acts and for any losses or costs to repair or remedy any work undertaken by Owner based on the Services as a result of any such errors, omissions, or negligent acts. Notwithstanding any other provision of this Contract, Consultant's obligations under this Section 3.3 shall exist without regard to, and shall not be construed to be waived by, the availability or unavailability of any insurance, either of Owner or Consultant, to indemnify, hold harmless, or reimburse Consultant for such damages, losses, or costs.

ARTICLE IV - INSURANCE; INDEMNIFICATION

4.1 Insurance

Contemporaneous with Consultant's execution of this Contract, Consultant shall provide certificates and policies of insurance evidencing at least the minimum insurance coverage and limits set forth in Attachment A. For good cause shown, Owner may extend the time for submission of the required policies of insurance upon such terms, and with such assurances of complete and prompt performance, as Owner may impose in the exercise of its sole discretion. Such policies shall be in a form reasonably acceptable to Owner and from companies with a general rating of A-, and a financial size category of Class V or better, in Best's Insurance Guide and otherwise reasonably acceptable to Owner. Such insurance shall provide that no change to or cancellation of any insurance, nor any reduction in limits or coverage or other modifications affecting this Agreement, shall become effective until the expiration of thirty (30) days after written notice thereof shall have been given by the insurance company to Owner. Consultant shall, at all times while providing, performing, or completing the Services, including without limitation at all times while providing corrective Services pursuant to Section 3.2 of this Contract, maintain and keep in force, at Consultant's expense, at least the minimum insurance coverage and limits set forth in Attachment A.

4.2 Indemnification

Consultant, without regard to the availability or unavailability of any insurance, either of Owner or Consultant, shall, to the fullest extent permitted by law, indemnify, save harmless, and reimburse Owner against any and all lawsuits, claims, demands, damages, liabilities, losses, and expenses, including reasonable attorneys' fees, that may arise or be alleged to have arisen out of or in connection with Consultant's negligent acts, errors, or omissions, except only to the extent caused by the negligence of Owner.

ARTICLE V - PAYMENT

5.1 Contract Price

Owner shall pay to Consultant, in accordance with and subject to the terms and conditions set forth in this Article V and Attachment A, and Consultant shall accept in full satisfaction for providing, performing, and completing the Services, the amount or amounts set forth in Attachment A ("Contract Price"), subject to any additions, deductions, or withholdings provided for in this Contract.

5.2 Taxes, Benefits and Royalties

The Contract Price includes applicable federal, state, and local taxes of every kind and nature applicable to the Services as well as all taxes, contributions, and premiums for unemployment insurance, old age or retirement benefits, pensions, annuities, or other similar benefits and all costs, royalties, and fees arising from the use on or the incorporation into the Services of patented equipment, materials, supplies, tools, appliances, devices, processes, or inventions. Consultant waives and releases any claim against Owner arising from the payment of any such tax, contribution, premium, benefit, cost, royalty, or fee.

5.3 Progress Payments

A. Payment in Installments. The Contract Price shall be paid in installments in the manner set forth in Attachment A ("Progress Payments").

B. Pay Requests. Consultant shall, as a condition precedent to its right to receive each Progress Payment, submit to Owner an invoice accompanied by such receipts, vouchers, and other documents as may be necessary to reasonably establish Consultant's prior payment for all labor, material, and other things covered by the invoice and the absence of any lien or other interest of any party in regard to the Services performed under this Contract. In addition to the foregoing, such invoice shall include (i) employee classifications, rates per hour, and hours worked by each classification, and, if the Services are to be performed in separate phases, for each phase; (ii) total amount billed in the current period and total amount billed to date, and, if the Services are to be performed in separate phases, for each phase; (iii) the estimated percent completion, and, if the Services are to be performed in separate phases, for each phase; and (iv) Consultant's certification that all prior Progress Payments have been properly applied to the Services with respect to which they were paid. Owner may, by written notice to Consultant, designate a specific day of each month on or before which pay requests must be submitted.

5.4 Final Acceptance and Final Payment

The Services or, if the Services are to be performed in separate phases, each phase of the Services, shall be considered complete on the date of final written acceptance by Owner of the Services or each phase of the Services, as the case may be, which acceptance shall not be unreasonably withheld or delayed. The Services or each phase of the Services, as the case may be, shall be deemed accepted by Owner if not objected to in writing within sixty (60) days after submission by Consultant of the Services or such phase of Services for final acceptance and payment plus, if applicable, such additional time as may be considered reasonable for obtaining approval of governmental authorities having jurisdiction to approve the Services, or phase of Services, as the case may be. Within thirty (30) days after final acceptance, Owner shall pay to Consultant the balance of the Contract Price or, if the Services are to be performed in separate phases, the balance of that portion of the Contract Price with respect to such phase of the Services, after deducting therefrom charges, if any, against Consultant as provided for in this Contract ("Final Payment"). The acceptance by Consultant of Final Payment with respect to the Services or a particular phase of Services, as the case may be, shall operate as a full and complete release of Owner of and from any and all lawsuits, claims, or demands for further payment of any kind for the Services or, if the Services are performed in separate phases, for that phase of the Services.

5.5 Deductions

A. Owner's Right to Withhold. Notwithstanding any other provision of this Contract and without prejudice to any of Owner's other rights or remedies, Owner shall have the right at any time or times, whether before or after approval of any pay request, to deduct and withhold from any Progress or Final Payment that may be or become due under this Contract, such amount as may reasonably appear necessary to compensate Owner for any actual or prospective loss due to: (i) Services that are defective, damaged, flawed, unsuitable, nonconforming or incomplete; (ii) damage for which Consultant is liable under this contract; (iii) liens or claims of lien, regardless of merit; (iv) claims of Sub-consultants, suppliers or other persons, regardless of merit; (v) delay in the progress or completion of the Services; (vi) inability of Consultant to complete the Services; (vii) failure of Consultant to perform any of its obligations under this Contract; (viii) any other failure of Consultant to perform any of its obligations under this Contract; (ix) the cost to Owner including attorneys' fees and administrative costs of correcting any of the aforesaid matters or exercising any one or more of Owner's remedies set forth in Section 6.1 of this Contract.

B. Use of Withheld Funds. Owner shall be entitled to retain any and all amounts withheld pursuant to Subsection 5.5A above until Consultant shall have either performed the obligations in question or furnished security for such performance satisfactory to Owner. Owner shall be entitled to apply any money withheld or any other money due Consultant under this Contract to reimburse itself for any and all costs, expenses, losses, damages, liabilities, suits, judgments, awards, attorneys' fees and administrative expenses incurred, suffered or sustained by Owner and chargeable to Consultant under this Contract.

5.6 Accounting

Consultant shall keep accounts, books, and other records of all its billable charges and costs incurred in performing the Services in accordance with generally accepted accounting practices, consistently applied, and in such manner as to permit verification of all entries. Consultant shall make all such material available for inspection by Owner, at the office of Consultant during normal business hours during this Contract and for a period of three years after termination of this Contract. Copies of such material shall be furnished, at Owner's expense, upon request.

ARTICLE VI - REMEDIES

6.1 Owner's Remedies

If it should appear at any time prior to Final Payment that Consultant has failed or refused to prosecute, or has delayed in the prosecution of the Services with diligence at a rate that assures completion of the Services in full compliance with the requirements of this contract, or has attempted to assign this Contract or Consultant's rights under this contract, either in whole or in part, or has falsely made any representation or warranty in this Contract, or has otherwise failed, refused or delayed to perform or satisfy any other requirement of this Contract, or has failed to pay its debts as they come due ("Event of Default"), and has failed to cure any such Event of Default within five (5) business days after Consultant's receipt of written notice of such Event of Default, Owner shall have the right, at its election and without prejudice to any other remedies provided by law or equity, to pursue any one or more of the following remedies:

- A. Owner may require Consultant, within such reasonable time as may be fixed by Owner, to complete or correct all or any part of the Services that are defective, damaged, flawed, unsuitable, nonconforming or incomplete to accelerate all or any part of the Services, and to take any or all other action necessary to bring Consultant and the Services into strict compliance with this Contract.
- B. Owner may accept the defective, damaged, flawed, unsuitable, nonconforming, incomplete or dilatory Services as part thereof and make an equitable reduction in the Contract Price.
- C. Owner may terminate this Contract without liability for further payment of amounts due or to become due under this Contract.
- D. Owner may withhold from any Progress Payment or Final Payment, whether or not previously approved, or may recover from Consultant any and all costs including attorneys' fees and administrative expenses incurred by Owner as the result of any Event of Default or as a result of actions taken by Owner in response to any Event of Default.
- E. Owner may recover any damages suffered by Owner.

6.2 Terminations and Suspensions by Owner Deemed for Convenience

Any termination or suspension by Owner of Consultant's rights under this Contract for an alleged Event of Default that is ultimately held unjustified shall automatically be deemed to be a termination or suspension for the convenience of Owner under Section 1.9 of this Contract.

ARTICLE VII - LEGAL RELATIONSHIPS AND REQUIREMENTS

7.1 Binding Effect

This Contract shall be binding on Owner and Consultant and on their respective heirs, executors, administrators, personal representatives, and permitted successors and assigns. Every reference in this Contract to a party shall also be deemed to be a reference to the authorized officers, employees, agents, and representatives of such party.

7.2 Relationship of the Parties

Consultant shall act as an independent contractor in providing and performing the Services. Nothing in, nor done pursuant to, this Contract shall be construed (i) to create the relationship of principal and agent, partners, or joint ventures between Owner and Consultant or (ii) to create any relationship between Owner and any sub-consultant of Consultant.

7.3 No Collusion

Consultant hereby represents and certifies that Consultant is not barred from contracting with a unit of state or local government as a result of (i) a delinquency in the payment of any tax administered by the Illinois Department of Revenue unless Consultant is contesting, in accordance with the procedures established by the appropriate revenue Act, its liability for the tax or the amount of the tax, as set forth in 65 ILCS 5/11-42.1-1; or (ii) a violation of either Section 33E-3 or Section 33E-4 of Article 33E of the Criminal Code of 1961, 720 ILCS 5/33E-1 et seq. Consultant hereby represents that the only persons, firms, or corporations interested in this Contract as principals are those disclosed to Owner prior to the execution of this Contract, and that this Contract is made without collusion with any other person, firm, or corporation. If at any time it shall be found that Consultant has, in procuring this Contract, colluded with any other person, firm, or corporation, then Consultant shall be liable to Owner for all loss or damage that Owner may suffer thereby, and this Contract shall, at Owner's option, be null and void.

Consultant hereby represents and warrants that neither Consultant nor any person affiliated with Consultant or that has an economic interest in Consultant or that has or will have an interest in the Work or will participate, in any manner whatsoever, in the Work is acting, directly or indirectly, for or on behalf of any person, group, entity or nation named by the United States Treasury Department as a Specially Designated National and Blocked Person, or for or on behalf of any person, group, entity or nation designated in Presidential Executive Order 13224 as a person who commits, threatens to commit, or supports terrorism, and neither Consultant nor any person affiliated with Consultant or that has an economic interest in Consultant or that has or will have an interest in the Work or will participate, in any manner whatsoever, in the Work is, directly or indirectly, engaged in, or facilitating, the Work on behalf of any such person, group, entity or nation.

7.4 Assignment

Consultant shall not (i) assign this Contract in whole or in part, (ii) assign any of Consultant's rights or obligations under this Contract, or (iii) assign any payment due or to become due under this Contract without the prior express written approval of Owner, which approval may be withheld in the sole and unfettered discretion of Owner; provided, however, that Owner's prior written approval shall not be required for assignments of accounts, as defined in the Illinois Commercial Code, if to do so would violate Section 9-318 of the Illinois Commercial Code, 810 ILCS 5/9-318. Owner may assign this Contract, in whole or in part, or any or all of its rights or obligations under this Contract, without the consent of Consultant.

7.5 Confidential Information

All information supplied by Owner to Consultant for or in connection with this Contract or the Services shall be held confidential by Consultant and shall not, without the prior express written consent of Owner, be used for any purpose other than performance of the Services.

7.6 No Waiver

No examination, inspection, investigation, test, measurement, review, determination, decision, certificate or approval by Owner, nor any order by Owner for the payment of money, nor any payment for or use, occupancy, possession or acceptance of the whole or any part of the Services by Owner, nor any extension of time granted by Owner, nor any delay by Owner in exercising any right under this Contract, nor any other act or omission of Owner shall constitute or be deemed to be an acceptance of any defective, damaged, flawed, unsuitable, nonconforming or incomplete Services, nor operate to waive or otherwise diminish the effect of any warranty or representation made by Consultant or of any requirement or provision of this Contract or of any remedy, power or right of Owner.

7.7 No Third Party Beneficiaries

No claim as a third party beneficiary under this Contract by any person, firm, or corporation (other than Owner and Consultant) shall be made or be valid against Owner or Consultant.

7.8 Notices

All notices required or permitted to be given under this Contract shall be in writing and shall be deemed received by the addressee thereof when delivered in person on a business day at the address set forth below or on the third business day after being deposited in the United States mail, for delivery at the address set forth below by properly addressed, postage prepaid, certified or registered mail, return receipt requested.

Notices and communications to Owner shall be addressed to, and delivered at, the following address:

Lake County Forest Preserve District
1899 West Winchester Road
Libertyville, Illinois 60048
Attention: Debbie Maurer

Notices and communications to Consultant shall be addressed to and delivered at the following address:

NAME The Morton Arboretum
ADDRESS 4100 Illinois Rte 53
CITY STATE Lisle, IL 60532-1293
Attention: Chuck Cannon

The foregoing shall not be deemed to preclude the use of other non-oral means of notification or to invalidate any notice properly given by any such other non-oral means.

By notice complying with the requirements of this Section 7.8, Owner and Consultant each shall have the right to change the address or addressee or both for all future notices to it, but no notice of a change of address or addressee shall be effective until actually received.

7.9 Governing Laws

This Contract and the rights of Owner and Consultant under this Contract shall be interpreted according to the internal laws, but not the conflict of laws rules, of the State of Illinois.

7.10 Changes in Laws

Unless otherwise explicitly provided in this Contract, any reference to laws shall include such laws as they may be amended or modified from time to time.

7.11 Compliance with Laws and Grants

Consultant shall perform, or cause its Sub-consultants to perform, the Services in accordance with all required governmental permits, licenses, or other approvals and authorizations, and with applicable statutes, ordinances, rules, and regulations. This requirement includes, but is not limited to, compliance with the Fair Labor Standards Act; any statutes regarding qualification to do business; any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification, including, without limitation, the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 et seq., and the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq. Consultant shall also comply with applicable conditions of any federal, state, or local grant received by Owner or Consultant with respect to this Contract or the Services.

Consultant shall be liable for any fines or civil penalties that may be imposed or incurred by a governmental agency with jurisdiction over the Services as a result of Consultant's or its sub-consultants' improper performance of, or failure to properly perform, the Services or any part thereof.

Every provision of law required by law to be inserted into this Contract shall be deemed to be inserted herein.

7.12 Ownership of Documents

Consultant and Consultant's sub-consultants shall be deemed the original authors and owners respectively of materials produced pursuant to this Contract and shall retain all common law, statutory and other reserved rights, including copyrights. Consultant hereby grants and conveys to Owner perpetual, irrevocable non-exclusive rights and license to use all Required Submittals and other materials produced under this Contract for District purposes and no other purposes. The Owner agrees to defend and hold the Consultant and the Consultant's sub-consultants harmless from any causes of action, claims, losses, damages and expenses of any nature whatsoever, including reasonable attorney's fees, resulting from any unauthorized re-use of the Consultant's and Consultant's sub-consultants' materials.

7.13 Time

The Contract Time is of the essence of this Contract. Except where otherwise stated, references in this Contract to days shall be construed to refer to calendar days.

7.14 Severability

The provisions of this Contract shall be interpreted when possible to sustain their legality and enforceability as a whole. In the event any provision of this Contract shall be held invalid, illegal, or unenforceable by a court of competent jurisdiction, in whole or in part, neither the validity of the remaining part of such provision, nor the validity of any other provisions of this Contract shall be in any way affected thereby.

7.15 Entire Agreement

This Contract sets forth the entire agreement of Owner and Consultant with respect to the accomplishment of the Services and the payment of the Contract Price therefore, and there are no other understandings or agreements, oral or written, between Owner and Consultant with respect to the Services and the compensation therefore.

7.16 Amendments

No modification, addition, deletion, revision, alteration, or other change to this Contract shall be effective unless and until such change is reduced to writing and executed and delivered by Owner and Consultant.

IN WITNESS WHEREOF, Owner and Consultant have caused this Contract to be executed as of the day and year first written above.

(SEAL)

Attest/Witness

LAKE COUNTY FOREST PRESERVE DISTRICT

By: _____

Julie A. Gragnani

Alex Ty Kovach

Title: Secretary

Title: Executive Director

Attest/Witness

Morton Arboretum

By: _____

By: _____

Gerard Donnelly

Title: _____

Title: _____

President and CEO

ATTACHMENT A - SUPPLEMENTAL SCHEDULE OF CONTRACT TERMS

1. Project:
Provide data collection, data analysis, and reporting services at MacArthur Woods, Captain Daniel Wright Woods, and Ryerson Woods Forest Preserves, which services include: data collection, data analysis, phase III dry mesic canopy thinning treatment development, technical reporting, and preparation of papers for publication.

The Services include, but are not limited to, all of the Services provided in Consultant's detailed Scope of Work. See Attachment B.

2. Approvals and Authorizations:
Consultant shall obtain the following approvals and authorizations from the following governmental bodies on or before the following dates:

<u>Approval/Authorization</u>	<u>Date</u>
-------------------------------	-------------

Not Applicable

3. Commencement Date:
June 1, 2016

4. Completion Date:
December 31, 2019

5. Insurance Coverage:

A. Worker's Compensation and Employer's Liability with limits not less than:

- (1) Worker's Compensation: Statutory
- (2) Employer's Liability:
 - a. \$1,000,000.00 injury-per-occurrence
 - b. \$1,000,000.00 disease-per-employee
 - c. \$1,000,000.00 disease-policy limit

Such insurance shall evidence that coverage applies in the State of Illinois.

B. Comprehensive Motor Vehicle Liability with a combined single limit of liability for bodily injury and property damage of not less than \$1,000,000.00 for vehicles owned, non-owned or rented. All employees shall be included as insured's.

C. Comprehensive General Liability with coverage written on an "occurrence" basis and with limits no less than:

- (1) General Aggregate: \$2,000,000.00
- (2) Bodily Injury: \$2,000,000.00 per person
\$2,000,000.00 per occurrence
- (3) Property Damage: \$2,000,000.00 per person
\$2,000,000.00 aggregate

Coverages shall include:

- ❖ Broad Form Property Damage Endorsement
 - ❖ Blanket Contractual Liability (must expressly cover the indemnity provisions of the Contract)
- D. Professional Liability Insurance with a limit of liability of not less than \$1,000,000.00 per claim and aggregate, and covering Consultant against all sums that Consultant may be obligated to pay on account of any liability arising out of the Contract.
- E. Umbrella Policy. The required coverages may be in any combination of primary, excess and umbrella policies. Any excess or umbrella policy must provide excess coverage of underlying insurance on a following-form basis such that when any loss covered by the primary policy exceeds the limits under the primary policy, the excess or umbrella policy becomes effective to cover such loss.
- F. Owner as Additional Insured. Owner shall be named as an Additional Insured on all policies except for:
- ❖ Worker's Compensation Policy
- G. Other Parties as Additional Insured. In addition to Owner, the following parties shall be named as Additional Insured on the following policies:

Additional Insured	Policy or Policies
_____	_____
_____	_____

6. Contract Price:

A. Schedule of Prices - Hourly/Not to Exceed:

Notwithstanding the foregoing, the total portion of the Contract Price based on Consultant's hourly rates of principals and employees shall not exceed \$ _____ and the total portion of the Contract Price based on reimbursable expenses shall not exceed \$ _____.

B. Schedule of Prices - Lump Sum

For providing, performing and completing all Services, the total Contract Price of:

<u>Eighty Thousand</u> (in writing)	Dollars and	<u>zero</u> Cents
<u>80,000</u> (in figures)	Dollars and	<u>00</u> Cents

Lump sum amount includes all travel, living and direct project expenses including printing, postage and handling. There shall be no additional costs.

7. Payments:

Regardless of whether the Contract Price is based upon hourly rates or a lump sum, Consultant shall, not later than ten (10) days after execution of the Contract and before submitting its first pay request, submit to Owner a schedule showing the value of each component part or phase of the Services in form and with substantiating data acceptable to Owner ("Breakdown Schedule"). The sum of the items listed in the Breakdown Schedule shall equal the lump sum Contract Price or the not to exceed Contract Price, as the case may be. An unbalanced Breakdown Schedule providing for overpayment of Consultant on component parts or phases of the Services to be performed first will not be accepted. The Breakdown Schedule shall be revised and resubmitted until acceptable to Owner. No payment shall be made for Services until Consultant has submitted, and Owner has approved, an acceptable Breakdown Schedule. When a component or phase of the Services, as identified in the Breakdown Schedule, is complete, Owner will pay Consultant the value of such component or phase as provided in the Breakdown Schedule; however, Owner shall not be required to make payments more frequently than once per month.

All pay requests from Consultant shall be made using the pay request format supplied by Owner.

Owner may require that the approved Breakdown Schedule be revised based on developments occurring during the provision and performance of the Services. If Consultant fails to submit a revised Breakdown Schedule that is acceptable to Owner, Owner shall have the right either to suspend Progress and Final Payments for Services or to make such payments based on Owner's determination of the value of the Services completed.

ATTACHMENT B - CONSULTANT'S SCOPE OF WORK

Background

Prior to European settlement, landscape fires are thought to have maintained oak (*Quercus* sp.) dominance of midwestern forests and woodlands (Lorimer 1987, Anderson 1991, Bowles *et al.* 1994). Post-settlement fire suppression is often followed by canopy closure and replacement of oaks by shade-tolerant mesophytic tree species such as sugar maple (*Acer saccharum* L.), thereby threatening the viability of this ecosystem (Lorimer 1985, 1988, Abrams 1992, , Bowles *et al.* 2003, Abrams 2005, Bowles *et al.* 2005). Ground layer vegetation is also thought to decline with fire protection due to loss of shade-intolerant understory plants (Bowles *et al.* 2000). As the groundlayer comprises most of the plant species in oak forests, maintaining its diversity is an important conservation need that may be facilitated by restoring fire to the system. A secondary effect of canopy closure also appears to be loss of shrub layer structure and diversity (Bowles *et al.* 2005). Repeated long term burning has been found to increase groundlayer richness and cover by reducing shrub and sapling layer cover (Bowles *et al.* 2007). Less fire frequency, but greater intensity, or mechanical removal may be needed to create larger canopy gaps and allow both oak and shrub layer regeneration.

Previous analyses of Chicago region upland dry-mesic, and mesic forests classified white oak-, red oak-, and sugar maple-dominated stands (Bowles *et al.* 2000). These stands differed in percent canopy cover, which was greater in maples stands, as well as in shrub and groundlayer vegetation species richness, and abundance of groundlayer guilds (Bowles *et al.* 2000). These stands are undergoing temporal change, with loss of subcanopy oaks and shrublayer vegetation, and invasion of oak sapling layers by sugar maple (Bowles *et al.* 2005). Declining subcanopy oaks date back to the mid-1800s, and appear to have generated following settlement and fire protection, a process that continues to affect old-growth forest structure. The Chicago region's savannas and woodlands have been classified into dry-mesic, mesic and wet-mesic stands that vary by dominant canopy tree species, as well as silt-loam vs gravel substrates (Bowles & McBride 1996). Other than mesic savannas (Bowles & McBride 1998, Jackson 2006), and flatwoods (e.g., Bowles *et al.* 2003), little published vegetation is available on the shrub and groundlayer vegetation of savanna and woodland vegetation. Definitions of forest, woodland and savanna structural characteristics vary among authors, and usually lack supportive data. Bowles & McBride (1996) suggested forests have > 100 trees/ha, with < 20% canopy openness based on canopy gaps; woodlands with > 50-100 trees/ha and 20-50% canopy openness, and savannas with > 0-50 trees/ha and > 50 % canopy openness. Point-center-quarter analysis of presettlement vegetation using these tree density categories indicates that the Chicago region's wooded landscapes were predominantly savanna; and that woodland was less frequent than forest.

Purpose

Lake County Forest Preserve District (LCFPD) completed baseline monitoring in 2008/09 to establish vegetation conditions and to inform decision making on future canopy restoration treatments. In 2012, in partnership with the Morton Arboretum, LCFPD initiated woodland restoration as part of a long term habitat restoration and enhancement project to restore biological and structural diversity of woodland, northern flatwoods and mesic forest plant communities in six preserves along the Southern Des Plaines River in Lake County. Work included restoring woodland age and size class structure, controlling invasives, introducing native vegetation, and conducting long-term monitoring. The goals of this project included metrics for vegetation, habitat and wildlife. Listed below are the goals related to vegetation and habitat structure from the original restoration plan:

Landscape Scale Goals

1. Restore woodland canopy structure (50% to 80% canopy cover) ensuring a mosaic of densities and size structures across 910 acres, including 650 acres of dry-mesic woodland and 260 acres of northern flatwoods
2. Increase tree species diversity and size/age structure diversity of dry-mesic, northern flatwood, and mesic forest communities across 1170 acres to help ensure long-term sustainability of these communities in the face of disease, pests, and climate change.
3. Restore native shrub abundance to a minimum importance value of 10 in a patchy distribution in each preserve. Enhance existing populations and reintroduce species that are currently absent.
4. Restore and maintain >90% herbaceous cover in each SDPRP preserve and increasing graminoid importance values for improvement of fuel matrix.
5. Maintain a minimum of 10 tree stumps or logs >7in dbh per acre for cover, nesting, and foraging habitat for wildlife.
6. Maintain a minimum of 0.2 snags >15in dbh per acre for cavity nesting, roosting, and foraging habitat for wildlife.

Community-Specific Goals

Dry-Mesic Forests/Woodlands and Northern Flatwoods

1. Canopy and sub-canopy structure and composition
 - a. Shift the regeneration of canopy species in mature oak-dominated communities, dry-mesic forests and northern flatwoods, from a maple/ash/elm species composition to an oak/hickory and oak-dominated species composition, respectively, with a diversity of sub-dominant species and promote development of a multicohort oak age structure.
 - i. Increase oak and other shade intolerant species seedling cover to 10% of the ground layer cover.
 - ii. Increase oak and other shade intolerant species sapling density to 10 to 20 stems per hectare.
 - iii. Increase light availability at ground level through canopy and sub canopy thinning to 30%- 40% light availability to establish seedlings of shade-intolerant species.
 - iv. Reduce and maintain invasive plant abundance to less than 2% of the stem density or cover in the shrub and ground layer vegetation.
2. Herbaceous vegetation
 - a. Increase the Mean C and Species Richness Indices by 20% from 1996 levels.
 - b. Increase native species diversity by 20% from 1996 levels.
 - c. Increase coverage of graminoid species in dry-mesic woodland by 50%.
 - d. Reduce invasive small stem woody plants coverage to less than 5% of the groundlayer cover.
 - e. Increase coverage of summer and fall blooming species by 30%.

Mesic Forests

1. Canopy and sub canopy
 - a. Increase canopy and sub canopy diversity in mesic forest communities.
 - b. Create variability in environmental conditions that allow for regeneration of multiple tree species.

An adaptive management strategy will be used to achieve these goals.

The baseline assessment completed in 2012 by the Morton Arboretum and the District provided: 1) a detailed analysis of current vegetation and environmental conditions of the plant communities within these preserves; 2) compared current vegetation structure and composition to historic vegetation patterns to help LCFPD develop restoration targets, and 3) provided management strategies for implementation of thinning actions in the 2012/13 project areas, including MacArthur Woods, Grainger Woods and Captain Daniel Wright Woods (Elm Road Woods). Pre-treatment data analysis led to specific management recommendations and informed implementation of treatments at each project site and individual management unit.

The purpose of this project is to:

- 1) Lead post-treatment monitoring of groundlayer vegetation communities and subcanopy environmental conditions within all Dry-mesic project sites – in previously established permanent monitoring plots
Analyze post-treatment data to assess effects of treatments on groundlayer vegetation communities (composition, diversity, and structure) and subcanopy environment (light transmittance, temperatures, moisture/humidity).
- 2) Lead post-treatment monitoring of canopy response in all Dry-mesic project sites – in previously established permanent monitoring plots
Analyze post-treatment data to assess effects of treatments on canopy tree survival, productivity, and health and canopy structure and function (leaf area index, canopy structural complexity, light-use efficiency).
- 3) Re-locate and measure planted oak seedlings in each monitoring plot in Dry-mesic project sites – seedling status (alive or dead), size, health, and (pending equipment availability) physiology (photosynthetic capacity, carbon balance, biomass allocation)
Analyze planted seedling data to assess effect of treatments on oak seedling survival, productivity, health and physiology.
- 4) Through data analysis, assess whether LCFPD is trending towards reaching the restoration goals established in the original plan.
- 5) Provide copies of all curated organized data from all post-treatment monitoring and analyses in all Dry-mesic project area sites.
- 6) Produce technical and non-technical reports summarizing and detailing primary findings from all above analyses. In these reports provide recommendations concerning application of second phase of treatments based on response of the system to the initial management
- 7) Work with LCFPD staff to prepare scientific manuscripts.
- 8) Provide copies of all scientific manuscripts resulting from data and analyses following acceptance for publication.

I. Post-treatment Monitoring of Groundlayer conditions

Monitoring protocol:

Monitoring plots (0.1ha, 17.8m radius) were randomly located within treatments – three plots per unit – groundlayer vegetation was sampled - Four 1m² sample plots (using sampling frame) located 5m from plot center in each cardinal direction (N, S, E, W)

- Re-establish plot centers with 0.5m tall PVC post when needed based on tree locations and GPS locations
- Re-sample Groundlayer vegetation
 - Record percent cover by species – sum can be greater than 100% because of layering
 - Record stem count for tree seedlings (<1.37m in height) – record clumps as a single stem
 - For naturally regenerated oak seedlings record height, basal diameter, and height growth in most recent year
- Saplings/shrubs (>1.37m tall, <10cm dbh)
 - Record stem counts on 5.64m radius (100m²) circular subplot around plot center
 - Record stem counts by diameter classes – <1cm, 1-5cm, 5-10cm
 - Record clumps as a single stem – in the class of the largest stem in the clump
 - For naturally regenerated oak saplings record height, dbh, and height growth (if possible)
- Measure LAI at each subplot location using Licor LAI-2200 and Photosynthetically Active Radiation (PAR) using Decagon Ceptometer
- Instrument a subset of plot centers with data loggers to measure soil moisture and temperature, air moisture and temperature, and continuous photosynthetically active radiation

II. Post-treatment Monitoring of Canopy conditions

Monitoring protocol:

Monitoring plots (0.1ha, 17.8m radius) were randomly located within treatments – three plots per unit – all canopy trees (>10cm dbh) were mapped

- Re-establish plot centers with 0.5m tall PVC post when needed based on tree locations and GPS locations
- Re-sample canopy trees
 - Record status (live/dead), condition, crown class, and dbh for all trees (>10cm dbh) in monitoring plots
 - Record species and location as well for all ingrowth (new trees grown into 10cm size class)

- Snags and downed woody debris will be re-measured and quantified in standard class categorization
- Measure LAI at each plot center using Licor LAI-2200 and Photosynthetically Active Radiation (PAR) using Decagon Ceptometer – also collect Hemispherical photograph to compare to prior data
- Measure canopy structural complexity on each plot using Below Canopy Lidar instrument

III. Post-treatment Monitoring of planted oak seedlings

Monitoring protocol:

Monitoring plots (0.1ha, 17.8m radius) were randomly located within treatments – three plots per unit – 13 white oak, 1 red oak, and 1 bur oak were planted in each monitoring plot

- Re-sample planted oak seedlings
 - Record status (live/dead), condition, height and dbase for all planted seedlings in monitoring plots and gaps
 - Re-flag any seedlings for which flags have been lost
- Measure LAI at each seedling location using Licor LAI-2200 and Photosynthetically Active Radiation (PAR) using Decagon Ceptometer

IV. Provide curated data from post-treatment monitoring

- Data from post-treatment monitoring at all dry mesic sites will be combined with pre-treatment data and the combined data set will be organized, archived, and summarized. Data shall be provided in electronic format in excel spreadsheets or an access database

V. Produce technical and non-technical reports

- Two general summary reports will be produced. A non-technical report will summarize the general findings of the work and include general recommendations for the next phase of work for each initial treatment and each site based on the findings. A technical report will outline the specific conditions and responses in each of the management units and include specific recommendations for each unit in the next phase of treatment.
- Prior to completion of technical reports, the Consultant shall provide recommendations for additional phase III canopy thinning treatments (see Timeline below)

VI. Provide copies of all scientific manuscripts

- Copies of all scientific manuscripts produced as a result of the project will be provided upon publication of the articles in a journal

Timeline

Post-treatment monitoring on all dry-mesic project sites shall be completed by September, 30 2017. Recommendations for next treatment phase will be provided by October 2016 (MacArthur) and October 2017 (MacArthur, Elm, Ryerson). Curation and analysis of data and delivery of all curated data shall be completed by June 30, 2018. Completed technical reports shall be provided to the District by December 31, 2018.

ATTACHMENT C - KEY PERSONNEL

1. Key Project Personnel – Owner

NAMES	TELEPHONE NUMBERS
Debbie Maurer	847-276-6943

2. Key Project Personnel – Consultant

NAMES	TELEPHONE NUMBERS
Dr. Robert Fahey	860-486-4169
Dr. Chuck Cannon	630-725-2071