

2 March 2022

Via Email to: hguenot@hollywoodfl.org

Heather Baburek Guenot, P.E.
Senior Project Manager
City of Hollywood
Design & Construction Management
P.O. Box 229045
Hollywood, FL 33022-9045

**Re: Proposal for Site Assessment and Professional Land Surveying Services
Orangebrook Golf & Country Club
400 Entrada Drive
Hollywood, Florida 33021
Langan Project No.: 330096701**

Dear Heather:

Langan Engineering and Environmental Services, Inc. (Langan) has prepared the following scope of services for the City of Hollywood (the client or the city) for the Orangebrook Golf & Country Club in Hollywood, Florida (property or site). This scope of services is being provided at the city's request to environmentally assess areas of potential development, as needed in accordance with Rule 62-780.600, Florida Administrative Code (FAC); and provide survey services for the property.

BACKGROUND

The property is comprised of three contiguous parcels identified by the Broward County Property Appraisers as parcels 514217030040, 514217050010 and 5142088010300. The property encompasses approximately 290 acres consisting of two 18-hole golf courses, known as the east and west courses. We understand the client is proposing to redevelop portions of the west course, including relocating stormwater from adjoining properties, but the locations of the redevelopment and stormwater management have not been finalized.

SCOPE OF SERVICES

PHASE 400 – ENVIRONMENTAL ENGINEERING

Langan will perform the following environmental engineering services. The scope of services provided are estimated amounts based on current assumptions, and may require modification once the redevelopment plan and stormwater management locations are determined.

Task 1 – Historical Review

Langan will review readily available data for information on the regulatory history of the golf course and its historical development. We will interview facility personnel knowledgeable of the golf course operations, and we will complete a site reconnaissance of the Site.

We will utilize the information collected during our review, as well as information on the site development provided by the client, to select the soil and groundwater sample locations proposed in Task 2.

Task 2 - Soil and Groundwater Assessment

Langan will divide the Site into the following assessment areas, and test each area only as required by your development plans or the Broward County Environmental Permitting Division (the Division).

- (1) Proposed stormwater management lakes;
- (2) Tees, greens and fairways;
- (3) Chemical storage, mixing and maintenance areas; and
- (4) Property boundaries.

Based a review of aerial photography, we believe there are three chemical storage, mixing and maintenance areas. Additionally, based on information provided by Kimley-Horn and Associates Inc., we understand up to five acres of new stormwater management lakes may excavated on the golf course, but the exact locations of these lakes have not yet been determined. Therefore, the locations of borings in these areas will be determined based on the historical review completed in Task 1 and information on the development provided by you.

The estimated number of soil and groundwater samples and the proposed analytical parameters are provided below.

Area of Concern	Number of Borings	Number of Wells	Lab Parameters
(1) Proposed stormwater management lakes (up to 5 acres)	25	5	Agricultural parameters
(2) Tees, greens and fairways	60	16	Agricultural parameters
(3) Chemical storage, mixing and maintenance areas	15	6	Agricultural, petroleum parameters
(4) Property boundaries	20	9	Agricultural parameters

Agricultural parameters will include the following analyses:

- Arsenic, copper and chromium by EPA method 6020, and
- Leachable arsenic and copper by the Synthetic Precipitation Leachate Procedure and EPA method 6020,
- Organochlorine pesticides by EPA method 8081, and
- Chlorinated herbicides by EPA method 8151 (only 20% of the collected samples will be analyzed for herbicides).

Petroleum parameters will include the following analyses:

- Arsenic, cadmium, copper, chromium and lead by EPA method 6020,
- Volatile organic aromatics (VOA) by EPA Method 8260,
- Polycyclic aromatic hydrocarbons (PAH) by EPA Method 8270, and
- Total recoverable petroleum hydrocarbons (TRPH) by the FL-PRO method.

Langan will conduct field work according to the Florida Department of Environmental Protection (FDEP) Standard Operating Procedures (revision January 2017, effective April 2018). We will

subcontract a licensed drilling contractor to provide direct-push drilling services and an environmental laboratory certified by the National Environmental Laboratory Accreditation Program to provide analytical services. Before drilling, Langan will mark the sample locations and initiate a public utility clearance through Sunshine State One-Call. If available, we request that you provide us with drawings or other documentation of subsurface utilities. Langan and its subcontractors will not be responsible for damage to utilities not identified to us. At each soil boring location, Langan will describe the lithology and record the depth to groundwater, and note odors or staining.

Soil Borings

We will install up to 120 soil borings. At each soil boring, Langan will collect discrete soil samples from zero to six inches below land surface (bls), six inches to two feet bls, two feet to four feet bls, and four to six feet bls. We will request the laboratory archive the discrete samples from two feet to four feet and four to six feet bls for future analysis, only if the results upper intervals exceed the Soil Cleanup Target Levels (SCTL). If additional lab analyses are required, an ASR will be provided.

Monitoring Wells

We will install up to 36 monitoring wells. The wells will be installed using the hollow stem auger attachments of a Geoprobe drill rig and will be constructed of two inch diameter polyvinylchloride (PVC) including 10 feet of well screen and up to five feet of solid riser, depending on the depth to water at each well. At least 24 hours following installation, Langan will collect groundwater samples from the monitoring wells.

Top of Casing and Well Location Survey

A Langan Professional Land Surveyor (PLS) will survey the well locations with respect to the site development, and top-of-casing measurements with respect to the North American Vertical Datum of 1988 (NAVD 88). Because of the size of the Site, we anticipate the survey will take two days to complete and will be done in conjunction with the survey scope of services provided below.

Investigative Derived Waste (IDW) Management

We will drum excess drill cuttings and development and purge water. Once the assessment is complete, Langan will subcontract a licensed waste hauler to remove the drums for off-site disposal. Disposal of ten drums is included. If additional drums require disposal, we will submit an ASR.

Task 3 – Data Evaluation and Reporting

Langan will compare the laboratory results to the Groundwater Cleanup Target Levels (GCTL) and SCTL in Chapter 62-777, FAC. We will discuss the results with you before preparing a report. If sufficient data is available, and if required by the Division, we will prepare a Site Assessment Report as defined by Chapter 62-780.600, FAC that discusses the assessment methodologies and evaluates the field and laboratory data. The report will include a scaled figure showing sample locations; analytical summary tables; statistical calculations; groundwater sampling logs; soil boring logs; well construction logs; laboratory reports; and disposal manifests for IDW.

Task 4 – Supplemental Soil and Groundwater Assessment

Upon completion of the soil and groundwater assessment recommended in Task 2, we anticipate additional assessment will be required prior to submitting a Site Assessment Report. At this time it is difficult to anticipate the scope of additional assessment; however, we understand you require this information for approval by the City Commission. A change order for supplemental assessment for services not included herein may be required.

Soil

Based on our experience with similar projects, the Division will likely require soil samples along the Site boundary. We anticipate up to 20 additional soil borings. At each soil boring, Langan will collect discrete soil samples from zero to six inches bls, six inches to two feet bls, two feet to four feet bls, and four to six feet bls. We will request the laboratory analyze the samples from zero to six inches bls, six inches to two feet bls, two to four feet bls and four feet to six feet bls for analysis of arsenic by EPA method 6020 (80 samples total).

Groundwater

Based on our experience with similar projects, the Division will may require additional shallow groundwater monitoring wells. We anticipate 10 additional monitoring wells, consisting of eight shallow wells and two deep wells. The eight shallows wells will be installed using the hollow stem auger attachments of Geoprobe drill rig and constructed similarly to those in Task 2. The two deep wells will be installed using direct push attachments of a Geoprobe to a depth of 35 ft bls, and will be constructed of one-inch diameter PVC. At least 24 hours following installation, Langan will collect groundwater samples from the monitoring wells for laboratory analysis of arsenic by EPA method 6020 (10 samples total).

Top of Casing and Well Location Survey

A Langan Professional Land Surveyor (PLS) will survey the well locations with respect to the site development, and top-of-casing measurements with respect to the North American Vertical Datum of 1988 (NAVD 88). We anticipate the survey will take eight hours to complete.

Investigative Derived Waste (IDW) Management

We will drum excess drill cuttings and development and purge water. Once the assessment is complete, Langan will subcontract a licensed waste hauler to remove the drums for off-site disposal. Disposal of four drums is included in this task.

Supplemental Site Assessment Report

Langan will compare the laboratory results to the GCTL and SCTL in Chapter 62-777, FAC. We will discuss the results with you before preparing a report. If sufficient data is available, and if required by the Division, we will prepare a Supplemental Site Assessment Report as defined by Chapter 62-780.600, FAC that discusses the assessment methodologies and evaluates the field and laboratory data. The report will include a scaled figure showing sample locations; analytical summary tables; statistical calculations; groundwater sampling logs; soil boring logs; well construction logs; laboratory reports; and disposal manifests for IDW.

Task 5 – Meetings

We assume the project will require continued environmental coordination in order to meet project requirements. The coordination will be in the form of numerous conference calls and correspondences with the client, the client's design team, the client's contractors, and

environmental regulatory agencies (if requested or required). We suggest a time and materials allowance of \$4,000 for this coordination.

PHASE 025 – PROFESSIONAL LAND SURVEYING

Langan will prepare a survey to document the existing conditions of the site. Additionally, is required to better understand the site prior to the environmental assessment for the following reasons:

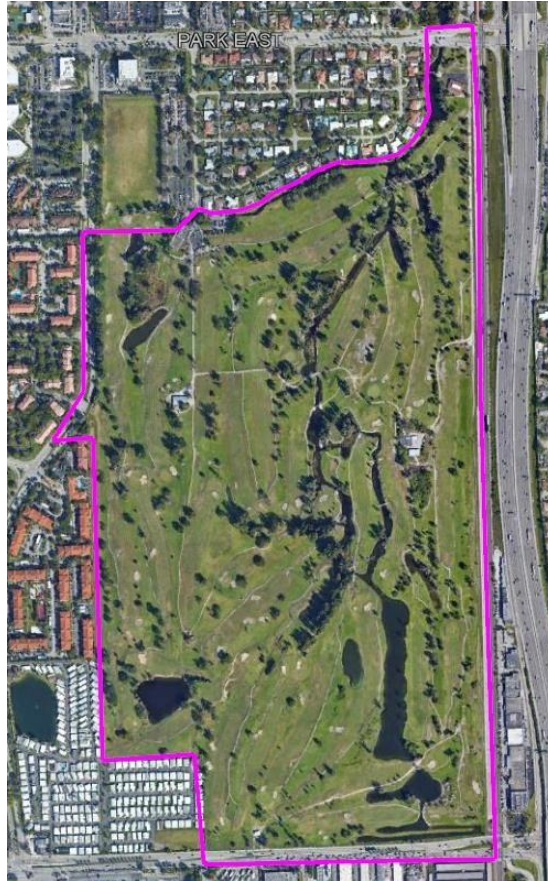
- (1) Identify topographic lows, which may have higher levels of contamination;
- (2) Evaluate cut and fill requirements during development so that remediation may be performed; and
- (3) Understand surface and groundwater flow directions, to understand how contamination (if identified) may impact neighboring properties.

A detailed description of our anticipated scope of services, and an estimate of Langan fees, are outlined below.

ALTA/NSPS Land Title Survey

- Prepare a survey of the property in accordance with Rule 5J-17, Florida Administrative Code, pursuant to Chapter 472.027 of the Florida Statutes.
- ALTA Survey will be based upon current title documentation provided by the client and/or title company. Research and/or Abstracting for title or encumbrances will not be performed by Langan. Any other deeds, maps, or information, or in client's possession should be provided.
- Relevant plottable information included in the title report will be shown on the survey. This does not constitute an absolute guarantee or warranty that any and all easements, covenants or restrictions affecting the property will be identified.
- We also assume the deed descriptions will be contiguous and that there will not be gaps or overlaps created by the geometry. In either event, we will discuss any additional costs to investigate and resolve these issues prior to proceeding with the project.
- A metes and bounds description will be prepared and will be shown on the map.
- Services will be performed in accordance with State and local standards, as well as the 2021 ALTA/NSPS survey standards, including Items 1, 2, 4, 5, 7a, 8 and 13 of Table A (Optional Survey Responsibilities and Specifications).
- The ALTA Survey will include all above ground improvements located on the subject's property if visible and attainable.
- Specific features to be included in the ALTA Survey per City of Hollywood:
 - Based on and dated after O&E
 - Extend survey area to centerline of all adjacent streets and alleys
 - Angles and bearings, including light and utility poles, catch basins, manholes and fire hydrants
 - Natural features (topography: existing and proposed contours and/or spot grades)
 - Location of buildings, including the location and size of berms, walls, underground facilities, intersections, bridges, sidewalks, driveways, curbs and streets
 - Abutting and internal streets and their widths, including existing curb

- cuts/driveways to surrounding properties within 100'.
- Easements and/or dedications with O.R. or plat book(s) and page number (s)
- Net & gross property size in square feet and acreage (provided gross for residential/hotel developments)
- If located within Regional Activity Center include the existing residential/hotel units and/or commercial square footage
- Deliverable will be a certified ALTA Survey.
- Limits of the ALTA survey are shown in Magenta Below:



Drone LiDAR Data Acquisition – Required for ALTA and Engineering Design

- This task involves the use of an Unmanned Aerial System (drone). Langan has determined a waiver will be required from the Federal Aviation Administration (FAA) to fly this property due to the projects proximity to FAA regulated airspace. The waiver may take upwards of 90-120 days to receive once notice to proceed is authorized from the client.
- Airborne LiDAR acquired from our Unmanned Aerial System will be collected with high-intensity, high overlap and in multiple passes so that a large percentage of LiDAR points are able to penetrate the vegetation canopy. The LiDAR data will be acquired with flight parameters and procedures adjusted to attempt to achieve a resolution of 150 – 200 points per square meter (PPM2).
- The airborne LiDAR data will be processed and classified to .LAS file format Class v1.2 (Bare Earth). The bare earth data will be reviewed and areas of dense foliage where the LiDAR was unable to penetrate will be identified. Langan expects these areas of dense

foliage to be small but there may be a need for field survey crews to perform ground survey to supplement the LiDAR data.

- Color digital aerial photography will be simultaneously acquired to support the creation of orthomosaic images of the project site with a ground sampling distance of 4 cm. The combination of the orthomosaic images and the LiDAR data are the basis for the topographic planimetric mapping products outlined below.

Topographic and Planimetric Mapping Data Products

- Langan will calibrate the individual flight lines of the airborne LiDAR data, register the LiDAR data to the ground control points set within the project site and perform an aerial triangulation process on the aerial imagery to generate the photo parameters for the accurate horizontal and vertical placement of the aerial imagery within the project coordinate system. From the properly oriented LiDAR and image data a Digital Terrain Model (DTM) will be prepared and delivered as well as an interpolated 3D point cloud that will be classified to identify ground and non-ground features. A digital orthomosaic image with a 3" Ground Sample Distance (GSD) will be produced for the project site.
- Planimetric and topographic features within the project site will be mapped from the LiDAR data and orthomosaic images. Features that will be shown on the survey plan include, but are not limited to buildings, walls, curbs, sidewalks, pavement areas, fences, traffic striping, wooded areas, signs, inlets, manholes, and other visible utility hardware. Individual tree locations are not included in the scope of services. Significant areas of dense vegetation may result in obscure areas that may not be able to be accurately interpolated from LiDAR or photogrammetrically compiled from the stereo imagery. These areas may require supplemental ground survey.
- In addition to the features mentioned previously, the topographic mapping will show spot grades at high points, low points and grade breaks to develop a digital terrain model and to produce contours for the site at a one-foot contour interval.

Utility Information

- Accessible aboveground utilities, including manholes, catch basins, inlets, and valves, will be shown within the site. Invert elevations and pipe sizes of underground storm and sanitary pipes will be shown, where accessible. Underground utilities, such as gas, water, electric, etc., will be shown as marked out by sub-consultant. Sub-consultant to provide electronic designation and GPR scanning to locate the horizontal position of the utilities within the site. These designations will be surveyed by Langan and incorporated into the ALTA survey.
- Utilization of the above equipment and methods is the industry recognized procedure for finding and locating underground utilities. Although effective and reliable, there is the possibility that all utilities may not be detected due to environmental conditions, soil conditions, water table, excessive depths and/or feature makeup. Langan and sub-consultant will not be responsible for damage to existing utilities that were designated by electronic means only.

Vacuum Excavation (Soft Dig – assume 10 holes)

- Additional vacuum excavation soft-digs. Sub-consultant to use vacuum excavation equipment to perform test holes at locations as directed by Langan. Vacuum excavation methods will enable Sub-consultant to visualize the utility in question for

a high degree of certainty. Sub-consultant will make every effort to vacuum excavate to a depth of eight (8) feet using high pressure air methods. However, vacuum excavation will cease when these methods are unable to progress below refusal, such as bedrock or flowable fill. Sub-consultant will not employ destructive methods, such as jackhammers or chipping hammers, to break up bedrock or other refusal within a test hole due to the high risk of damage to buried utilities and safety risk to employees. Utilities deeper than 8 feet may not be found.

- At the completion of each excavation Sub-consultant will place an iron rod and cap or a nail and disk at the test hole location and further identify the test hole location with paint marks on the ground surface. They will backfill with native material and compact the soil in 6"-12" lifts as well as provide a permanent restoration of the pavement or ground surface within the limits of the original excavation. They will record maximum depth of the test hole as well as vertical depth of any utility encountered. If a utility is encountered, they will also provide utility type, size, shape, material and orientation to the extent they are able to ascertain this information

Survey Exclusions:

- Changes made to Rights-of-Way.
- Revisions to our survey based upon new or revised title commitments provided subsequent to the issuance of our survey
- Revisions to our survey based on review by others
- Discussions, research, and/or resolutions of title issues
- Preparation of easements, easement or ROW vacations, written descriptions, subdivision, consolidation documents, ROW taking, ROW de-mapping documents or plans, sketch and legal descriptions.
- Flood elevation certificates
- Zoning analysis
- Platting
- Survey of underwater ground features
- Irrigation pipes and sprinkler heads

Survey Assumptions:

- Access to the subject and adjoining properties shall be granted upon prior notice if restricted, gated, and/or locked. Topographical data will not be collected upon properties in which the surveyor is asked to leave.
- This survey will not make any representation as to zoning or development restrictions unless otherwise stated in provided documents.
- This survey will not constitute a tree survey. Tree specimen nomenclature shall be generally common (oak, palm, pine, etc.) and cannot be relied upon. Consult with an arborist for further classification.
- Meeting attendance is not included in these scope of services.
- Langan may rely upon the accuracy and completeness of any information, requirements, reports, data, surveys, and instructions (information) provided by Client unless expressly stated otherwise with respect to such information.
- This proposal does include the coordination of underground utility designation or markings by sub-consultant.
- This proposal assumes if the soft dig option is chosen that 4 soft dig utility test holes

will be required.

- Utility Information scope of service excludes the cleaning/pumping of underground structures
- Utility Information scope of service excludes the maintenance of traffic requirements. If structures within the roadway require maintenance of traffic (traffic control) an ASR will be required.
- We prepare our deliverables in AutoCAD Civil 3D 2020.

FEE

We propose to complete the scope of services for the fees below. We will only bill for assessment services required by your development plans or the Division.

Task	Description	Base Fee	Optional Fee
Environmental Services			
1	Historical Review	\$3,500	
2	Soil and Groundwater Assessment Soil and Groundwater Sampling Top of Casing and Well Location Survey Drilling (subcontracted) Laboratory Analysis (subcontracted) IDW Disposal Task 1 Sub-total	\$43,000 \$ 3,000 \$52,000 \$44,000 <u>\$ 1,500</u> \$143,500	
3	Data Evaluation and Reporting Data Evaluation Reporting Task 4 Sub-total	\$ 4,000 <u>\$ 8,000</u> \$ 12,000	
4	Supplemental Soil and Groundwater Assessment Soil and Groundwater Sampling Top of Casing and Well Location Survey Drilling (subcontracted) Laboratory Analysis (subcontracted) IDW Disposal Data Evaluation and Reporting Task 4 Sub-total		\$ 8,000 \$ 1,000 \$ 12,750 \$ 2,750 \$ 500 <u>\$ 5,000</u> \$ 30,000
5	Meetings	\$ 4,000	
	Fee for Environmental Services:	\$163,000	\$30,000

Task	Description	Base Fee	Optional Fee
Surveying Services			
1	Survey Services ALTA/NSPS Land Title Survey Drone LiDAR Acquisition Subsurface Utility Exploration (ESTIMATED) Optional Soft Dig (Ten holes)	\$34,400 \$28,600 \$35,000	
	Fee for Survey Services:	\$98,000	\$4,000

	Base Fee	Optional Fee
Base and Optional Fee Subtotals:	\$261,000	\$34,000
TOTAL FEE:	\$295,000	

Additional fees will apply if actual conditions differ from those discussed herein. We will invoice monthly according to our approved Professional Continuing Services Agreement with the City of Hollywood. We will not exceed the budget without the client's authorization.

SCHEDULE

Environmental

We will schedule the work when we are authorized to proceed and complete the field investigation within four to six weeks of receiving authorization. We will request the laboratory analyze the samples within two weeks. Upon receipt of the analytical data, we will complete a draft report within three weeks. We anticipate about three months to complete our services.

Survey

Once a written notice to proceed has been received along with the appropriate contractual documentation a project schedule will be determined and reviewed with the client for concurrence. It is anticipated that the above scoped tasks will be completed in approximately four months from notice to proceed.

LIMITATIONS

Langan's services will be provided according to generally accepted environmental science, geosciences, and engineering practices at the time the services are performed. No expressed or implied representation or warranty is included or intended in our reports, except that our services will be performed within the limits prescribed by the client and with customary thoroughness and competence of our profession.

CLOSING

Thank you for the opportunity to work with you on this project. Please call us at 954-320-2100 with any questions.

Sincerely,

Langan Engineering & Environmental Services, Inc.



Michael L. Spievack, PE
Senior Project Manager



Vincent Yarina, PG, CEM
Principal/Vice President



Bryan A. Merritt, PSM
Senior Survey Project Manager



Joseph E. Romano, PSM
Principal/Vice President