

25 February 2015

Terrence Comiskey, AIA  
Engineering Support Services Manager  
Public Works Department  
2600 Hollywood Boulevard  
P.O. Box 229045  
Hollywood, Florida 33021

**Re: Proposal for an Engineering Feasibility Study  
Hollywood Incinerator Ash Dump  
1600 S Park Road  
Hollywood, Florida  
Langan Proposal No.: 300171000**

Dear Terrence:

Langan Engineering and Environmental Services, Inc. is pleased to present herein our proposal to prepare an engineering feasibility study for the redevelopment of the Hollywood Incinerator Ash Dump (HIAD) at 1600 S Park Road, Hollywood, Florida. We base this scope of work on Request for Qualifications #RFQ-4427-14-IS (Environment Engineering Services), issued by the City of Hollywood on 18 July 2014, and on discussions on 14 January 2015 and 11 February 2015 between representatives of the city (Department of Public Works and Department of Community and Economic Development) and Langan.

## **BACKGROUND**

The city wants to evaluate redevelopment options for 22 acres of the 32-acre HIAD site. Those 22 acres comprise the North Parcel (Parcel No. 5142-20-00-0040, 14.8 acres) and a portion of the Middle Parcel (Parcel No. 5142-20-00-0140, 10.4 acres). Previous environmental assessments have identified contaminants of concern (COCs) in soil (benzo(a)pyrene toxic equivalents, arsenic, lead, and dioxins) and in groundwater (arsenic) at concentrations above cleanup target levels.

The feasibility study will evaluate the geotechnical, environmental, economic, and planning aspects of various development options:

- Langan will investigate the geotechnical properties of the landfill to determine whether the subsurface can support the development options or whether ground improvement would be necessary as part of site development.
- Langan will investigate the environmental conditions of the soil and groundwater to determine the nature and extent of contamination and the potential cleanup costs associated with the development options.

- Langan will subcontract Lambert Advisory, LLC, to evaluate the economics of the development options, e.g., the potential gains for the city in terms of increased tax revenues. Lambert will also evaluate how well the development options fit with the current community structure.
- Langan will also analyze the benefits available to the city under the site's Brownfield Site Rehabilitation Agreement (BSRA).

Langan will evaluate mixed use, commercial, industrial, residential, and parks/recreation development options, and the costs associated with each option. The city commission will use the results of the study to decide which options to present to the developer community in the form of a request for bid.

### DATA GAP ANALYSIS

Langan reviewed the regulatory file available on the Florida Department of Environmental Protection (FDEP) Oculus website (<http://depedms.dep.state.fl.us/Oculus/servlet/login>) and correspondence provided to Langan by the City of Hollywood. The HIAD documents are filed under the Bureau of Waste Cleanup ID# COM\_271237. Environmental assessment documents on Oculus cover the years 1986 through 2012 and include investigations by the U.S. Environmental Protection Agency (EPA), the U.S. Geological Survey (USGS), and the FDEP. Our review has identified the following data gaps:

- *The horizontal and vertical extent of the landfill is not sufficiently understood.* Historical aerial photographs show that the landfill was excavated between the late 1950s and the early 1960s. The city bought the property in 1963 and placed vegetative debris and incinerator ash in the landfill until 1973. At its greatest horizontal extent, the excavated area appears to have encompassed almost all of the North and Middle parcels. Langan did not find information on the depths of the excavations or on the distribution of wastes.
- *The geotechnical properties of the subsurface are unknown.* Previous assessments did not evaluate the geotechnical properties of the subsurface, particularly in the landfill portion of the site. FDEP and the city had agreed to close the site with institutional and engineering controls, as necessary; however, a geotechnical evaluation is not a component of a conditional closure. Uncontrolled filling could have resulted in unstable subsurface conditions, which could make the property unsuitable for various developments.
- *The landfill has not been investigated for methane generation.* Although solid waste and vegetative debris are reported to have been placed in the landfill, previous assessments did not include methane as a potential environmental concern. The presence and extent of methane could affect the practicality and cost of development options.
- *Contaminants in the landfill have not been sufficiently investigated.* The USGS collected four surficial soil samples in 1986. In 1988 the USGS installed a shallow well in the former landfill area but could not install a deep well because of "impenetrable material." The agency conducted a subsurface geophysical investigation along the northern and southern boundaries of the North Parcel and concluded that "conductivities indicated contamination at shallow depths." In 1995, Black & Veatch (B&V), on behalf of the U.S. EPA, collected three surficial and three subsurface soil samples, although the depths of the subsurface samples were not specified. B&V attempted to install a temporary monitoring well but was "unsuccessful due to auger refusal caused by items such as gravel,

rocks, rubbish, and tree stumps.” In 1996 B&V installed a shallow temporary monitoring well in the former landfill area. The objective of these assessments was to identify, not delineate, contaminants of concern. Assessments since 2007 have not looked at soil and groundwater quality in the former landfill area, but focused on evaluating whether groundwater contamination was migrating off site. Soil and groundwater cleanup target levels, laboratory analytical methods, and assessment procedures have changed since the 1980s. For example, direct exposure criteria now require an understanding of soil quality in the 0 to 2-foot interval and the 2-foot to 4-foot interval below grade, and of the horizontal distribution of contaminants of concern in each of those intervals.

Langan will address these data gaps in the investigation portion of this project.

## **SCOPE OF WORK**

This section describes our proposed scope of work. Tasks 1, 2, and 4 will run concurrently, although Task 3 (Planning and Economic Evaluation) depends to some extent on the results of Tasks 1 and 2.

### **Task 1: Environmental Investigation**

Before beginning field work for Tasks 1 and 2, Langan will initiate a public subsurface utility clearance through Sunshine State One-Call. We request that the city provide drawings showing the locations of utilities and to approve all sample and boring locations. Langan and its subcontractors will not be responsible for damage to utilities that are not disclosed to us.

Langan will conduct field work according to the FDEP Standard Operating Procedures (rev. July 2014). We will subcontract an environmental lab certified by the National Environmental Laboratory Accreditation Program to provide analytical services, and a Florida-licensed water well driller to provide soil sampling and well installation services. Langan will notify the FDEP within seven days, but no less than one day, in advance of field work, in accordance with Chapter 62-780.220(1), Florida Administrative Code (FAC). Figure 1 and Figure 2 show the proposed sample locations.

#### Soil Quality

Langan proposes to collect soil samples at 11 locations in the North and Middle parcels. Figure 1 shows the combined environmental and geotechnical locations (B-1 through B-8) and the three environmental locations (DP-1, -2, and -3). We propose 11 locations because that will enable us to evaluate soil quality using the FDEP’s approved statistical analytical tool, the 95% UCL. The intervals of concern for direct exposure to contaminated soil are the first four feet below grade. We will decontaminate the sampling equipment between samples. We will prepare a soil boring log for each boring.

Site elevations range from el +7 ft to el +19 ft. For purposes of this scope of work, we assume that final grade for future construction will be at +7 ft. The intervals of concern for direct exposure, therefore, will be +7 to +5 ft, and +5 to +3 ft. We will use the following sampling methodology:

- At each of the locations, the direct-push driller will advance a five-foot-long stainless steel sleeve to +3 ft, retract the sleeve and cut open the internal plastic tube to expose

the sample. Langan will record the lithology and collect one sample in the +7 to +5 interval and one sample in the +5 to +3 ft interval.

- At the locations that are at a higher elevation than +7 ft, we will collect a composite sample from grade to +7 ft. For estimating purposes we assume that the elevation at eight of the 11 locations is greater than +7 ft.

#### Groundwater Quality

Langan proposes to install and sample six shallow monitoring wells – four in the North Parcel and two in the Middle Parcel – to investigate groundwater quality in the landfill. These wells will be at B-3, -4, and -7, and at DP-1, -2, and -3. Figure 1 shows the locations. We will install the wells using the direct-push method.<sup>1</sup> The well driller will drive a pre-packed, 1-inch-diameter, polyvinyl chloride (PVC) well into the ground until the well screen intersects the water table, which is between 6 and 13 feet below grade; total well depths, therefore, will be between 14 and 21 feet. Langan will develop each well using a low-flow peristaltic pump to remove fine sediment from the sand pack around the well.

Shallow monitoring wells MW-1A, -2A, -3A, -5A, and -6 were part of the program in 2009 that monitored arsenic in groundwater. These wells were installed along the perimeter of the north and Middle Parcels. Because those wells have not been sampled since 2009, we propose to include them in this investigation. Figure 1 shows the well locations.

At least 24 hours after we install the new wells, we will sample them and the previously installed wells. Before sampling, we will purge the wells with a peristaltic pump and polyethylene tubing and monitor water quality parameters (dissolved oxygen, temperature, conductivity, pH, and turbidity) until values stabilize within FDEP-approved ranges. We will calibrate the field meters in accordance with manufacturer specifications and record the calibration on FDEP logs. We will place the samples in containers provided by the laboratory, place the containers on ice in coolers, and transport the coolers to the laboratory under chain-of-custody procedures.

We will drum development and purge water pending laboratory analysis. We will return excess drill cuttings to the borehole.

#### Laboratory Analysis

The laboratory will analyze the 30 soil and 11 groundwater samples for volatile organic compounds (VOCs) by EPA Method 8260, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270, total recoverable petroleum hydrocarbons (TRPH) by the FL-PRO Method, organochlorine pesticides by EPA Method 8081, organophosphorous pesticides by EPA Method 8041, polychlorinated dibenzodioxins and polychlorinated dibenzofurans by EPA Method 8290,<sup>2</sup> and 8 RCRA metals. (These are the analytes and methods FDEP approved during the

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<sup>1</sup> A previous assessment encountered refusal at 60 feet below grade; Langan believes that direct push will work in the shallower material.

<sup>2</sup> Because the cost of a dioxin analysis is high (\$500), we will initially analyze 25% of the soil samples for dioxins; if laboratory analysis detects dioxins at concentrations above cleanup target levels, the laboratory will analyze the remaining samples. We have included the cost of all analyses in this scope of work, but we will request authorization from the client before analyzing more than six samples.

property boundary assessment in 2007.) We will also analyze the soil samples for polychlorinated biphenyls (PCBs) by EPA Method 8082.

If laboratory analysis detects contaminants of concern (COCs) at concentrations above cleanup target levels, Langan will discuss with the city whether to install deeper monitoring wells to delineate the contamination vertically. The cost of installing such wells is not included in this scope of work.

Depending on the soil analytical results, Langan might recommend additional shallow or deeper borings. The cost of such borings is not included in this scope of work.

### Methane

At each of the soil sample locations, the driller will install a temporary well screen to two feet above the water table, i.e., to between 4 feet and 11 feet below grade. Langan will use a gas emissions monitor (Landtec GEM 2000 or similar equipment) to measure methane concentrations (percent by volume and percent of the lower explosive limit). The monitor will be calibrated with a standard calibration gas containing 15% methane by volume and 15% carbon dioxide by volume, and another gas cylinder containing 4% oxygen by volume. We will record the methane concentration at each sample location for at least five minutes and until the methane concentration stabilizes within 0.5% by volume for three consecutive readings, to determine the steady-state concentration. Depending on the results of this investigation, Langan will evaluate whether methane co-generation is an option to consider during site development.

We estimate that one staff engineer/geologist can complete the field work for Task 1 in four 8-hour days.

We will present the results of the environmental investigation in an Environmental Investigation Summary, which will:

- Summarize the field and laboratory results;
- Compare the laboratory analytical results to the Soil Cleanup Target Levels (SCTLs) and Groundwater Cleanup Target Levels (GCTLs) in Chapter 62-777, FAC; and
- Discuss the horizontal and vertical distribution of the landfill materials and the contaminants in soil and groundwater;

The report will include figures showing the sample locations and the analytical results, tables summarizing the laboratory data, groundwater sampling logs, monitoring well construction and development logs, well completion reports, soil boring logs, and equipment calibration logs.

### **Task 2: Geotechnical Investigation**

Our scope of work for the geotechnical study will include: (1) reviewing geotechnical information from nearby sites, as well as historical aerial photographs of this site; (2) investigating subsurface conditions; (3) performing laboratory tests; and (4) providing preliminary foundation and site preparation recommendations. Our proposed scope of work is described on the following paragraphs.

### Review of Information

We will review geotechnical information in our file for nearby sites where we have been the geotechnical engineering consultants, as well as the information for this project. This information will help us define our field exploration and develop foundation recommendations. We will also review historical aerial photographs to understand the site history and conditions.

### Preliminary Subsurface Exploration

Our subsurface exploration will consist of drilling eight test borings, two to 100 feet and six to 60 feet. We will also excavate eight 20-foot-deep test pits with a backhoe to better understand the vegetative debris and ash material. Figures 3 and 4 show the proposed boring and test pit locations. We intend to place the borings in the green areas or parking areas and the test pits in the green areas. If a boring or test pit location conflicts with operations or underground utilities, our field engineer will adjust the location in the field.

The borings will be drilled using mud rotary drilling techniques. Standard Penetration Tests (SPT) will be done continuously in the upper 10 feet of each boring and at 5-foot intervals thereafter. Additional continuous SPT sampling might be performed at other depths to verify specific subsurface conditions. The SPT provides index values (N-values) from which the density and compressibility of the subsurface layers can be inferred. They also provide samples of the subsurface materials for classification and laboratory index property testing.

All subsurface investigation work will be done by specialty subcontractors and performed under the full-time inspection of one of our field engineers. Our engineer will mark the boring locations and examine and log the soil and rock samples.

### Laboratory Testing

We will perform laboratory tests to understand the engineering properties of the backfilled materials, especially the ash. Laboratory tests will include, but not be limited to, the natural water content, organic content, sieve analysis, Atterberg limits, and corrosivity. A consolidation-type test of the ash material might be performed, depending on the ability to obtain a relatively undisturbed sample. We will define the laboratory tests during and after the field investigation. For this proposal, we suggest an allowance of \$2,500. Most of the laboratory tests will be performed by Langan's specialty subcontractors under our direction.

### Geotechnical Engineering Analyses, Evaluations, Recommendations and Report

The data from the subsurface investigation and laboratory tests will be used to evaluate the foundation support and site preparation alternatives for the proposed development scenarios. Preliminary recommendations will be provided for the most appropriate and cost-effective solutions. The geotechnical engineering study for this work will discuss the following:

- Subsurface conditions, including test boring records and generalized subsurface profiles;
- Laboratory test results for the ash material, other fill material, and native soils;
- Preliminary evaluations of ground improvement alternatives;
- Preliminary evaluations and recommendations for deep and shallow foundation support options;

- Estimated settlements for different types of ground improvement and foundation systems;
- Preliminary ground floor slab recommendations;
- Preliminary site preparation recommendations, including cut/fill and material reuse;
- Preliminary roadway subgrade preparation and pavement section recommendations; and
- Construction dewatering comments and subfloor drainage recommendations.

We will present the results of our subsurface investigation, our preliminary engineering analyses and evaluations, and our preliminary design criteria in a Geotechnical Engineering Study.

### **Task 3: Planning and Economic Evaluation**

Lambert Advisory will analyze the market supply and demand conditions, the zoning and land-use requirements, and the environmental issues to evaluate the best redevelopment options from a financial perspective. Please see Attachment A for a discussion of the scope of work for this task.

### **Task 4: Brownfields Program Opportunities**

Under this task Langan proposes to review and summarize applicable federal and state brown-field programs for redevelopment and economic revitalization for which the City of Hollywood, potential developers, and end users may be eligible. Multiple economic incentive programs are available for a variety of sites that meet program-specific past-use obligations, and planned re-use obligations, and only for certain eligible applicants (public entities, quasi-governmental agencies, and developers). Langan's grant writing team has leveraged over \$30 million in funding on behalf of our clients.

These programs range from federal programs including, but not limited to, the U.S. EPA, the U.S. Department of Agricultural, The U.S. Economic Development Administration, and the U.S. Department of Housing and Urban Development; to state programs including, but not limited to, the Florida Department of Environmental Protection Voluntary Cleanup Tax Credits, the Florida Department of Economic Opportunity, and the Governor's Office of Tourism, Trade and Economic Development.

Langan will also identify programs that will provide incentives for end-users, including but not limited to, creating jobs, limiting and managing exposure to regulatory and private third-party environmental liability, and facilitating and protecting financing commitments.

Langan will provide the City of Hollywood a summary of these programs, their applicability to different phases of the project, application eligibility, and deadlines.

### **Task 5: Feasibility Study**

Langan proposes the following structure for the feasibility study:

- Section 1 – An introduction to the study and its objectives, and a summary of the site's history.
- Section 2 – The Environmental Investigation Study.
- Section 3 – The Geotechnical Engineering Study.
- Section 4 – The results of the planning and economic evaluation.

- Section 5 – A discussion of the options available to the city under the brownfields program.
- Section 6 – A synthesis of Sections 2 through 5 in the context of each development option. For each development option, we will present ranges of costs related to environmental closure options and geotechnical foundation and ground improvement options, the financial benefits available under the brownfields program, and the economic and planning advantages and disadvantages.

### **Task 6: Project Management**

Langan proposes a separate task for project management not related to supervision of the field work in Tasks 1 and 2. This task includes management of subcontractors; meetings, correspondence, and conference calls with the city; and monthly status reports to the city.

We suggest an initial budget of 10 two-hour meetings involving the client contact (Vincent Yarina) and one of the task managers, as necessary. If the city requests the participation of additional task managers, or if the city requests additional meetings, Langan will discuss the additional cost with the city.

The monthly status report will summarize the work of the preceding month and project a schedule for the upcoming month. The report might include documentation produced in Tasks 1 through 4 (e.g., laboratory reports, soil boring logs, analytical summary tables). The report will include a table summarizing how much has been billed against each task budget and comparing the remaining level of effort to complete each task with the remaining task budget.

### **Task 7: Contingency**

Our review of the field and laboratory data might identify additional data gaps that should be addressed. For example, we might recommend additional monitoring wells or geotechnical borings. In accordance with the city's recommendation, we propose a contingency approximately equal to 17% of the proposed budget. We will not access the contingency without the city's authorization.

### **ESTIMATED FEE**

We propose to complete this scope of work for a time-and-materials, not-to-exceed fee of \$205,700. This fee includes \$57,000 in subcontracted laboratory, drilling, and backhoe costs and \$39,000 in subconsultant fees for Lambert Advisory.

Langan proposes an allowance of \$3,000 for reimbursable expenses (mileage, field supplies, field equipment, reproduction, courier, etc.).

When possible, we will combine field efforts to reduce costs. For example, one field geologist/engineer will mark the environmental and geotechnical borings, and we will try to overlap the environmental and geotechnical borings so that we do not need two mobilizations and two drillers. We will invoice monthly according to the terms of our approved Professional Services Agreement with the City of Hollywood.

The following table summarizes the estimated costs.



Task	Estimated Fee
<i>Task 1: Environmental Investigation</i>	
Langan fee (sampling, drilling oversight, report)	\$16,800
Direct-push drilling (subcontracted)	\$5,900
Laboratory analysis (subcontracted)	<u>\$41,100</u>
<i>Subtotal:</i>	<u>\$63,800</u>
<i>Task 2: Geotechnical Evaluation</i>	
Langan fee (drilling oversight, report)	\$28,600
Drilling (subcontracted)	\$8,800
Backhoe (subcontracted)	\$1,200
Laboratory analysis (subcontracted)	<u>\$2,300</u>
<i>Subtotal:</i>	<u>\$40,900</u>
<i>Task 3: Planning and Economic Evaluation*</i>	\$39,000
<i>Task 4: Brownfields Program Opportunities</i>	\$15,000
<i>Task 5: Feasibility Study</i>	\$20,000
<i>Task 6: Project Management</i>	\$24,000
<i>Reimbursable Expenses</i>	\$3,000
<b>Subtotal:</b>	<b>\$205,700</b>
<i>Task 7: Contingency</i>	
Additional monitoring wells, geotechnical borings, testing, etc.	\$34,300
<b>Total:</b>	<b>\$240,000</b>

\*Subcontracted to Lambert Advisory

## SCHEDULE

Langan understands that the feasibility study must be presented to the city commission in less than one year from the notice to proceed. We will keep to that schedule. We anticipate that we can complete Tasks 1, 2, and 4 within two months of authorization. Assuming that we do not identify additional data gaps in Tasks 1 and 2, we anticipate that we can complete Task 3 within two months of completing those first tasks. We will submit a draft feasibility study to the city within two months of completing Task 3. We anticipate a month of discussions and revisions, with the final report completed within four weeks thereafter. We expect the process from authorization to final report will take up to eight months. This schedule could be affected by what we find during the field work.

	Week																															
Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1 - Environmental Investigation																																
2 - Geotechnical Investigation																																
3 - Planning and Economic Evaluation																																
4 - Brownfields Program Opportunities																																
5 - Feasibility Study																																
Draft discussion																																
Final report																																

## LIMITATIONS AND ASSUMPTIONS

We base this scope of work and budget on the following limitations and assumptions:

- The investigation proposed in Task 1 is not intended to satisfy the conditional closure requirements of Chapter 62-780, FAC, but to help the city understand its development options for the site.

- Because this is an FDEP-regulated site, Langan will notify the agency before field work is begun. At the city's request, we will submit our reports to FDEP.
- The costs associated with the development options, which we will discuss in the feasibility study, are not presented as, and should not be taken to be, the actual costs of development. Actual costs can only be estimated when a specific development option is selected.
- The city informed Langan it will contract a public land surveyor to collect center-line road elevations, spot elevations on site, and locations and elevations of monitoring wells and soil borings.

Langan's services will be provided according to generally accepted environmental science, geosciences, and engineering practices at the time the work is performed. Even the most comprehensive scope of services may fail to detect environmental liability; therefore, Langan cannot act as insurer and cannot certify that a property is free of contamination. Langan's services and recommendations cannot be construed as endorsement of the proposed land use. No expressed or implied representation or warranty is included or intended in our reports, except that our services were performed within the limits prescribed by the client and with customary thoroughness and competence of our profession.

#### **CLOSING**

We look forward to working with the City of Hollywood on this project. Please let us know if you have questions or concerns.

Sincerely,

**Langan Engineering and Environmental Services, Inc.**



Daniel Spector, P.G.  
Senior Project Manager

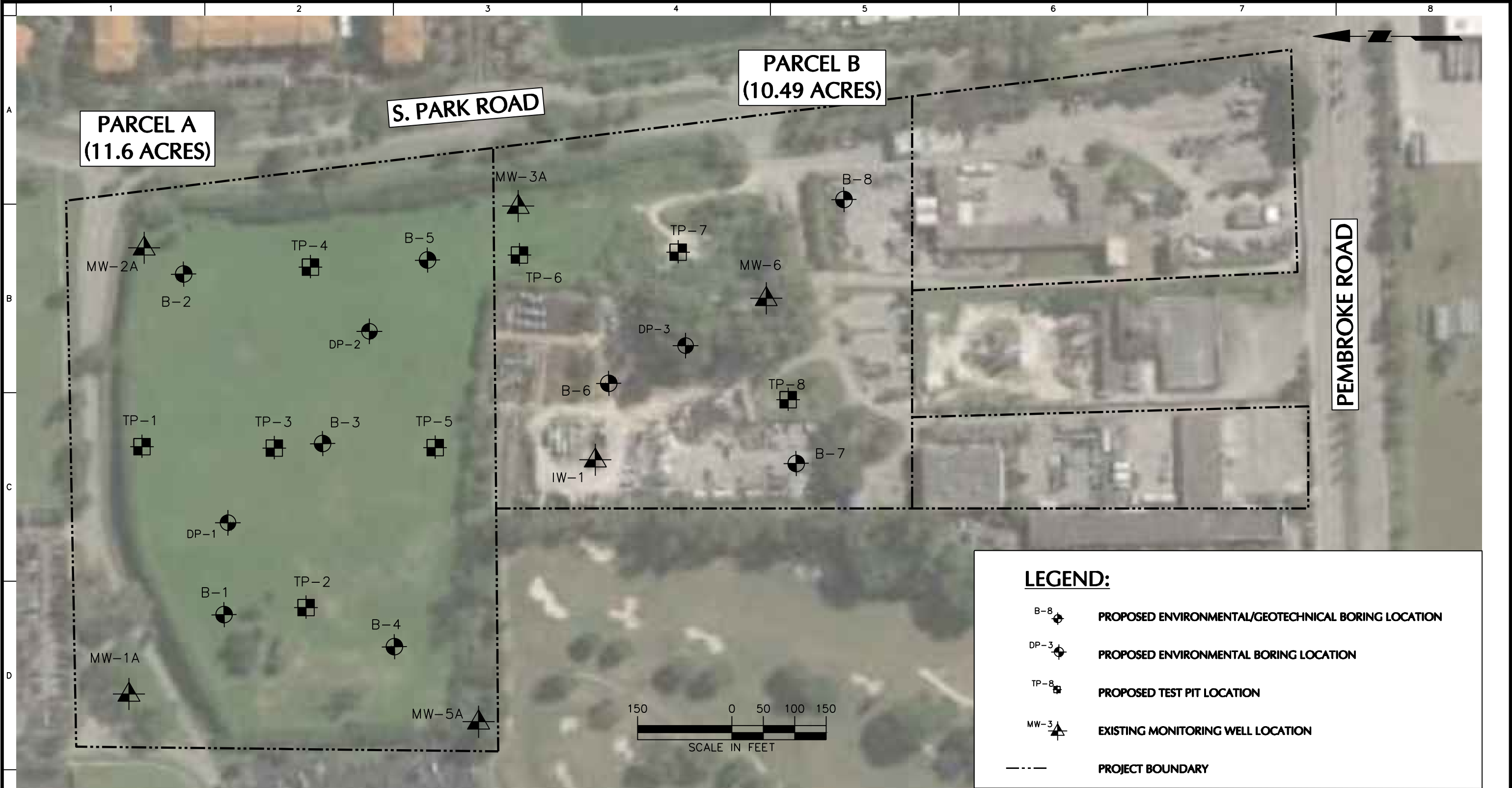


Vincent D. Yarina, P.G., CEM  
Senior Associate/Vice President

DS:vdy

Enclosure: Figure 1 – Proposed Investigation Locations

cc: Roger Archabal, Feng Lu, Greg Firely – Langan



**NOTES:**

1. BASE PLAN REPRODUCED FROM 2014 AERIAL IMAGERY FROM GOOGLE EARTH PROFESSIONAL, LICENSED 2014.
2. PROJECT BOUNDARY SHOWN IS APPROXIMATE.
3. BORING AND TEST PIT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

**LANGAN**

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Langan Engineering, Environmental, Surveying and  
Landscape Architecture, D.P.C.

Langan Engineering and Environmental Services, Inc.

Langan CT, Inc.

Langan International LLC

Collectively known as Langan

FL CERTIFICATE OF AUTHORIZATION No. 00006601

Project

**THE PARK ROAD  
DEVELOPMENT**

**HOLLYWOOD**

**FLORIDA**

Drawing Title

**PROPOSED  
INVESTIGATION  
LOCATIONS**

Project No.  
300171001

Date  
FEB 2015

Scale  
1" = 150'

Drawn By  
RS

Checked By  
DS

Submission Date  
FEB 2015

Drawing No.

**FIG.01**

Sheet 1 of 1