

**WORK AUTHORIZATION # CM2096-WA24  
NASSAU COUNTY  
BOARD OF COUNTY COMMISSIONERS  
RFQ/BID NO. NC13-033**

<b>Consultant:</b>	S2L, Incorporated
<b>Contract Number:</b>	CM2096
<b>Contact Name:</b>	Sam Levin, P.E.
<b>Contact Number:</b>	407-475-9163
<b>Email:</b>	Slevin@s2Li.com

CURRENT WORK AUTHORIZATION			
Project Short Title: Installation of Five Landfill Gas Replacement Wells at West Nassau Landfill			
		CONTRACT OVERVIEW	
		Total of Previous Authorizations	\$1,207,107.71
Date Submitted	11/16/17	Adjustments/Change Orders	(\$12,873.70)
Amount	\$124,998.84	This Work Authorization	\$124,998.84
Scheduled Completion	February 9, 2018	Current Contract Total	\$1,332,106.55

This Work Authorization is to the AGREEMENT between Nassau County and the Consultant known as the Continuing Contract for Professional Engineering Services – Solid Waste Landfills and Other Related Ancillary Facilities for Nassau County, Florida, dated April 16, 2014. The services to be provided under this Work Authorization are as follows:

**ARTICLE 1. Services Described as:**

S2Li Team will provide installation of five new landfill gas recovery wells to replace five existing wells, which have failed or are not functioning as originally designed. S2L, Incorporated (S2Li) shall perform the work in accordance with the scope of services, attached hereto as Attachment “A”.

**ARTICLE 2. Time Schedule**

Total expected time period for this work authorization will begin upon execution and end on February 9, 2018

**ARTICLE 3. Budget**

The cost estimate to conduct the Work as described in the Scope of Services is \$124,998.84

**Article 4. Other Provisions**

The Services covered by this Work Authorization will be performed in accordance with the provisions set forth in the AGREEMENT referenced above and any of its attachments or schedules. Additional terms or contract provisions whether submitted purposely or inadvertently, shall have no force or effect. This Work Authorization will become a part of the referenced AGREEMENT when executed by both parties.

---

In presenting this Work Authorization, Consultant agrees that:

Unless detailed herein, all drawings, data, electronic files and other information required for this Work Authorization has been accepted by Consultant. Specifically, all electronic files have been reviewed and accepted for the purposes of this Work assignment. Any additional information, including detailed scope of services are attached.

AGREED TO BY:

BY: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**RECOMMENDED AND APPROVED BY NASSAU COUNTY:**

Public Works Director: \_\_\_\_\_  
Board of County Commissioners, Chair \_\_\_\_\_  
Ex-Officio Clerk: \_\_\_\_\_  
County Attorney: \_\_\_\_\_

APPROVED by the County Manager, designee for the BOARD OF COUNTY COMMISSIONERS, the  
\_\_\_\_ day of \_\_\_\_\_, 2017.

ACCOUNT NO.: \_\_\_\_\_

**Installation of Five Landfill Gas Replacement Wells  
at the  
West Nassau Landfill  
Landfill Gas Collection and Control System  
Fiscal Year 2018**

**County Contract and Work Authorization Number: CM2096-WA24  
S2Li Project Number: 17-17-760**

This Work includes the installation of five new landfill gas recovery wells to replace five existing wells which have failed or are not functioning as originally designed as required by the West Nassau Landfills' Title V permit and the Florida Department of Environmental Protection (FDEP).

**Background**

Under the County 's Federal Title V Operating Permit No. 0890428-009-AV for the West Nassau Landfill, the County is required to operate and maintain a Landfill Gas Collection and Control System (LFGCCS) in accordance to Federal Rule No. 40 CFR 60, Subpart WWW, New Source Performance Standards (NSPS). The LFGCCS is comprised of a blower and flare station and 50 landfill gas recovery wells operating under a vacuum system. As part of this operation, NSPS rules require the County to monitor each well monthly for temperature, oxygen, and pressure and to maintain these parameters within NSPS operating limits to ensure that the LFGCCS is operating properly. If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded (or repaired) to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure is not to cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance is to be submitted to FDEP for approval.

Gas well GW-7 was observed to be failing to meet the NSPS operating parameters (e.g. O<sub>2</sub> less than 5%), so a below ground investigation was conducted to check the condition of the well. It was determined that the well had broken below the landfill surface and had filled up with rock and soil. As a result, landfill gas extraction is significantly inhibited, and the well not operating as designed, therefore, not meeting NSPS operating parameters. The investigation was expanded to check other nearby wells on the western side of the landfill and it was determined that four additional wells were broken and/or partially filled up with rock and soil. Although the County, to date, has been able to maintain these additional four wells as necessary to meet NSPS operating parameters, they are not operating as designed and failure of these wells with respect to meeting NSPS operating parameters is imminent.

It is believed that these wells are failing due to a combination of reasons: 1) after installation, ongoing landfilling operations which included waste placement in proximity to existing wells caused pressure on and movement of the vertical piping, 2) closure construction activities placing final cover around existing wells resulted in the movement of waste underneath the cap, causing pressure on the vertical piping, 3) differential (uneven) landfill settlement, and 4) landfill core temperatures above 130 degrees F distorted PVC wells and weakening pipe strength.

FDEP was notified on the well failures along with an inquiry on the possibility of developing an alternate operating procedure for GW-7 and other wells in lieu of full replacement. FDEP did not agree to employing an alternative procedure, stating that the wells needed to be operating as designed. As a result, the wells need to be replaced. Since GW-7 is not operating within NSPS parameters, it needs to be replaced and back within compliance by February 9, 2018 which is the last day of the 120-day time limit for achieving compliance.

A summary of the condition of each damaged well as of September 2017 is as follows:

- GW-1R: Pipe is broken at 23 feet below ground, water level is at 38 feet, bottom of well at 43 feet, Well Construction Depth is 35 feet, not repairable;
- GW-2: Pipe cracked and pinched at 25 feet, water at 35 feet, bottom of well at 38 feet Well Construction Depth is 40 feet, not repairable;
- GW-7: Full of soil and water at 13 feet, not repairable, Well Design Depth is 93 feet (construction depth not available);
- GW-8: Full of soil at 11 feet, not repairable; Well Design Depth is 97 feet (construction depth not available); and
- GW-9: Pipe bending and cracked at 13 feet, small crack at 23 feet, water at 71 feet, Well Design Depth is 93 feet (construction depth not available, not repairable).

### **Scope of Services**

Under the scope of services, the S2Li Team will perform the following:

- Because the landfill surface elevation is lower since closure due to waste settlement and the landfill has a bottom liner that must not be punctured by the drill rig boring, the current elevations of the locations for the new wells will be determined by a Professional Surveyor. The surveyed surface elevations will be compared to the design bottom elevations to determine the maximum drill depth for each new well. It is assumed that each new well will be designed to terminate at least 20 feet above the top of the known (record drawing) bottom liner system elevation (top of protection cover). It is also assumed that each new well will be no deeper than originally designed.
- FDEP will be notified of the schedule to replace wells GW-1R, GW-2, GW-7, GW-8, and GW-9. New wells will be designated as GW-1R2, GW-2R, GW-7R, GW-8R, and GW-9R.
- An experienced well driller and installer will install five new wells. The location of the new wells will be approximately 10 to 15 feet from each existing well depending on access. The drilling borehole will be up to 36 inches in diameter. The gas well material will be made up of 8-inch, schedule 80 PVC solid and slotted pipe. Since this is a closed, older area of the landfill, slotted pipe is expected to start 10 to 15 feet below the surface. Backfill will consist of selected granite stone, pea gravel, bentonite and fill dirt. Upon drilling operations, care will be taken to minimize the penetration of the liner cap to minimize the repair and re-sealing of the liner cap when the wells are installed. Also, the driller and well installer will attempt to minimize damage to the vegetative cover.
- The 4-inch diameter HDPE lateral piping connected to each well will be extended or rerouted to connect to the new wells. The gas well heads on the existing wells will be reused at the corresponding new well. It should be noted that exposed waste and gas leakage will temporary emit odor into the surrounding area. Care will be taken to attempt to minimize landfill gas and odors from the wells by covering up waste and placing temporary caps over each open penetration.

- Waste and material cuttings removed from the drilling process will be placed into drop boxes and covered overnight for transportation off site for disposal at a permitted Class I type disposal facility.
- Each existing well will be cut off just below surrounding grade level and will be permanently capped and covered with soil. These wells will no longer be connected to the LFGCCS and used for LFG extraction.
- Each new well and its new lateral pipe connection location will be surveyed for location. An updated wellfield drawing will be prepared to include the new survey information. The landfill data base information system will be updated to reflect the location of the new wells, elimination of the five old wells, and readied to accept new tests results.
- The disturbed area within the limits of construction will be regraded and sodded back to pre-installation conditions to the satisfaction of the County.
- After installation, the wells will be tuned to the collection system and measured for NSPS operating parameters.
- After completion, FDEP will be notified of the work completion along with documentation showing that the new wells are back within NSPS operating parameters.

### **Schedule**

Work under the Scope of Services provided above is expected to be completed by February 9, 2018 assuming a Notice to Proceed from the County is received by December 20, 2017.

### **Cost Estimate**

The cost estimate to conduct this Work as described in the above listed Scope of Services is not to exceed \$124,998.84. A detailed breakdown for each task in conjunction with the estimated labor hours, contract labor rates, and expenses are included in the attached Exhibit 1 for the S2Li Team. Costs incurred will be invoiced on a time and unit cost basis.

November 16, 2017

Total Project Costs

S2Li Fee Estimate

## EXHIBIT 1

S2Li No.

17-760

County No.

CM2096-WA24

**Installation of Five Landfill Gas Replacement Wells**  
**Fiscal Year 2018 (October 1, 2017 through September 30, 2018)**  
**Nassau County, Florida**

LABOR		LABOR CATEGORY AND RATE							TOTAL HOURS	SUBTOTAL LABOR
		Project Dir./ Principal	Regional Manager/ QC Officer	Principal Engineer	Senior Engineer	Project Engineer	Associate Engr./ CADD	Office Manager		
TASK	DESCRIPTION	\$225.00	\$208.88	\$171.38	\$122.51	\$81.81	\$47.47	\$68.46		
	<b>Total</b>									
	-- Survey	2	8	2	0	16	0	2	30	\$ 3,909.68
	-- FDEP Notification	2	8	0	0	0	0	0	10	\$ 2,121.04
	-- Well Drilling and Installation	8	24	4	0	24	0	4	64	\$ 9,735.92
	-- Record Drawings and Survey	4	4	2	0	16	8	2	36	\$ 3,903.92
	-- FDEP Notification of Completion	2	16	0	0	24	0	0	42	\$ 5,755.52
	<b>SUBTOTALS:</b>	<b>18</b>	<b>60</b>	<b>8</b>	<b>0</b>	<b>80</b>	<b>8</b>	<b>8</b>	<b>182</b>	<b>\$ 25,426.08</b>

EXPENSES		Field Vehicle (\$90/day)	Lab Testing (est.)	Equipment Rental (est.)	Parts (est.)	Misc. & Unknowns (est.)	Sullivan Environmental (Attachment 1)	Surveyor (est.)		SUBTOTAL EXPENSES
TASK	DESCRIPTION									
	<b>Total</b>									
	-- Survey	\$ -	\$ -	\$ -	\$ -		\$ -	\$ 4,000.00		\$ 4,000.00
	-- FDEP Notification	\$ -	\$ -	\$ -	\$ -		\$ -			\$ -
	-- Well Drilling and Installation	\$ 180.00	\$ -	\$ -	\$ -	\$ 5,940.00	\$ 89,272.76			\$ 95,392.76
	-- Record Drawings and Survey	\$ 180.00	\$ -	\$ -	\$ -		\$ -			\$ 180.00
	-- FDEP Notification of Completion	\$ -	\$ -	\$ -	\$ -		\$ -			\$ -
	<b>SUBTOTALS:</b>	<b>\$ 360.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 5,940.00</b>	<b>\$ 89,272.76</b>	<b>\$ 4,000.00</b>	<b>\$ -</b>	<b>\$ 99,572.76</b>

COST SUMMARY				
TASK	DESCRIPTION	SUBTOTAL S2Li LABOR	SUBTOTAL Subcontractors and EXPENSES	TASK TOTAL
	Total	\$25,426.08	\$ 99,572.76	\$ 124,998.84
<b>TOTALS</b>		<b>\$ 25,426.08</b>	<b>\$ 99,572.76</b>	<b>\$ 124,998.84</b>

November 16, 2017

## Attachment 1

S2Li No. 17-760

County No. CM2096-WA24

**Attachment - Sullivan Environmental- Subconsultant**

(See Attached Estimate Sheet for Further Details)

### Installation of Five Landfill Gas Replacement Wells

Fiscal Year 2018 (October 1, 2017 through September 30, 2018)

**Nassau County, Florida**

LABOR		LABOR CATEGORY AND RATE										TOTAL HOURS	SUBTOTAL LABOR
		Senior Superintendent \$127.19	Senior Technician \$107.19										
TASK	DESCRIPTION												
2	Total	80	160	0	0	0	0	0	0	0		240	\$27,325.60
	-- Survey											0	
	-- FDEP Notification											0	
	-- Well Drilling and Installation	80	160									240	
	-- Record Drawings and Survey											0	
	-- FDEP Notification of Completion											0	
	SUBTOTALS:	80	160	0	0	0	0	0	0	0	0	240	\$ 27,325.60

EXPENSES		Field Vehicle (\$90/day)	Lab Testing (est.)	Equipment Rental (est.)	Parts (est.)			Subcon- tractors (est.)					SUBTOTAL EXPENSES
2	Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	-- Survey	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	-- FDEP Notification	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	-- Well Drilling and Installation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 61,947					\$ 61,947
	-- Record Drawings and Survey	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	-- FDEP Notification of Completion	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	SUBTOTALS:	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ 61,947
	TOTAL \$ 89,272.76												



4448 13TH LN NE  
ST. PETERSBURG, FL 33703

# Estimate

Date	Estimate #
11/15/2017	423

Name / Address
S2L, Incorporated 531 Versailles Drive, Suite 202 Maitland, Florida 32751

Description	Qty	Unit Cost	Total
West Nassau County Landfill 46026 Landfill Rd, Callahan, FL 32011			
Install five new wells to replace GW-1R, 2, 7, 8 ,9.			
This is a time and materials estimate. Cost is not to exceed this amount without prior approval from Nassau County. Actual time and unit costs will be billed.			
Sod replacement is not included in this quote.			
Hourly Bill Rate - Sr Superintendent	80	127.19	10,175.20
Hourly Bill Rate - Sr Technician	80	107.19	8,575.20
Hourly Bill Rate - Sr Technician	80	107.19	8,575.20
Hourly Bill Rate - Secretarial	5	45.00	225.00
Drill Rig Mob	1	8,625.00	8,625.00
Drilling - 36" Bore Hole	378	36.80	13,910.40
8" SCH 80 PVC Slot Pipe	220	15.46	3,401.20
8" SCH 80 PVC Solid Pipe	100	13.80	1,380.00
8" SCH 40 PVC Slip Cap	5	32.24	161.20
4" HDPE SDR17 Pipe	120	7.13	855.60
4" HDPE SDR17 4" Elbow	5	22.30	111.50
Bentonite - Bag OR Expanding Foam	70	12.65	885.50
Granite - Ton	130	69.40	9,022.00
Fill Dirt - Truck Load	4	460.00	1,840.00
Pea Gravel	70	10.29	720.30
Excavator - 13 Ton - Weekly Rate	1	2,991.15	2,991.15
Off Road Truck - Weekly Rate	1	4,389.55	4,389.55
Skid Steer Track Loader - Weekly Rate	1	2,462.96	2,462.96
		<b>Total</b>	

Customer Signature



4448 13TH LN NE  
ST. PETERSBURG, FL 33703

## Estimate

Date	Estimate #
11/15/2017	423

Name / Address
S2L, Incorporated 531 Versailles Drive, Suite 202 Maitland, Florida 32751

[illegible]

Customer Signature