IRVINGTON LANDFILL, TUCSON, ARIZONA 2019 ANNUAL ENVIRONMENTAL REPORT AQUIFER PROTECTION PERMIT NO. 50044800.00

Prepared for:

Arizona Department of Environmental Quality Solid Waste Plan Review Unit 1110 West Washington Street Phoenix, Arizona 85007

January 2, 2020

Prepared by:

City of Tucson Environmental & General Services Department P.O. Box 27210 Tucson, Arizona 85726-7210



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Figures

Figure 1 Figure 2 Location Map Site Map

Appendices

Appendix A Appendix B Field Data Sheets for Methane Gas Probes

Landfill Site Inspection Reports



Acronyms

Alert Level AL
Aquifer Protection Permit APP
Aquifer Quality Limit AQL
Aquifer Water Quality Standards AWQS
Arizona Department of Environmental Quality ADEQ
Below Ground Surface bgs
Carbon Dioxide CO₂

City of Tucson-Environmental & General Services Department COT-EGSD

Feet ft

Feet Above Mean Sea Level ft amsl
Groundwater Protection Level GPL
Non Detect ND
Methane CH₄
Milligrams per Liter mg/l
Nephelometric Turbidity Unit NTU
Oxygen O₂

Quality Assurance/Quality ControlQA/QCReportable Detection LevelRDLVolatile Organic CompoundsVOCWater Table ElevationWTETotal Suspended SolidsTSSTetrachloroethenePCE

cis-1,2-Dichloroethene cis-1,2-DCE

Vinyl ChlorideVCTrichlorofluoromethaneTCFMDichlorodifluoromethaneDCFM



Trichloroethene

TCE

1.0 INTRODUCTION

The City of Tucson - Environmental & General Services Department (COT-EGSD) has prepared this report to document groundwater, methane gas, soil vapor monitoring, and site inspections completed at the closed Irvington Landfill during 2019. Environmental sampling and analysis and site inspections are required by Aquifer Protection Permit (APP) 50044800.00, approved by the Arizona Department of Environmental Quality (ADEQ) on May 28, 2009.

The Irvington Landfill is located on the east side of the City of Tucson at 10000 East Irvington Road, near the intersection of East Irvington Road and South Houghton Road. The location of the Irvington Landfill is shown on **Figure 1**. The Irvington Landfill was operated as a municipal waste landfill by the City of Tucson from 1978 to 1988.

2.0 GROUNDWATER MONITORING

In March 2014, ADEQ¹ approved a reduction in the frequency of post-closure groundwater monitoring at the Irvington Landfill from an annual basis to a biennial basis (one sampling event every two years). The most recent annual groundwater sampling event at the Irvington Landfill was conducted by COT-EGSD in 2018. Accordingly, the next annual groundwater sampling event at the Irvington Landfill will be conducted by COT-EGSD in 2020.

3.0 METHANE GAS MONITORING PROBE RESULTS

There are 14 methane gas monitoring probes, designated as probes IRV-1 through IRV-14, located around the perimeter of the Irvington Landfill. Each probe is constructed to allow for a soil vapor (methane gas) sample to be collected at depths of 10 feet and 25 feet below ground surface. The gas monitoring probe locations are shown on **Figure 2**.

COT-EGSD monitored methane gas probes IRV-1 through IRV-14 on a quarterly basis in February, May, September, and November 2019 for the presence of methane gas in the vapor of shallow subsurface soils. Methane gas concentrations in the perimeter landfill gas probes were below the equipment detection limit at each probe location during the four sampling events in 2019. The measurement range for each methane measurement is 0% to 100% and the accuracy for each measurement is \pm 0.3%. **Appendix A** contains the quarterly soil vapor (methane gas) field monitoring summary sheets for 2019.

¹ ADEQ, RE: Irvington Landfill, Aquifer Protection Permit (APP) No. 50044800.00, 2013 Annual Report for Groundwater and Methane Monitoring, Landfill Inspections, March 27, 2014



4.0 DEEP SOIL VAPOR MONITORING

COT-EGSD had been monitoring volatile organic compounds (VOCs) on a voluntarily basis at deep nested soil vapor probe R-101A to assess deep vadose zone conditions at the Irvington Landfill site. The purpose of this analysis was to assess possible impacts to groundwater from vapor phase VOCs migrating from the waste at the Irvington Landfill site. There are no regulatory standards for this monitoring data and analysis of the soil vapor for VOCs is not a requirement of the APP. HARGIS + Associates, Inc. developed Groundwater Protection Limits (GPLs) for VOCs for the Irvington Landfill site in 2008². The GPLs establish the minimum soil vapor concentrations that will not cause an exceedance of the aquifer water quality standards (AWQS) in the groundwater at the site.

Historical analytical data, since 2002, obtained by COT-EGSD was evaluated to assess possible impacts to groundwater from vapor phase VOCs potentially migrating from the waste at the Irvington Landfill site. Evaluation of the data identified VOCs in concentrations significantly less than the GPLs, suggesting the potential for soil vapors to impact groundwater quality was unlikely. Therefore, COT-EGSD decided to discontinue the deep soil vapor monitoring at probe R-101A. The results of the historical soil vapor evaluation were provided in the 2016 Annual Environmental Report. COT-EGSD³ also notified ADEQ of its intention to permanently discontinue the voluntary vapor monitoring.

5.0 SITE INSPECTIONS

Irvington Landfill site inspections are required on a quarterly basis and under qualifying weather conditions as specified in the APP. Site inspections were conducted by COT-EGSD's Engineering Manager and by Engineering and Environmental Consultants, Inc. (EEC), on behalf of COT-EGSD, in 2019. A copy of each inspection report is provided in **Appendix B**.

The following landfill site inspections were conducted in 2019:

- February 14, 2019: 1st quarterly 2019 event.
- May 15, 2019: 2nd quarterly 2019 event.
- July 31, 2019: Rainfall inspection event.
- August 13, 2019: 3rd quarterly 2019 event.
- September 26, 2019: Rainfall inspection event.
- November 13, 2019: Wind inspection event.
- November 20, 2019: Rainfall inspection event.

³ COT-EGSD, Irvington Landfill, Tucson, Arizona, 2016 Annual Environmental Report, Aquifer Protection Permit 50044800.00, January 24, 2017



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² EEC and Hargis + Associates, Inc., Soil Vapor Assessment at Los Reales, Prudence, Vincent Mullins, Irvington, Cottonwood, and Ryan Landfills, April 10, 2008

- November 28-29, 2019: Rainfall inspection event.
- December 8, 2019: Rainfall inspection event.
- December 18, 2019: Wind inspection event.

The following items were noted as discrepancies during 2019:

- Fencing: Concrete footers of several fence poles along the southern and eastern perimeter fence are exposed and being undermined by runoff.
- Inspection roads: Erosion rills observed along the southern and western inspection road. South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road.
- Stormwater controls: Sediment accumulating in top section of the basin drainage channel.

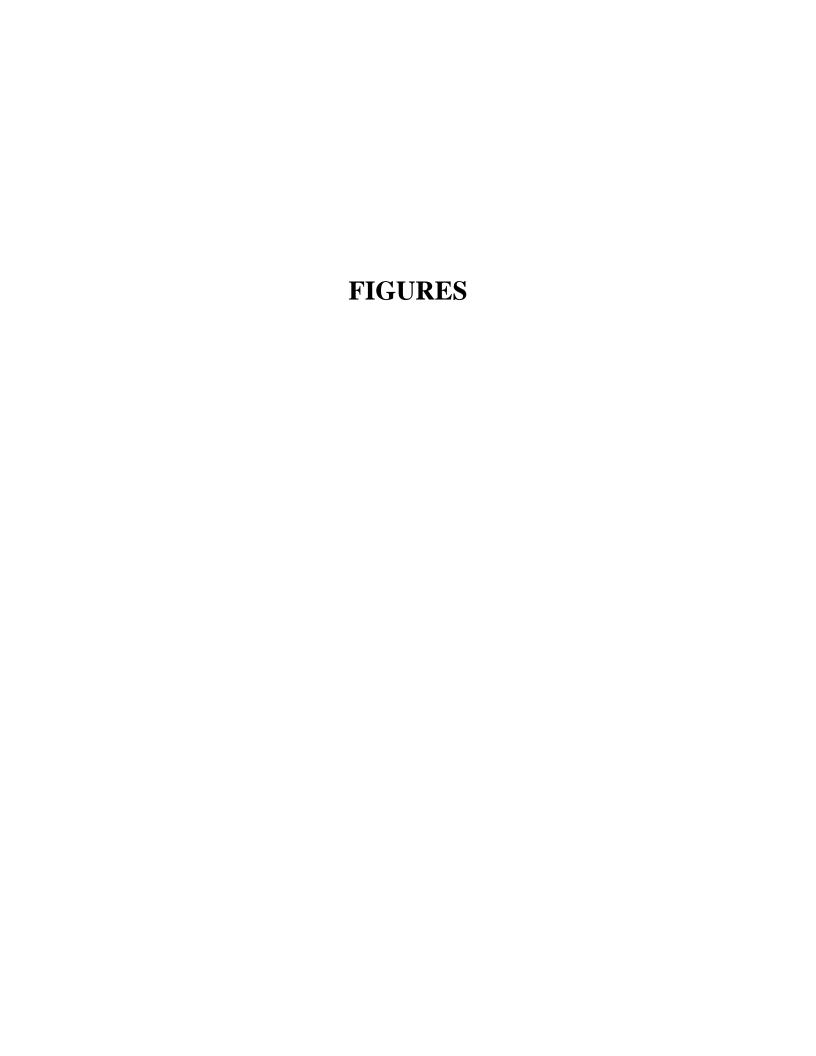
COT-EGSD will evaluate the discrepancies and determine appropriate timing of repairs and maintenance to the facility in 2020.

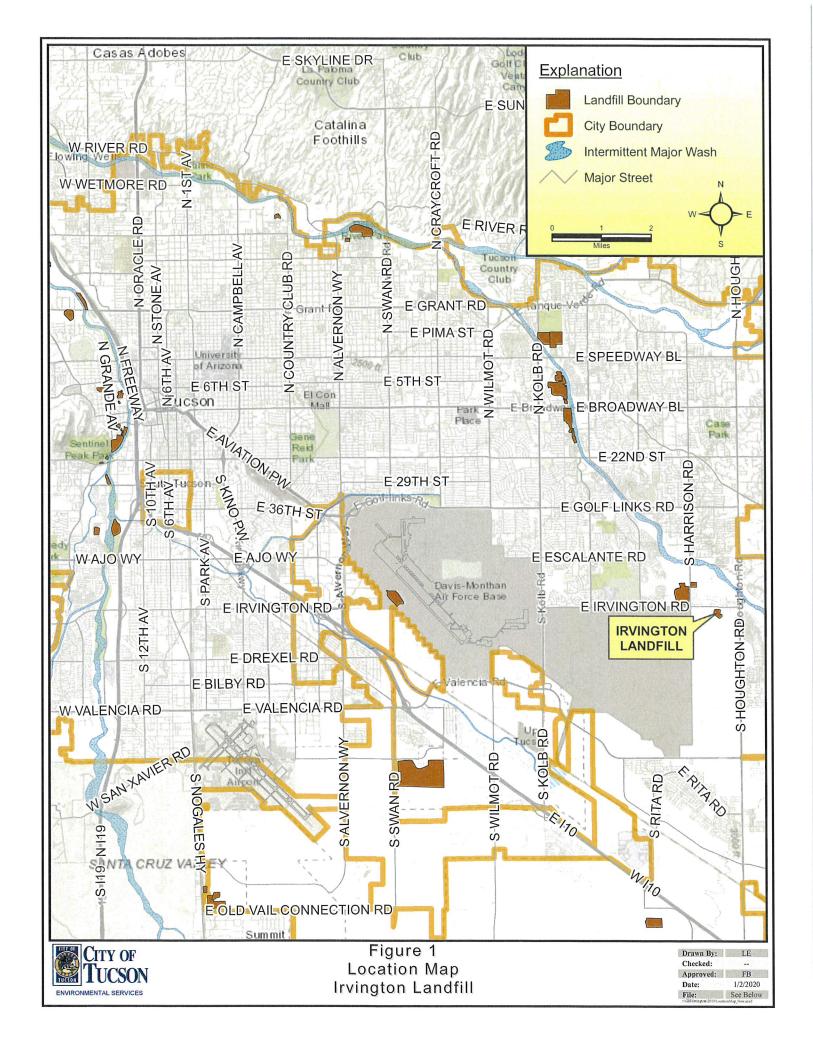
6.0 SUMMARY OF ACTIVITIES

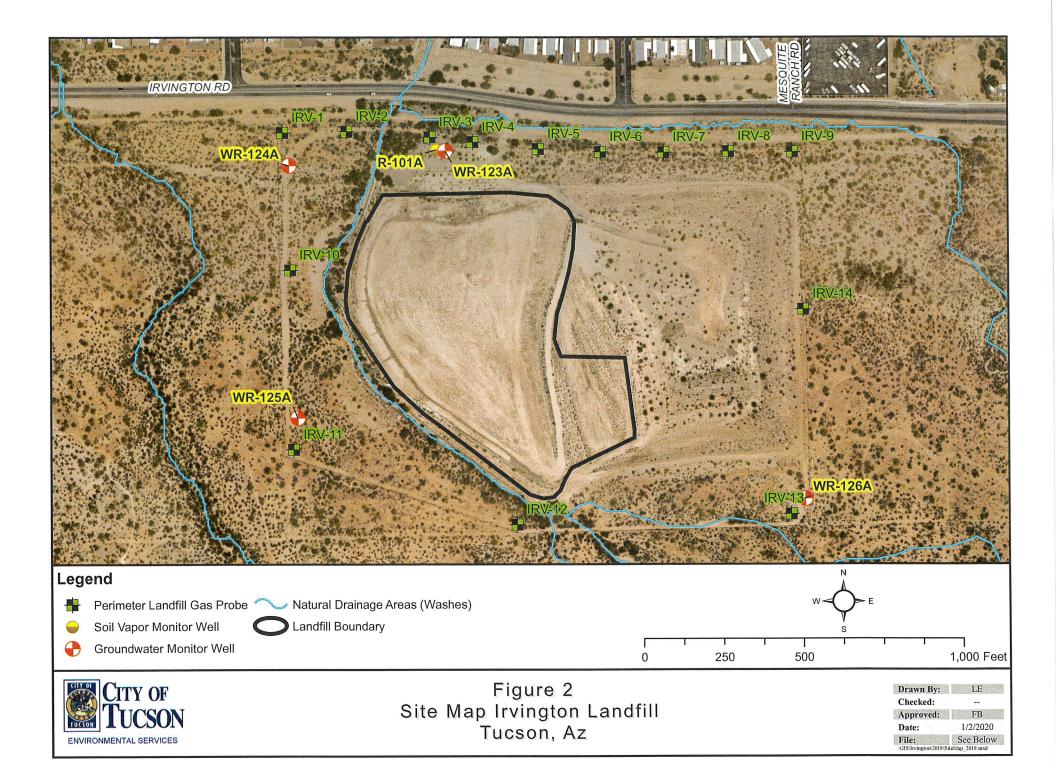
Activities conducted in 2019 at the Irvington Landfill site include:

- Methane gas was not detected in any of the perimeter landfill gas probes during quarterly monitoring conducted in 2019. Methane gas monitoring at the gas probes will continue on a quarterly basis in 2020.
- As required by the APP, site inspections were performed to evaluate the integrity of the final cover layer, access road conditions, drainage systems, vegetation, and security conditions. No critical environmental issues were identified at the Irvington Landfill during the site inspections.
- The landfill met all the requirements and conditions of the APP.









Appendix A

Field Data Sheets for Methane Gas Probes April 17, 2019

Mr. Thomas Ryan, P.E.
Ms. Lori Ehman
City of Tucson
Environmental & General Services Department
4004 S. Park Avenue, Bldg. 2
Tucson, Arizona 85714

Re: Summary of First Quarterly Landfill Gas Monitoring at Irvington Landfill

Dear Mr. Ryan and Ms. Ehman:

EEC is pleased to submit the data package for the quarterly landfill gas monitoring at the Irvington Landfill. The monitoring was performed on February 28, 2019 to satisfy the requirement for the first quarter 2019 monitoring. EEC arrived on site at 1245 and was off site at 1630.

No methane was detected in any probe monitored. Where appropriate, EEC remarked probe nomenclature and lubed sticky padlocks. The following additional items were noted:

No locks were observed on wells IR-006, IR-007, IR-008, IR-009, IR-0010, IR-0011, IR-0012, IR-0013, or IR-0014, however these wells are located within the fenced area of the landfill.

Let us know if you have any questions or concerns.

Sincerely,

Engineering and Environmental Consultants, Inc.

Chad S. Hancock

Field Services Manager

Kevin A. Pierce

Senior Environmental Manager

Mr a Rui

Irvington Landfill Methane Monitoriing Wells (all, Quarterly)

Device ID	Date/Time	CH4	CO2	O2	Balance	Baro. Press.	Rel. Press.
		%	%	%	%	inches Hg	inches H2O
IR000110	2/28/2019 13:04	0	0.8	19.7	79.5	27.26	0
IR000125	2/28/2019 13:07	0	1.2	19.2	79.6	27.26	0.01
IR000210	2/28/2019 13:13	0	1.2	19.5	79.3	27.26	0.01
IR000225	2/28/2019 13:17	0	1	19.7	79.3	27.27	0
IR000310	2/28/2019 13:30	0	1.2	19.3	79.5	27.27	0
IR000325	2/28/2019 13:34	0	2.1	18.7	79.2	27.26	0.02
IR000410	2/28/2019 13:40	0	1.6	19.4	79	27.27	0
IR000425	2/28/2019 13:43	0	2.9	18.3	78.8	27.26	0
IR000510	2/28/2019 13:51	0	2.8	18.3	78.9	27.26	0.01
IR000525	2/28/2019 13:55	0	4	17.2	78.8	27.26	0.01
IR000610	2/28/2019 14:01	0	1.2	19.8	79	27.25	0.01
IR000625	2/28/2019 14:05	0	2	19.2	78.8	27.26	-0.01
IR000710	2/28/2019 14:09	0	0.7	20.6	78.7	27.25	0
IR000725	2/28/2019 14:12	0	0.7	20.7	78.6	27.25	0
IR000810	2/28/2019 14:19	0	0.7	20.7	78.6	27.25	0
IR000825	2/28/2019 14:23	0	0.9	20.1	79	27.26	-0.01
IR000910	2/28/2019 14:27	0	1	20.6	78.4	27.24	-0.01
IR000925	2/28/2019 14:31	0	1.8	19.9	78.3	27.24	0.01
IR001010	2/28/2019 14:52	0	1.5	20.3	78.2	27.24	0.01
IR001025	2/28/2019 14:56	0	2.7	19.1	78.2	27.22	-0.01
IR001110	2/28/2019 15:02	0	0.5	21.1	78.4	27.22	0
IR001125	2/28/2019 15:06	0	1.1	20.6	78.3	27.21	0.02
IR001210	2/28/2019 15:23	0	0.7	21.2	78.1	27.21	0
IR001225	2/28/2019 15:27	0	1.7	20.5	77.8	27.21	0.02
IR001310	2/28/2019 15:47	0	0.4	21.8	77.8	27.21	0
IR001325	2/28/2019 15:50	0	0.8	21.3	77.9	27.17	0.01
IR001410	2/28/2019 15:56	0	0.3	21.8	77.9	27.2	0
IR001425	2/28/2019 15:59	0	0.4	21.8	77.8	27.19	0

Note:

GEM5000 ID: G505889

Monitored by: K. Pierce (EEC)

 $\mbox{GEM}5000$ was calibrated using 15% methane (see K.P. calibration sheet for this date).

Pressure readings were taken with a Dywer Model 476A digital manometer.

Accuracy of the machine is \pm -0.3% at methane concentrations of less than <5.0%.

METHANE MONITORING FIELD FORM IRVINGTON

GEM ID: 6505889

anaometer ID: Dwyer H76HWeather Condition: $CLer \sim 72^{\circ}$

Inspector Name: Pressure: 27.28"

	A 2.13 (1.15) (1.15)			STORING CONTINUES	Triggie Property Person			4 1 7 CA 10	
Probe ID	Pressure (H ₂ O) Reading	Methane (CH₄) Reading	Purge Times (seconds)	Notes	Probe ID	Pressure (H₂O) Reading	Methane (CH₄) Reading	Purge Times (seconds)	Notes
IR000110	D	-B %	47 (1WV)		IR001310	ST	Substantial States N	47 (1WV)	
IR000125	6	£ %	116 (1WV)		IR001325	, sign	THE REAL PROPERTY OF THE PARTY		
IR000210	Ø	0 %	47 (1WV)		IR001410	Dr	sure produces	47 (1WV)	
IR000225	0	0 %	116 (1WV)		IR001425	ング	«	116 (1WV)	
IR000310	8	6 %	47 (1WV)		NOTES: Prob to a maximun	oes will be pur n of 3 well vol	ged a minimu umes (3WV).	m of 1 well vo	lume (1WV)
IR000325	J.J	6 %	116 (1WV)	2. ()	-100	o site o	1345		
IR000410	-0.07	D %	47 (1WV)		- 70	locks o	in prol	e well,	6,7,8
IR000425	-0,08	%	116 (1WV)		9,1	3,11(60)	(n prol (+), 12, 1	3,14	
IR000510	0	%	47 (1WV)		1	f site	•		
ನ000525	Ø.	6 %	116 (1WV)		,		102		
IR000610	-8	£ %	47 (1WV)						
IR000625	Jest.	£ 7 ′ %	116 (1WV)						
IR000710	U	6 %	47 (1WV)						
IR000725	9	& %	116 (1WV)						
IR000810	9	£F %	47 (1WV)						
IR000825	Ŋ	# %	116 (1WV)						·
IR000910	+0,10	£3" %	47 (1WV)	4					
IR000925	8	P %	116 (1WV)						
IR001010	<u> </u>	£J %	47 (1WV)						
IR001025	Lý-	first %	116 (1WV)						
IR001110	W	%	47 (1WV)						
IR001125	9	%	116 (1WV)						
ห 1 001210	Ø	<i>Y</i> %	47 (1WV)						
IR001225	X	<i>y</i> %	116 (1WV)						



LANDTEC CALIBRATION FORM

DATE	= 2/28/19	TIME:	0720	Inspector's Nam	ne: Pierce
MACHINE TYPE:	GEM2000	OTHER (X)	TYPE: GEMS	MACHINE!	D: 6505889
SITE INFO & STORA	IGE:				
File: S:\GA90\D/	ATA	xls		File: S:\GA90\DATA	.xls
File: S:\GA90\DA	\TA	xis		File S \GA90\DATA	.xls
Methane Calibr	ation Gas Used:	(15.0%) 50.0%	(circle one)	MANUFACTUER	LOT#
		15.0%CH4/15.0%(CO2/0.0% O2 :	LANDTEC or CALGAZ	738866
		50.0%CH4/35.0%	CO2/0.0% O2; 4%02/96%N2;	LANDTEC or CALGAZ LANDTEC or CALGAZ	11221 305
	DEC	T TO FACTORY S		1	4736299
		ET TO FACTORY	DETTINGS?	YES NO	
CALIBRATION GAS		CALIBRA	TION READING	3	RANGES
Zero Methane(CH ₄)	Initial CH ₄ Zero Read	ing		2 %	CH ₄ ranges: 15% and 50%
(Not connected to calibration gas)	Final CH₄ Zeroed-Out	Reading		₽ %	15% = min-14 0%-max-16.0%
Span Methane(CH ₄)	Initial CH. Danding				50% = min-48 8%max-51.2%
(Connect to calibration	Final Calibrated CH ₄ I	Reading		15.7 %	In range? YES
gas)			7	5 0 78	In range? YES 🔀
Span Carbon					CO ₂ ranges: 15% and 35%
Dioxiode (CO ₂) (Stay connected to	Initial CO₂ Reading			15,4 %	15% = min-14 0%—max-16.0%
calibration gas)	Final Calibrated CO ₂ F	Reading		15.8-%	35% = min-34 2%max-35.8%
		1.2			In range? YES 🔀
Zero Oxygen (O₂)					
(Stay connected to	Initial O₂ Reading			8,1 %	Zeroed O ₂ range: 0.0%
calibration ges)	Final Calibrated O ₂ Re	ading		Q %	In range? YES
					NO
Span Oxygen (O₂)	Oxygen Ambient Air or	nly		20.8%	O ₂ range: 20.8%
(Disconnect from calibration gas)	Initial O₂ Reading			2 2 2	min-19 8%max-21,8%
	Final Calibrated O ₂ Re	ading		2 B. 2 %	In range? YES
			Philosophy and Page	Section and additional Section and Section	NO III
Calibration Check (Check ranges)	Methane (CH₄) Readin	g [5%]	Read methane gas)	Oxygen (O₂) Reading	25, X% (Read ambient air)
Calibration Comple	ete? Yes 🔀 I	10 📋 1	f no, Why?	STORY OF THE PROPERTY OF THE P	
	Inspector Signa	ture.	I be so	1	TOP COMED IN STREET AND STREET AN
	mopeosor orgina	ta: 6.	~ 01		

ISSUED BY: QED Environmental Systems, Inc. Services Facility

Date Of Calibration: January 18, 2019 Certificate Number: G505889 10/35684



No. 66916

Page 1 of 2

Approved By Signator

Kyle Racine
Laboratory Inspection



QED Environmental Systems, Inc. Services Facility, 2355 Bishop Circle West, Dexter, MI 48130

www.qedenv.com

Customer:

Geotech Environmental Equipment Inc

2650 E 40th Ave Denver, CO 80205 USA

Description:

Gas Analyser

Model:

GEM5000

Serial Number:

G505889

Accredited Results:

	2000 1000 1000 1000 1000 1000 1000 1000		
	/	Methane (CH4)	
L	Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
	5.0	4.9	-0.42
NO.	15.0	14.9	0.66
- Landerson	50.0	49.6	1.03

	Carbon Dioxide (CO2)	
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.8	0.43
15.0	14.7	0.71
50.0	49.7	1.19

	Oxygen (O2)	
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
20.7	20.7	0.25

Gas cylinders are traceable and details can be provided if requested.

CH4, CO2 readings recorded at:

32.2 °C/89.9 °F

Barometric Pressure:

29.15 "Hg

O2 readings recorded at:

22.6 °C/72.7 °F

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases. All analyzers are calibrated in accordance with our procedure ISP-17 using high purity grade gas.

All calibrations are performed in accordance with ISO 17025 at LANDTEC, an ISO 17025:2005 – accredited service facility through PJLA.

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (SI). Certification only applies to results shown. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 101 IGC Instance: N/A

LP015LNANIS

PJLA ACCREDITED CALIBRATION LABORATORY NO. 66916

Certificate Number G505889 10/35684

Page 2 of 2

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with NIST requirements.

Non Accredited results:

	Pre	ssure Transducers	(inches of water colu	mn)	
Transducer	Certified (Low)	Reading (Low)	Certified (High)	Reading (High)	Accuracy
Static	0"	0"	40"	40.10"	2.0"
Differential	0"	0"	4"	4.02"	0.7"

Barometer (mbar)						
Reference	Instrument Reading					
0987 mbar / 29.15 "Hg	0990 mbar / 29.22 "Hg					

Additional Gas Cells						
Gas	Certified Gas (ppm)	Instrument Reading (ppm)				
СО	501	507				
H2S	249.5	250				

As received gas check readings are only recorded if the instrument is received in a working condition. Where the instrument is received damaged no reading can be taken.

End of Certificate

Calibration Instance: 101 IGC Instance: N/A

LP015LNANIST-1.1

July 9, 2019

Mr. Thomas Ryan, P.E.
Ms. Lori Ehman
City of Tucson
Environmental & General Services Department
4004 S. Park Avenue, Bldg. 2
Tucson, Arizona 85714

Re: Summary of Second Quarter 2019 Landfill Gas Monitoring at Irvington Landfill

Dear Mr. Ryan and Ms. Ehman:

EEC is pleased to submit the data package for the quarterly landfill gas monitoring at the Irvington Landfill. The monitoring was performed on May 23, 2019 to satisfy the requirement for the second quarter 2019 monitoring.

No methane was detected in any probe monitored. Where appropriate, EEC remarked probe nomenclature and lubed sticky padlocks. No additional items were noted.

Let us know if you have any questions or concerns.

Sincerely,

Engineering and Environmental Consultants, Inc.

Chad S. Hancock

Field Services Manager

Kevin A. Pierce

Senior Environmental Manager

Irvington Landfill Methane Monitoring Wells (all, quarterly)

Device ID	Date/Time	CH4	CO2	O2	Balance	Baro. Press.	Rel. Press.
		%	%	%	%	inches Hg	inches H2O
IR000110	5/23/2019 7:20	0	0.5	20.3	79.2	27.09	0
IR000125	5/23/2019 7:23	0	1.2	19	79.8	27.09	0
IR000210	5/23/2019 7:31	0	0.3	20.2	79.5	27.1	0
IR000225	5/23/2019 7:34	0	0.4	20.1	79.5	27.08	0
IR000310	5/23/2019 7:39	0	1.7	18.8	79.5	27.1	0
IR000325	5/23/2019 7:42	0	2.3	17.9	79.8	27.11	0
IR001010	5/23/2019 7:49	0	1.7	18.9	79.4	27.09	0
IR001025	5/23/2019 7:53	0	1.4	19	79.6	27.1	0
IR001110	5/23/2019 8:03	0	0.2	20.4	79.4	27.08	0
IR001125	5/23/2019 8:07	0	0.1	20.5	79.4	27.1	-0.12
IR000410	5/23/2019 9:55	0	2.7	18.7	78.6	27.15	0
IR000425	5/23/2019 9:58	0	3	17.9	79.1	27.14	0
IR000510	5/23/2019 10:05	0	3.1	18.2	78.7	27.15	0
IR000525	5/23/2019 10:08	0	3.1	17.9	79	27.14	0
IR000610	5/23/2019 10:16	0	1.2	19.6	79.2	27.15	0
IR000625	5/23/2019 10:19	0	1.9	18.4	79.7	27.15	0
IR000710	5/23/2019 10:23	0	0.3	20.2	79.5	27.16	0
IR000725	5/23/2019 10:26	0	0.1	20.4	79.5	27.13	0
IR000810	5/23/2019 10:30	0	0.8	19.5	79.7	27.13	0
IR000825	5/23/2019 10:33	0	0.9	18.6	80.5	27.15	0
IR000910	5/23/2019 10:37	0	0.6	19.8	79.6	27.15	0
IR000925	5/23/2019 10:40	0	1.5	18.5	80	27.16	0
IR001210	5/23/2019 10:54	0	0.5	20.6	78.9	27.17	0
IR001225	5/23/2019 10:57	0	0	21.2	78.8	27.13	0
IR001310	5/23/2019 11:04	0	0.5	20.7	78.8	27.18	0
IR001325	5/23/2019 11:08	0	0.4	20.4	79.2	27.15	0
IR001410	5/23/2019 11:13	0	0.4	20.6	79	27.16	0
IR001425	5/23/2019 11:21	0	0.3	20.6	79.1	27.14	0
Note:							
GEM5000 ID:	G505889	Monitored	by: K. Piero	ce (EEC)			
GEM5000 wa	s calibrated using 15	% methane	(see K.P. c	alibration s	heet for thi	s date).	
Pressure reac	lings were taken wit	h a Dywer I	Model 476A	digital mai	nometer.		
Accuracy of the	he machine is +/-0.3	% at metha	ne concent	rations of le	ess than <5.	0%.	



METHANE MONITORING FIELD FORM

IRVINGTON

M	ID:	G86 5 8 8 Q	
		Complete Com	

Manaometer ID: Dayer 476

Inspector Name:	fierca

Date: 5 / 23 / 19

			5-02-10-North (1980)	X (0) (X-4) (1) (2) (3) (3) (4) (4)				
Pressure (H ₂ O) Reading	Methane (CH₄) Reading	Purge Times (seconds)	Notes	Probe ID	Pressure (H ₂ O) Reading		Purge Times (seconds)	Notes
Ą	- 0 %	47 (1WV)		IR001310	9	Ø %	47 (1WV)	
LG.	6 %	116 (1WV)		IR001325	0	*	116 (1WV)	
D	6 %	47 (1WV)		IR001410	a		47 (1WV)	
9	9 %	116 (1VV)	12	IR001425	O O			
D-	53 %	47 (1WV)	10 10 10 10 10 10 10 10 10 10 10 10 10 1	a maximum d	of 3 well volum	rged a minimu nes (3WV). <i>Pu</i>	m of 1 well vo rge times are	lume (1WV) (based on a
0	<i>9</i> %	116 (1WV)) 7.2.		
Ð	-O %	47 (1WV)					ceshurt	VMLA
4	9 %	116 (1WV)					1	
0	D %	47 (1WV)		CP	CIL P	~ 121	5 <i>0</i>	
-6-	6 %	116 (1VVV)		~ D//	sue 8			
Ø	9 %	47 (1WV)						
Ø	D %							
8	Ø %							
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	(2)v							
	CY"							()
	(H ₂ O) Reading	(H₂O) Reading	(H ₂ O) Reading	(H ₂ O) Reading Reading (seconds) (Notes ### ### ############################	(M2O) Reading Reading (seconds) Notes Probe ID ### 47 (1WV) IR001310 ### 116 (1WV) IR001325 ### 47 (1WV) IR001410 ### 116 (1WV) IR001425 ### NOTES: Pro a maximum of GEM 5000 into CEM 5000 into	(H ₂ O) Reading (seconds) Notes Probe ID (H ₂ O) Reading (H ₂	(H ₂ O) Reading Reading (seconds) Notes Probe ID (H ₂ O) Reading Reading W	(H ₂ O) Reading (esconds) W



LANDTEC CALIBRATION FORM

DATE:	5 3 3 1 TIME: 0 700 Inspector's Name:	Prese
MACHINE TYPE:	GEM2000 OTHER TYPE: GENSUS MACHINE ID:	G585886
SITE INFO & STORA	ge:	
File: S:\GA90\DA	TAxls File: S:\GA90\DATA	.xls
File: S:\GA90\DA		
Methane Calibra	ation Gas Used: 15.0% 50.0% (circle one) MANUFACTUER	LOT#
	15.0%CH4/15.0%CO2/0.0% O2: LANDTEC or CALGAZ	1089600
	50.0%CH4/35.0%CO2/0.0% O2: LANDTEC or CALGAZ	
	4%02/96%N2: LANDTEC or CALGAZ	
	RESET TO FACTORY SETTINGS? YES NO	
CALIBRATION GAS	CALIBRATION READINGS	RANGES
Zero Methane(CH ₄)	Initial CH₄ Zero Reading %	CH ₄ ranges: 15% and 50%
(Not connected to calibration gas)	Final CH ₄ Zeroed-Out Reading %	15% = min-14.0%-max-16.0%
3-7		50% = min-48.8%max-51.2%
Span Methane(CH ₄)		
(Connect to calibration gas)	Final Calibrated CH ₄ Reading	In range? YES
A STATE OF THE SPECIAL PROPERTY.		NO NO
Span Carbon Dioxiode (CO₂)		CO ₂ ranges: 15% and 35%
(Stay connected to	Initial CO ₂ Reading	15% = min-14.0%-max-16.0%
calibration gas)	Final Calibrated CO ₂ Reading	35% = min-34.2%-max-35.8%
		In range? YES
Zero Oxygen (O ₂)		Zeroed O ₂ range: 0.0%
(Stay connected to	Initial O ₂ Reading	min-0.0%max-0.2%
calibration gas)	Final Calibrated O ₂ Reading %	In range? YES
		NO
Span Oxygen (O ₂)	Oxygen Ambient Air only 20.8%	O ₂ range: 20.8%
(Disconnect from		min-19.8%max-21.8%
calibration gas)	Initial O ₂ Reading	In rounce? VES
31-	Final Calibrated O ₂ Reading	In range? YES S
The state of the s	Methane (CH ₄) Reading (Read methane gas) Oxygen (O ₂) Reading	25 4% (Read ambient air)
(Check ranges)		
Calibration Compl	oto? Voc NO lifne Why?	
Cambiation Compi	ete? Yes NO lif no, Why?	
	Inspector Signature:	
	v į	

ISSUED BY: QED Environmental Systems, Inc. Services Facility

Date Of Calibration: January 18, 2019 Certificate Number: G505889 10/35684



No. 66916

Page 1 of 2
Approved By Signatory

LANTEL

QED Environmental Systems, Inc. Services Facility, 2355 Bishop Circle West, Dexter, MI 48130

www.qedenv.com

Kyle Racine
Laboratory Inspection

Customer:

Geotech Environmental Equipment Inc

2650 E 40th Ave Denver, CO 80205 USA

Description:

Gas Analyser

Model:

GEM5000

Serial Number:

G505889

Accredited Results:

	Methane (CH4)									
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)								
5.0	4.9	0.42								
15.0	14.9	0.66								
50.0	49.6	1.03								

Carbon Dioxide (CO2)						
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)				
5.0	4.8	0.43				
15.0	14.7	0.71				
50.0	49.7	1.19				

		Oxygen (O2)	
L	Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
L	20.7	20.7	0.25

Gas cylinders are traceable and details can be provided if requested.

CH4, CO2 readings recorded at:

32.2 °C/89.9 °F

Barometric Pressure:

29.15 "Hg

O2 readings recorded at:

22.6 °C/72.7 °F

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases. All analyzers are calibrated in accordance with our procedure ISP-17 using high purity grade gas.

All calibrations are performed in accordance with ISO 17025 at LANDTEC, an ISO 17025:2005 – accredited service facility through PJLA.

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (SI). Certification only applies to results shown. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 101 IGC Instance: N-A

LP015LNANIS

PJLA ACCREDITED CALIBRATION LABORATORY NO. 66916

Certificate Number G505889_10/35684

Page 2 of 2

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with NIST requirements.

Non Accredited results:

Pressure Transducers (inches of water column)							
Transducer Certified (Low) Reading (Low) Certified (High) Reading (High) Accura							
Static	0"	0"	40"	40.10"	2.0"		
Differential	0"	0"	4"	4.02"	0.7"		

Barometer (mbar)							
Reference	Instrument Reading						
0987 mbar / 29.15 "Hg	0990 mbar / 29.22 "Hg						

		Additional Gas Cells	
	Gas	Certified Gas (ppm)	Instrument Reading (ppm)
	CO	501	507
L	H2S	249.5	250

As received gas check readings are only recorded if the instrument is received in a working condition. Where the instrument is received damaged no reading can be taken.

End of Certificate

Calibration Instance: 101 IGC Instance: N/A

LP015LNANIST-1.1

October 3, 2019

Mr. Thomas Ryan, P.E. Ms. Lori Ehman City of Tucson Environmental & General Services Department 4004 S. Park Avenue, Bldg. 2 Tucson, Arizona 85714

Re: Summary of Third Quarter 2019 Landfill Gas Monitoring at Irvington Landfill

Dear Mr. Ryan and Ms. Ehman:

EEC is pleased to submit the data package for the quarterly landfill gas monitoring at the Irvington Landfill. The monitoring was performed on September 6, 2019 to satisfy the requirement for the third quarter 2019 monitoring.

No methane was detected in any probe monitored. Where appropriate, EEC remarked probe nomenclature and lubed sticky padlocks. No unexpected items or problems were noted.

Let us know if you have any questions or concerns.

Sincerely,

Engineering and Environmental Consultants, Inc.

Chad S. Hancock

Field Services Manager

Kevin A. Pierce

Senior Environmental Manager

Irvington Landfill Methane Monitoring Wells (all, quarterly)

Device ID	Date/Time	CH4	CO2	02	Balance	Baro. Press.	Rel. Press.
######################################		%	%	%	%	inches Hg	inches H2O
IR000110	9/6/2019 6:30	0	0.7	20.4	78.9	27.22	O
IR000125	9/6/2019 6:33	0	1.2	19.2	79.6	27.19	0
IR001010	9/6/2019 6:41	0	1.1	19.9	79	27.21	0
IR001025	9/6/2019 6:45	0	0.8	19.8	79.4	27.2	0
IR001110	9/6/2019 6:50	0	0.8	20.1	79.1	27.21	0
IR001125	9/6/2019 6:54	0	0.3	20.3	79.4	27.18	0
IR000210	9/6/2019 6:59	0	0.3	20.6	79.1	27.21	0
IR000225	9/6/2019 7:03	0	0.7	20.1	79.2	27.2	0
IR000310	9/6/2019 7:18	0	1.7	19.3	79	27.2	0
IR000325	9/6/2019 7:23	0	3.2	17.6	79.2	27.2	0
IR000410	9/6/2019 7:29	0	2.4	18.6	79	27.24	0
IR000425	9/6/2019 7:33	0	4.3	16.6	79.1	27.23	0
IR000510	9/6/2019 7:39	0	3.1	18.1	78.8	27.24	0
IR000525	9/6/2019 7:42	0	4	17	79	27.2	0
IR000610	9/6/2019 7:47	0	1.3	19.5	79.2	27.24	0
IR000625	9/6/2019 7:51	0	2.1	18.5	79.4	27.24	0
IR000710	9/6/2019 8:01	0	0.5	20.4	79.1	27.24	0
IR000725	9/6/2019 8:04	0	0.1	20.7	79.2	27.23	0
IR000810	9/6/2019 8:09	0	0.6	20.3	79.1	27.24	0
IR000825	9/6/2019 8:13	0	0.9	19.3	79.8	27.24	0
IR000910	9/6/2019 8:19	0	0.8	20.1	79.1	27.2	0
IR000925	9/6/2019 8:23	0	1.8	18.8	79.4	27.2	0
IR001410	9/6/2019 8:35	0	0.4	20.5	79.1	27.24	0
IRO01425	9/6/2019 8:38	0	0.1	21	78.9	27.2	0
IR001310	9/6/2019 8:42	0	0.4	20.6	79	27.18	0
IR001325	9/6/2019 8:45	. 0	0.2	20.5	79.3	27.21	0
IR001210	9/6/2019 8:55	0	0.6	20.5	78.9	27.22	0
IR001225	9/6/2019 8:59	0	0.9	20.1	79	27.22	0
Note:	ngrappaga ya gaaba ka ana kanana ka kanana wa kana da kanana ka kanana ka		***************************************	- Construint - Sp Specific - Amprilament - Accessor	Mariana and Mariabhdas whole was a	and the second second of the second s	agus qua guireann na tradaigh mhliathach i mhliann a cuid air, ar a an an chairte air aid ma
GEM5000 ID:	G505889	Monitored	by: K. Pier	ce (EEC)	and the state of t		
CARRENTERS MANAGEMENT CONTROL CONTROL	s calibrated using 1				heet for thi	s date).	
	ings were taken wi			MANAGEMENT OF THE SECTION OF SECTION ASSESSMENT	A CONTRACTOR OF THE PROPERTY O		anne ann an aire ann an Ai
usanaladella referencementeriorana como como en de e	ne machine is +/-0.		man common control addition within a control and the		and the second s	0%.	access accessors to the area and accessors to the same published that there are

CITY OF TUCSON METHANE MONITORING FIELD FORM IRVINGTON

GEM ID: 650 5889

Manaometer ID: Dwy 4 476 A

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47 (1WV)

116 (1WV)

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IR001110

IR001125

IR001210

IR001225

Inspector	Name:). -	حدو	······	***************************************	
Data	G	,	1	,	,	_	

/eather Condition: Parkly (1). 80°						9_1_6		}
	aus/2/ C1	~ ~ ~ ~ ° °			Barometric	: Pressure: _	<u> 27. 2</u>	2
Pressure (H₂O) Reading		Purge Times (seconds)	Notes	Probe ID	Pressure (H₂O) Reading	Methane (CH₄) Reading	Purge Times (seconds)	Notes
8	0 x	47 (1WV)		IR001310	3	0,	47 (1WV)	
19/	-O- x	116 (1WV)		IR001325	B	Ø ,	116 (1WV)	
Ð	₽ "	47 (1WV)		IR001410	Ð	0,		
9	O ,	116 (1WV)		IR001425	Ð	₩ «	116 (1WV)	
Ø	O 4	47 (1WV)		to a maximum	ı of 3 well valı	ged a minimu ımes (3WV). <i>I</i>	m of 1 well vo Purge times a	lume (1WV) re based on
\$	~5~ %	116 (1WV)		a GEM 5000 ii	nstrument.			
₩	O .	47 (1WV)		~ U ~	SITU	06		
خد	·O ,	116 (1WV)		ا ن ــ	F 51+	a 091)	
Ø	Ø,	47 (1WV)	3.5					
Ø	D ,	116 (1WV)						
ـ۵ــ	.D- %	47 (1WV)						
- Q-	& 'S	116 (1WV)						
-b"	<i>⊌</i> "	47 (1WV)						
.01	0 4	116 (1WV)						
0	-Ô- x	47 (1WV)						
-8	O ,	116 (1WV)						
Ð	<i>9</i> ,	47 (1WV)	i i					
-63-	Ø ,							
8	SØ %	47 (1WV)						
-0	∂ ,							
	Pressure (H ₂ O) Reading Pressure (H ₂ O) Reading	Pressure (H ₂ O) Reading Readi	Pressure (H ₂ O) Reading Methane (CH ₄) Purge Times (seconds) ### At (1wv) ### At (1wv)	Pressure (H ₂ O) Reading Methane (CH ₄) Reading Seconds Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Pressure (H ₂ O) Reading Purge Times (seconds) Notes Purge Times (seconds) Notes Purge Times (seconds) Note	Pressure (H₂O) Reading Purge Times (seconds) Notes Probe ID ### ### ### ### ### #### #### ####	Pressure (H ₂ O) Reading Probe ID (H ₂ O) R	Pressure Probe D Pressure Methane (CH4) Purge Times (seconds) Notes Probe D Pressure Methane (CH4) Reading Reading Probe D Pressure Methane (CH4) Reading Probe D Pressure Methane (CH4) Reading Probe D Pressure Methane (CH4) Reading Probe D Pressure Probe Probe Probe Pressure Probe Probe	Ondition: Parky Closely See Barometric Pressure: 27.2 Pressure (H,O) Reading Mothane (CH _A) Purge Times (seconds) Notes Probe ID (H _A O) Reading (H _A O) Reading (seconds) Mothane (CH _A) Purge Times (seconds) W W 47 (1WV) IR001310 W x 47 (1WV) ISO



LANDTEC CALIBRATION FORM

DATE:	916/19	TIME:	0600	Ins	spector's Name:	Piecee
MACHINE TYPE:	GEM2000	OTHER	TYPE: GF V	<u>4 8000</u>	MACHINE ID:	<u> </u>
SITE INFO & STORAG	3E:					
File: S:\GA90\DA	TA	.xls		File: S:\GA9	0\DATA	slx.
File: S:\GA90\DA	TA	.xls		File: S:\GA9	0\DATA	.xls
Methane Calibra	tion Gas Used:	15.0% 50.0%	(circle one)	MANUFAC	***************************************	LOT#
		15.0%CH4/15.0%C	06/06/C) H96/C) (C20/C) (C20/C	LANDTEC or	***************************************	1022080
		and the property of the proper	4%02/96%N2;	LANDTEC or	***************************************	
	RES	ET TO FACTORY S	ETTINGS? Y	ES NO		
CALIBRATION GAS		CALIBRA	TION READINGS			RANGES
Zara Mathama(CUI)	Initial City Zero Dood	A NEW THE SECOND STREET, SECOND STRE		J		CU was accorded and 500/
Zero Methane(CH ₄) (Not connected to	Initial CH₄ Zero Read Final CH₄ Zeroed-Ou	-		0	(<u>)</u> %	CH ₄ ranges: 15% and 50% 15% = min-14.0%max-16.0%
calibration gas)						50% = min-48.8%max-51.2%
Span Methane(CH₄)				14	1.6 %	
(Connect to calibration gas)	Final Calibrated CH ₄	Reading		LIS	.0 %	In range? YES
			Esta Company (Company)			
Span Carbon Dioxiode (CO₂)	Initial CO₂ Reading			1	1.7%	CO ₂ ranges: 15% and 35% 15% = min-14.0%max-16.0%
(Stay connected to calibration gas)	Final Calibrated CO ₂	Reading		1.3	7. 7. %	35% = min-14.0%max-16.0% 35% = min-34.2%max-35.8%
cammaton gas)						In range? YES
				Ţ.		NO L
Zero Oxygen (O ₂)	Initial O₂ Reading			<u> </u>	7 0/	Zeroed O₂ range: 0.0%
(Stay connected to calibration gas)	Final Calibrated O ₂ R	eading		0.	3 %	min-0.0%-max-0.2% In range? YES ←
	.			L		NO 🔲
Span Oxygen (O₂)	Oxygen Ambient Air c	nly		20	0.8%	O ₂ range: 20.8%
(Disconnect from calibration gas)						mln-19.8%max-21.8%
campration gasy	Initial O₂ Reading Final Calibrated O₂ R	eading		30		In range? YES
	*					NO 🗀
Calibratica Chast	Mathema (OII) Danii	[\.\.\.\.\.		0,0,0,0,0	3 \ Dandin	⊋0 √% (Read ambient air)
Calibration Check (Check ranges)	Methane (CH₄) Readi	ug [13,0%]	(Read methane gas)	Oxygen (C	O ₂) Reading	70 X % Keag amplent all)
	.op		€, e, j			
Calibration Comple	ete? Yes	NO 🗀	If po, Why?	. /)	······································	
	Inspector Sign	ature:		1/hi		N. C.
	-					

ISSUED BY: QED Environmental Systems, Inc. Services Facility

Date Of Calibration: January 18, 2019 Certificate Number: G505889_10/35684



No. 66916

Page 1 of 2
Approved By Signatory

ANJIEL

QED Environmental Systems, Inc. Services Facility, 2355 Bishop Gircle West, Dexter, MI 48130.

www.qedenv.com

Kyle Racing

Kyle Racine
Laboratory Inspection

Customer:

Geotech Environy(ental/Equipment/Inc

2650 E 40th Ave Denver, CO 80205 USA

Description:

Gas Analyser

Model:

GEM5000

Serial Number:

G505889

Accredited Results:

AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	Advitor and an artist and the contract of the
Methane (CH4)	
Instrument Reading (%)	Uncertainty (%)
4.9	\ 0:42
14.9	0.66
49.6	1.03
	Instrument Reading (%) 4.9

Carbon Dioxide (CO2)						
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)				
5.0	4.8	0.43				
15.0	14.7	0.71				
50,0	49.7	1.19				

	**************************************	National Commence of the Party		The state of the s
		Oxygen ('O2\	
or other lands		The state of the s		
	Certified Gas (%)	Instrument Res	iding (%)	Uncertainty (%)
3	20.7	20.7		0.00
-48	20. December 1	を表現の生まれたままれてよりで1.3	THE RESERVE THE PARTY OF THE PA	い しんしょう しんしょう

Gas cylinders are traceable and details can be provided if requested.

CH4, CO2 readings recorded at:

32.2 °C/89.9 °F

Barometric Pressure:

29.15 "Hg

O2 readings recorded at:

22.6 °C/72.7 °F

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases. All analyzers are calibrated in accordance with our procedure ISP-17 using high purity grade gas.

All calibrations are performed in accordance with ISO 17025 at LANDTEC, an ISO 17025:2005 - accredited service facility through PJLA.

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (S1). Certification only applies to results shown. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 101 IGC Instance. N A

LP015LNANIS

PJLA ACCREDITED CALIBRATION LABORATORY NO. 66916

Certificate Number G505889_10/35684

Page 2 of 2

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with NIST requirements.

Non Accredited results:

Pressure Transducers (inches of water column)							
Transducer	Certified (Low)	Reading (Low)	Certified (High)	Reading (High)	Accuracy		
Static	0"	0"	40"	40,10"	2.0"		
Differential	0"	0"	4"	4.02"	0.7"		

Barometer (mbar)				
Reference	Instrument Reading			
0987 mbar / 29.15 "Hg	0990 mbar / 29.22 "Hg			

Additional Gas Cells						
Gas	Certified Gas (ppm)	Instrument Reading (ppm)				
CO	∕∕501∖∖	507				
H2S	249.5	250				

As received gas check readings are only recorded if the instrument is received in a working condition. Where the instrument is received damaged no reading can be taken.

End of Certificate

Salibration Instance: 101 IGC Idstance: N/A

LPOISLNANIST-I

December 16, 2019

Ms. Lori Ehman City of Tucson Environmental & General Services Department 4004 S. Park Avenue, Bldg. 2 Tucson, Arizona 85714

Re: Summary of Fourth Quarter 2019 Landfill Gas Monitoring at Irvington Landfill

Dear Ms. Ehman:

EEC is pleased to submit the data package for the quarterly landfill gas monitoring at the Irvington Landfill. The monitoring was performed on November 21, 2019 to satisfy the requirement for the fourth quarter 2019 monitoring.

No methane was detected in any probe monitored. Where appropriate, EEC remarked probe nomenclature and lubed sticky padlocks. No unexpected items or problems were noted.

Let us know if you have any questions or concerns.

Sincerely,

Engineering and Environmental Consultants, Inc.

Chad S. Hancock

Field Services Manager

Kevin A. Pierce

Senior Environmental Manager

Irvington Landfill Methane Monitoring Wells (all, quarterly)

Device ID	Date/Time	CH4	CO2	O 2	Balance	Baro. Press.	Rel. Press.
DEALCE ID	Date/IIIIe	%	%	%	%	inches Hg	inches H2O
IR000110	11/21/2019 9:37	0	0.3	20.3	79.4	27.04	0
IR000110	11/21/2019 9:41	0	1.3	19	79.7	27.04	0
IR000123	11/21/2019 9:47	0	0.2	20.4	79.4	27.07	0
IR000215	11/21/2019 9:50	0	0.6	20.1	79.3	27.05	0
IR001010	11/21/2019 9:54	0	1.4	19.4	79.2	27.07	0
IR001010	11/21/2019 9:59	0	1.5	19.1	79.4	27.02	0
IR001110	11/21/2019 10:03	0	0.7	20	79.3	27.06	0
IR001110	11/21/2019 10:08	0	0.3	20.4	79.3	27.03	
IR000310	11/21/2019 10:20	0	1.4	19.4	79.2	27.06	0
**************************************	11/21/2019 10:20	0	3	17.9	79.1	27.06	0
IR000325	a separation of the contract o	0	2	18.8	79.2	27.08	0
IR000410	11/21/2019 10:28	0	4.1	16.9	79	27.08	0
IR000425	11/21/2019 10:32	0	2.9	18.2	78.9	27.08	0
IR000510	11/21/2019 10:37					27.06	0
IR000525	11/21/2019 10:40	0	3.4	17.5	79.1		417-1420-1430-1430-1430-1430-1430-1430-1430-143
IR000610	11/21/2019 10:45	0	1.1	19.8	79.1	27.09	
IR000625	11/21/2019 10:48	0	2.1	18.9	79	27.06	0
IR000710	11/21/2019 10:53	0	0.4	20.7	78.9	27.07	0
IR000725	11/21/2019 10:56	0	0.1	21.1	78.8	27.07	
IR000810	11/21/2019 11:00	0	0.6	20.1	79.3	27.04	***************************************
IR000825	11/21/2019 11:03	0	1	19.2	79.8	27.04	Ö
IR000910	11/21/2019 11:06	0	0.7	20	79.3	27.07	0
IR000925	11/21/2019 11:09	0	1.9	18.9	79.2	27.04	O
IR001410	11/21/2019 11:23	0	0.4	20.4	79.2	27.02	0
IR001425*	11/21/2019 11:27	N/A	N/A	N/A	N/A	N/A	0
IR001310	11/21/2019 11:34	0	0,5	20.2	79.3	27.03	0
IR001325	11/21/2019 11:37	0	0.9	19.6	79.5	27.05	0
IR001210	11/21/2019 11:53	0	0.5	20.3	79.2	27.06	0
IR001225	11/21/2019 11:58	O	0.9	19,6	79.5	27.06	0
Note:		ang sawa a warran harrimonabetin sabbashin sabrimine into				A COMMENSACION RELEASED CONTROL CONTRO	e un carrier administrational desirement de la constant de la cons
GEM5000 ID	: G505889	🖣 garangan salah kacamatan	l by: K. Pier	man to a contract to			Angeles and improved a company of the control of th

GEM5000 was calibrated using 15% methane (see K.P. calibration sheet for this date).

Pressure readings were taken with a Dywer Model 476A digital manometer.

Accuracy of the machine is +/-0.3% at methane concentrations of less than <5.0%.

*The instrument appears to have malfunctioned while saving the reading at IR001425, the field sheet indicates 0% CH4.

CITY OF TUCSON IRVINGTON

METHANE MONITORING FIELD FORM

GEMID: <u>G505889</u>

Manaometer ID : Dyww 476 A

Weather Condition: Claude 51

Inspector Name: Pierce

Date: __ 11 __/_ 2\ / 19

Methane (CH₄)

Reading

Barometric Pressure: ___

Purge Times

(seconds)

47 (1WV)

116 (1WV)

47 (1WV)

Notes

weather C	onaition: <u>C</u>	loudy 5	20172853832238352425		and the state of t
Probe ID	Pressure (H₂O) Reading	Methane (CH ₄) Reading	Purge Times (seconds)	Notes	Probe ID
IR000110	9	Ø *	47 (1WV)		IR001310
IR000125	B	₽ _%	116 (1WV)		IR001325
IR000210	ىد	+ + ×	47 (1WV)		IR001410
IR000225	9	<i>₽</i> ,	116 (1WV)		IR001425
IR000310	-0-	Q ,	47 (1WV)		NOTES: Pro to a maximu
JR000325	9	₩ %	116 (1WV)		a GEM 5000
IR000410	<i>-</i> ₩	~G~ %	47 (1WV)		or off s
IR000425	4	€ _%	116 (1WV)		0-74 3
IR000510	Ø	-&r %	47 (1WV)		
IR000525	8	-ंठ _%	116 (1WV)		
IR000610	ø	Ø *	47 (1WV)		
IR000625	Ð	-9° ×	116 (1WV)		
IR000710	Đ	<i>\text{\tin}\text{\tetx{\text{\tetx{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\ti}\}\text{\text{\text{\text{\text{\text{\text{\text{\tex{\tex</i>	47 (1WV)		
IR000725	Ð	Ø "	116 (1WV)		· · · · · · · · · · · · · · · · · · ·
IR000810	Ð	Ø _*	47 (1WV)		
IR000825	Ø	Ø ∗	116 (1WV)		
IR000910	Ø	& *	47 (1WV)		
IR000925	Ð	₽ _*	116 (1WV)		
IR001010	9		47 (1WV)		
IR001025	₩.	₩ "	116 (1WV)		•
IR001110	Ð	e .	47 (<u>1W</u> V)		
IR001125	Ð-	<i>₽</i> "	116 (1WV)		
IR001210	e	· *	47 (1WV)		
IR001225	20	Ø ,	116 (1WV)		

% 116 (1WV) OTES: Probes will be purged a minimum of 1 well volume (1WV) o a maximum of 3 well volumes (3WV). Purge times are based on GEM 5000 instrument.

on site 0930 off sita 1230

Pressure

(H₂O) Reading

0

O

6



LANDTEC CALIBRATION FORM

Egisten Andrew Programme (1980) K. St. 165 (1999) A programme (1980) Andrew (1980) And	reach, and the kind of the second			and the state of t		
DATE	= 11/21/18	TIME	: <u>0829</u>	, , , , , , , , , , , , , , , , , , ,	inspector's Nam	· Pierce
MACHINE TYPE:	GEM2000	OTHER ,	TYPE. GE	MCJOO	MACHINE I	0: G505889
SITE INFO & STORA	NGE:					The second secon
File;\$*\GA90\D/	ATA	xls		File. S \C	GA90\DATA	xls
File \$:\GA90\D/	ATA	xis		File. SAC	A90\DATA	,xis
Methane Calibr	ation Gas Used:	/18.0% 50.0%	(circle one)	ARRAGE	AOTUER	
		15.0%CH4/15.0% 150.0%CH4/35.0%	CO2/0.0% (024)	LANDTEC LANDTEC	OF CALGAZ OF CALGAZ OF CALGAZ	130 122780
	RES	ET TO FACTORY	SETTINGS?	YEST	112,550,000	namen og skalle skal
CALIBRATION GAS			ATION READING			
Zoro Mothema(CH)	V	7.00				RANGES
(Not connected to calibration gas)	Initial CH₄ Zero Read Final CH₄ Zeroed-Ou	*			D %	CH ₄ ranges: 15% and 50%
Span Methane(CH ₄)	ia –			1	14 (%	50% = m.n-48 81e-max-51 2%
(Connect to calibration gas)	Final Calibrated CH ₄ I	Reading		900 - 3500 - 3500	15.0 %	In range? YES
Span Carbon Dioxiode (CO ₂) (Stay connected to calibration gas)	Initial CO₂ Reading Final Calibrated CO₂ I	Reading		-	4,15 %	CO ₂ ranges: 15% and 35% 15% = min-14 0%-max-16 0% 35% = min-34.2%-max-35.8% In range? YES
Zero Oxygen (O ₂)	Initial O ₂ Reading		and the state of t	F 77. 23	A 1	Zeroed O ₂ range: 0.0%
calibration gas)	Final Calibrated O ₂ Re	ading		197 4780-18 (E.S.	0. \ % P %	In range? YES
Span Oxygen (O₂)	Oxygen Ambient Air or	ıly			20.8%	NO ;
	Initial O₂ Reading Final Calibrated O₂ Re	ading		2	1.0 %	min-198%max-21 8% In range? YES
	The second section of the second section of the second second section of the second se	portugalis				
Calibration Check (Check ranges)	Methane (CH₄) Readin	9 [35.0%]	Read methane gas)	Oxygen	(O ₂) Reading	Q.), [%] (Read ambient air)
alibration Comple	te? Yes		no, Why?	00		
	шареског эідпа	wre:	7444 <u> </u>	1600	Marry documentations	

ISSUED BY: QED Environmental Systems, Inc. Services Facility

Date Of Calibration: January 18, 2019 Certificate Number: G505889_10/35684



No. 66916

Page 1 of 2

QED Environmental Systems, Inc. Services Facility, 2355 Bishop Circle West, Denter, MI 48130.

www.gedeny.com

Laboratory Inspection

Customer:

Geotech Environplental Equipment Inc

2650 E 40th AVO Denver, CQ 80205 USA

Description;

Cas Analyser

Model:

GEM5000

Sérial Number: G505889

Accredited Remits:

the contract of the contract o		al all the first of the said and a
	Methane (CH4)	
Certinel Gar (%)	Instrument Reading (%)	Uncertainty (%)
''/5 Q\'	4.9	V0 42
15.0	14.9	0.66
50.0	49.6	1.03

Carbon Dioxide (CO2)						
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)				
5.0	4.8	0.43				
15.0	14.7	0.71				
50.0	49.7	1.19				

The second secon	Oxygen (O	71	
And the second s	VATACILIV	41	
· · · · · · · · · · · · · · · · · · ·	A Part of the Particular Property of the Party of the Par	10/ L Y1	COLUMN TO THE PROPERTY OF THE
Certified Gas (%)	i criticament restor	## (%) Unc	ertainty (%)
20.7	on the second se		
2019/100	70.74	The state of the s	
A STATE OF THE PARTY OF THE PAR	ASSESSMENT TO A PARTY OF THE PROPERTY OF THE P	AND REAL PROPERTY AND A SECURITION OF THE PROPERTY OF THE PROP	

Gas cylinders are traceable and details can be provided if requested.

CH4, CO2 readings recorded at:

32.2 °C/89.9 °F

Barometric Pressure

29.15 "Hg

O2 readings recorded at:

22.6 °C/72.7 °F

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases. All analyzers are calibrated in accordance with our procedure ISP-17 using high purity grade gas.

All calibrations are performed in accordance with ISO 17025 at LANDTEC, an ISO 17025:2005 - accredited service facility through PJLA.

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (SI) Certification only applies to results shown. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance 101 IGC Instance N A LPOISLNANGE

PILA ACCREDITED CALIBRATION LABORATORY NO. 66916

Certificate Number G505889_10/35684

Page 2 of 2

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with NIST requirements.

Non Accredited results:

Pressure Transducers (inches of water column)							
Transducer	Certified (Low)	Reading (Low)	Certified (High)	Reading (High)	Accuracy		
Static	0"	0"	40"	40.10"	2.0"		
Differential	0"	0"	4"	4.02"	0.7"		

Barometer (mbar)				
Reference	Instrument Reading			
0987 mbar / 29.15 "Hg	0990 mbar / 29.22 "Hg			

Additional Gas Cells					
Gas	Certified Gas (ppm)	Instrument Reading (ppm)			
CO	∕ ?'501'∖∖	507			
H2S	249,5 ♠	250			

As received gas check readings are only recorded if the instrument is received in a working condition. Where the instrument is received damaged no reading can be taken:

End of Certificate

Cultivation Instance: 101 IOC histories N/A

LPOISLNÄNDST-1.1

WWW.LANDTECNA.COM

QED Instrument Services Facility - 2355 Bishop Circle West, Dexter, Mt. 48130

Appendix B

Landfill Site Inspection Reports

CITY OF TUCSON ENVIRONMENTAL SERVICES QUARTERLY CLOSED LANDFILL INSPECTION REPORT IRVINGTON LANDFILL

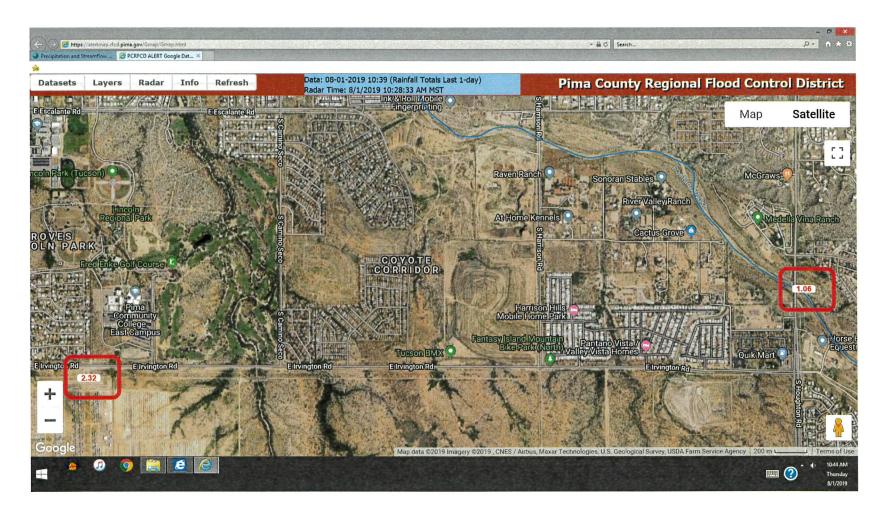
INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION		
Perimeter Security Fence and Gate (holes, structure issues)	The concrete footers of several fence poles along the southern and eastern perimeter fence are exposed and being undermined by runoff.	Fill and compact soil around the fence pole footers.		
Inspection Roads (washouts, obstructions, potholes)	Erosion rills observed along the southern and western inspection road.	Fill and compact the erosion area.		
Storm Water Controls (berms, let downs, spillways)	Sediment accumulating in top section of the basin drainage channel.	Remove sediment to allow flow of stormwater to continue into channel and onto basin.		
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancies observed	Not Applicable		
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancies observed	Not Applicable		
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	No gas extraction system on-site.	Not Applicable		
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	No gas extraction system on-site.	Not Applicable		
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancies observed	Not Applicable		
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancies observed	Not Applicable		
Remediation Equipment (compound fence, erosions, leaks)	No remediation equipment on-site	Not Applicable		
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	No illegal dumping observed	Not Applicable		
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No new land uses observed	Not Applicable		
INSPECTOR SIGNATURE		Date: Feb. 14, 2019		
	Thomas Ryan, EGSD Engineering Manager	Quarter: 1		

CITY OF TUCSON ENVIRONMENTAL SERVICES QUARTERLY CLOSED LANDFILL INSPECTION REPORT IRVINGTON LANDFILL

INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	The concrete footers of several fence poles along the southern and eastern perimeter fence are exposed and being undermined by runoff.	Fill and compact soil around the fence pole footers.
Inspection Roads (washouts, obstructions, potholes)	Erosion rills observed along the southern and western inspection road.	Fill and compact the erosion area.
Storm Water Controls (berms, let downs, spillways)	Sediment accumulating in top section of the basin drainage channel.	Remove sediment to allow flow of stormwater to continue into channel and onto basin.
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancies observed	Not Applicable
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancies observed	Not Applicable
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	No gas extraction system on-site.	Not Applicable
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	No gas extraction system on-site.	Not Applicable
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancies observed	Not Applicable
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancies observed	Not Applicable
Remediation Equipment (compound fence, erosions, leaks)	No remediation equipment on-site	Not Applicable
lilegal Dumping (including overgrown vegetation, homeless camps, vectors)	No illegal dumping observed	Not Applicable
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No new land uses observed	Not Applicable
INSPECTOR SIGNATURE		Date: May 15, 2019
	Thomas Ryan, EGSD Engineering Manager	Quarter: 2

INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
Inspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE Rainfall (1.06")	DATE 7/31/19

7/31/19 Rainfall Harrison and Irvington Landfills

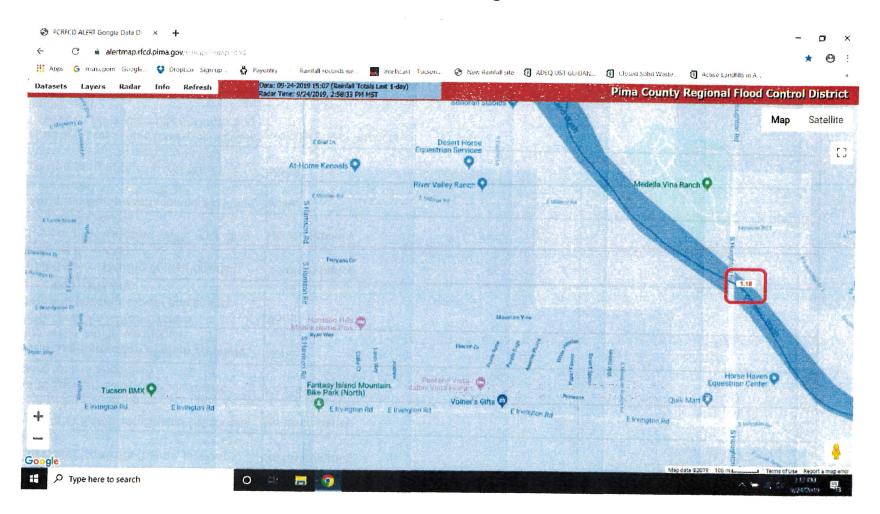


CITY OF TUCSON ENVIRONMENTAL SERVICES QUARTERLY CLOSED LANDFILL INSPECTION REPORT IRVINGTON LANDFILL

INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No Discrepancy	None needed
Inspection Roads (washouts, obstructions, potholes)	Major erosion on south perimeter road. Minor erosional rills on west perimeter road.	Identify corrective action after conclusion of monsoon season
Storm Water Controls (berms, let downs, spillways)	No Discrepancy	None needed
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No Discrepancy	None needed
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No Discrepancy	None needed
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	None needed
Compound (fencing, blower equipment, flare, carbon canisters)	None	None needed
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No Discrepancy	None needed
Groundwater Monitoring Wells (including bollards, vaults, locks)	No Discrepancy	None needed
Remediation Equipment (compound fence, erosions, leaks)	None	None needed
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	None needed
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No Changes or Impacts	None needed
INSPECTOR SIGNATURE		Date: August 13, 2019
-	Thomas Ryan, EGSD Engineering Manager	Third Quarter Inspection

INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
nspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacented uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE	EVENT TYPE Rainfall (1.81")	DATE: 9/26/19 (Event 9/24 &25/19)

9/24/19 Rainfall Event Irvington Landfill



INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
Inspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road	Monitor and assess during annual inspection
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	·
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE Wind	DATE: 11-13-19 (Event 11-12-19)

Tucson, AZ 🏚

Tucson International

② 2:11 PM MST on November 12, 2019 (GMT -0700)

Weather History for KTUS - November, 2019

November	
12	
2019	

View Tuesday, November 12, 2019

Daily	Weekly	Monthly	Custom				
			and the second s	Actual	Average	Record	de Mir Posterello i ser
Temperatu	re						
Mean Tem	perature			64 °F	61 °F		
Max Temp	erature			73 °F	75 °F	90 °F (1999)	
Min Tempe	erature			55 °F	47 °F	25 °F (1898)	
Degree Da	ıys						
Heating De	egree Days			2	5		
Month to d	ate heating deg	ree days			43		
Since 1 Ju	ly heating degre	e days			67		
Cooling De	egree Days			0	1		
Month to d	ate cooling deg	ree days			21		
Year to da	te cooling degre	e days			3140		
Growing D	egree Days			14 (Base 50)			

Moisture

Nov. 12, 2019		Rise	Set			
Civil Twilight	The second secon	6:24 AM MST		5:51 PM MST		
Nautical Twilight		5:54 AM MST 6:20 PM MST				
Astronomical Twilight		5:25 AM MST 6:49 PM MST				
Moon		5:53 PM MST	6:47 AM MST			
Length of Visible Light		11h 27m				
Length of Day		10h 35m	and an administrative confirmation of the second section of the second section (second section).			
Full, 100% of the Moon is	luminated					
Today	Nov 19	Nov 26	Dec 3	Dec 11		
Full	Last Quarter	New	First Quarter	Full		

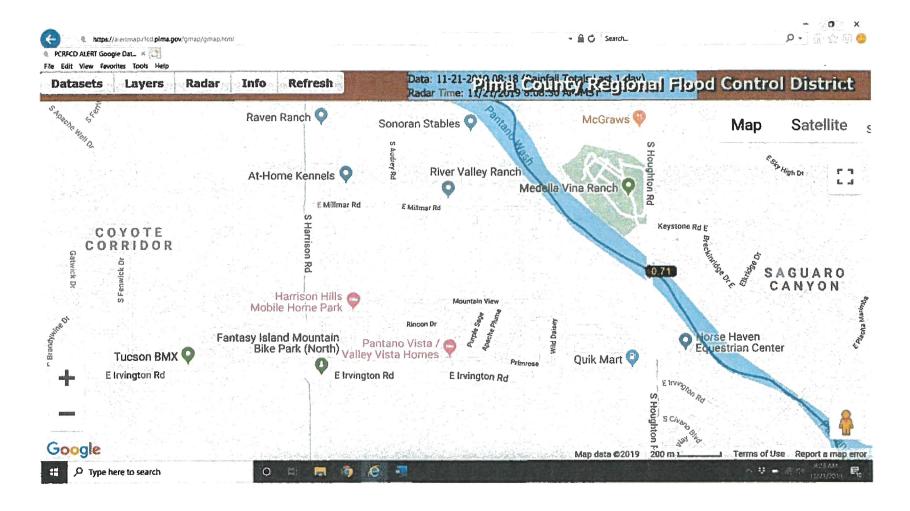
Hourly Weather History & Observations

Time (MST)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:53 AM	61.0 °F	41.0 °F	48%	30.02 in	10.0 mi	SE	4.6 mph	-	N/A		Mostly Cloudy
	METAR H	KTUS 1207	53Z 14004KT	10SM FEW0	90 BKN120 1	6/05 A30	12 RMK AO2	SLP165 T016	610050		
1:53 AM	59.0 °F	42.1 °F	53%	30.03 in	10.0 mi	SE	5.8 mph	-	N/A		Clear
	METAR H	KTUS 1208	53Z 14005KT	10SM CLR 1	5/06 A3012 F	RMK AO2	SLP167 T01	500056 51006	3		
2:53 AM	55.9 °F	42.1 °F	60%	30.02 in	10.0 mí	sw	5.8 mph	-	N/A		Clear
	METAR	KTUS 1209	53Z 23005KT	10SM CLR 1	3/06 A3011 F	RMK AO2	SLP165 T018	330056			
3:53 AM	63.0 °F	46.0 °F	54%	30.01 in	10.0 mi	ESE	10.4 mph	**	N/A		Clear
	METAR I	CTUS 1210	53Z 11009KT	10SM CLR 1	7/08 A3012 F	RMK AO2	SLP163 T017	20078			
4:53 AM	63.0 °F	44. 1 °F	50%	30.03 in	10.0 mi	ESE	16.1 mph	-	N/A		Clear
	METAR	CTUS 1211	53Z 11014KT	10SM CLR 1	7/07 A3013 R	RMK AO2	SLP169 T017	20067 10172	20128 53	004	
5:53 AM	60.1 °F	41.0 °F	49%	30.06 in	10.0 mi	ESE	13.8 mph	20.7 mph	N/A		Clear
	METAR I	KTUS 1212	53Z 12012G1	8KT 10SM C	_R 16/05 A30	16 RMK /	AO2 SLP179	T01560050			
6:53 AM	60.1 °F	39.9 °F	47%	30.09 in	10.0 mi	SE	12.7 mph	•	N/A		Clear

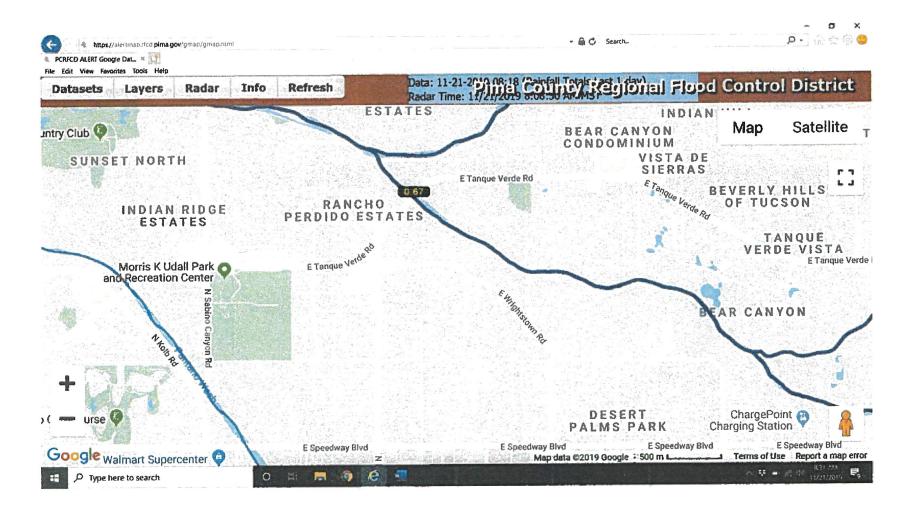
	Time (MST)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
		METAR	CTUS 1213	53Z 13011KT	10SM CLR 1	6/04 A3018 F	RMK AO2	SLP188 T018	560044			
	7:53 AM	60.1 °F	39.0 °F	46%	30.11 in	10.0 mi	ESE	20.7 mph	-	N/A		Clear
		METAR	CTUS 1214	53Z 12018KT	10SM CLR 1	6/04 A3019 F	RMK AO2	SLP194 T01	560039 5101	7		
	8:53 AM	62.1 °F	37.0 °F	39%	30,12 in	10.0 mi	SE	23.0 mph	35,7 mph	N/A		Clear
		METAR I	CTUS 1215	53Z 13020G3	1KT 10SM CI	LR 17/03 A30	20 RMK /	AO2 PK WND	13031/1547	SLP198 T	01670028	
	9:53 AM	64.9 °F	37.9 °F	37%	30.10 in	10.0 mi	ESE	23.0 mph	35.7 mph	N/A		Clear
		METAR I	CTUS 1216	53Z 12020G3	1KT 10SM CI	LR 18/03 A30	19 RMK /	AO2 PK WNE	13035/1618	SLP193 To	01830033	
1	/10:53 AM	66.9 °F	37.9 °F	34%	30.08 in	10.0 mi	ESE \	29.9 mph	43.7 mph	N/A		Clear
		METAR I 58007	CTUS 1217	53Z 12026G3	8KT 10SM CI	LR 19/03 A30)17 RMK /	AO2 PK WNE	12038/1752	SLP186 TO	01940033 1	0194 20150
	11:53 AM	70.0 °F	37.0 °F	30%	30.06 in	10.0 mi	SE	28.8 mph	38.0 mph	N/A		Clear
		METAR I	CTUS 1218	53Z 13025G3	3KT 10SM CI	LR 21/03 A30)16 RMK /	AO2 PK WND	12034/1842	SLP180 T	02110028	
1	12:53 PM	72.0 °F	37.0 °F	28%	30.03 in	10.0 mi	ESE	26.5 mph	36.8 mph	N/A		Clear
		METAR I	CTUS 1219	53Z 12023G3	2KT 10SM CI	LR 22/03 A30	13 RMK	402 PK WNE	13036/1904	SLP169 To	02220028	•
	1:53 PM	73.0 °F	36.0 °F	26%	30.01 in	10.0 mi	ESE	18.4 mph	29.9 mph	N/A		Clear
		METAR I	CTUS 1220	53Z 12016G2	6KT 10SM C	LR 23/02 A30	010 RMK	AO2 PK WND	12032/1955	SLP161 T	02280022 5	8022

INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
	South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE: Rainfall (0.71")	DATE: 11/20/19

Harrison/Irvington Rain Event 24 hours 11/20/19 8AMto 11/21/19 8AM

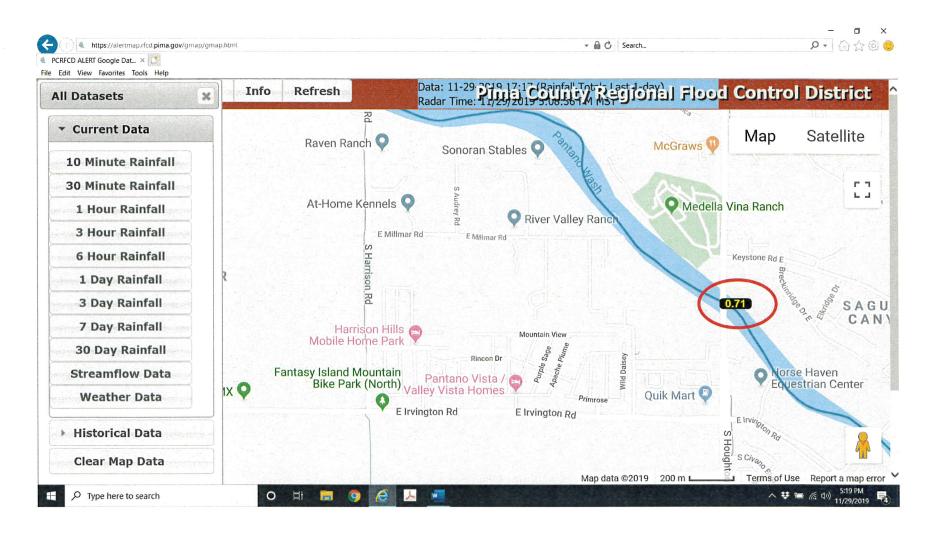


Mullins Rain Event 24hrs printed 11-21-19 8AM



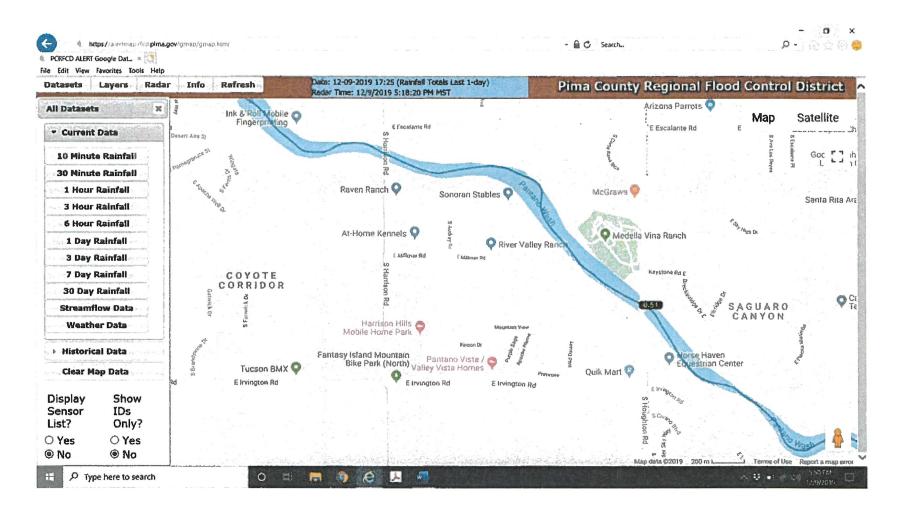
INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
Inspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Increasing erosional rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	:
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	,
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE: Rainfall (0.71")	DATE: 11/28 & 29/19

Rainfall Event 11-28 & 29 Harrison and Irvington Last 24 hours printed 11-29-19 @5:21 PM

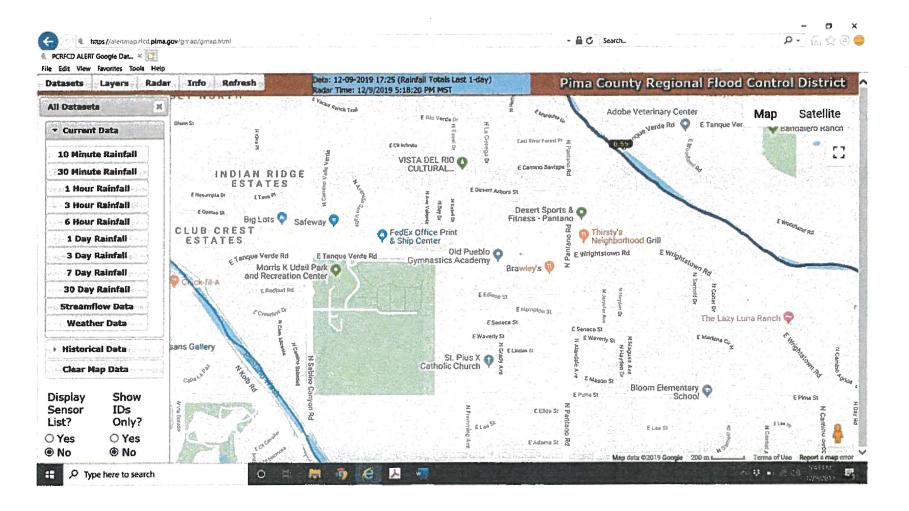


INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
Inspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Minor erosional rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE Rainfall (0.51")	DATE: 12/8/19

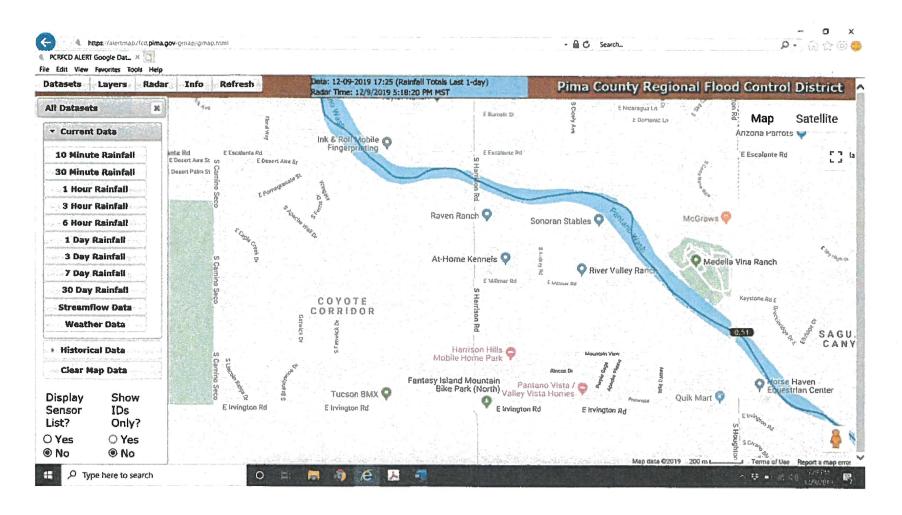
Rain Event 12-8-19 Harrison and ILF



12-8-19 Rain Event Mullins



Rain Event 12-8-19 Harrison and Irvington



INSPECTION ITEM	DISCREPANCY	CORRECTIVE ACTION
Perimeter Security Fence and Gate (holes, structure issues)	No discrepancy	
Inspection Roads (washouts, obstructions, potholes)	South perimeter road impassible (erosion and wash). Increasing rills on west perimeter road	Re-evaluate after conclusion of Monsoon season.
Storm Water Controls (berms, let downs, spillways)	No discrepancy	
Storm Water Retention Basins (washouts, excessive silt in, holding water)	No discrepancy	
Landfill Earthen Cap (washouts, trash showing, debris and trash)	No discrepancy	
Landfill Gas Extraction System Wellfield (piping, wells, vaults, washouts)	None	
Landfill Gas Extraction System Compound (fencing, blower equipment, flare, carbon canisters)	None	
Landfill Gas Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Groundwater Monitoring Wells (including bollards, vaults, locks)	No discrepancy	
Remediation Equipment (compound fence, erosions, leaks)	None	
Illegal Dumping (including overgrown vegetation, homeless camps, vectors)	None	
Neighboring Land Uses (changing adjacent land uses that will or currently are impacting the landfill site)	No changes or impacts	
INSPECTOR SIGNATURE Kevin Pierce, EEC	EVENT TYPE: Wind	DATE: 12/18/19

Schiller Park, IL 18 °F Fair Boston, MA 🛕 35 *F Cloudy

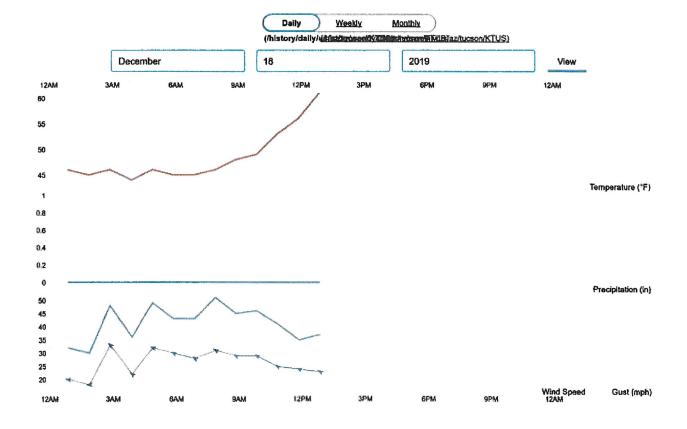
32.12 N, 110.94 W

Tucson, AZ Weather History *

🌼 61° TUCSON INTERNATIONAL AIRPORT STATION (WEATHER/US/AZ/TUCSON/KTUS?CM_VEN=LOCALWX_PWSDASH) | CHANGE 🗸

HISTORY (/HISTORY/DAILY/US/AZ/TUCSON/KTUS)

- · TODAY (/WEATHER/US/AZ/TUCSON/KTUS)
- · HOURLY I/HOURLY/US/AZ/TUCSON/KTUS)
- 10-DAY (/FORECAST/US/AZ/TUCSON/KTUS)
- · CALENDAR (/CALENDAR/US/AZ/TUCSON/KTUS)
- HISTORY (/HISTORY/DAILY/US/AZ/TUCSON/KTUS)
- WUNDERMAP (WUNDERMAP?LAT=32.12&LON=-110.94)



Summary

Temperature (* F)	Actual	Historic Avg.	Record	•
High Temp	######################################	64	80	42.4.19911111111111111111111111111111111
Low Temp	44	39	23	
Day Average Temp	48.48	51		
Precipitation (Inches)	Actual	Historic Avg.	Record	
Precipitation (past 24 hours from 07:53:00)	0.00	0.03	E	

Temperature (° F)	Actual	Historic Avg.	Record	•
Dew Point (* F)	Actual	Historic Avg.	Record	A
Dew Point	7.15	•	•	
High	14	-	-	
Low	0	•		
Average	7.15		•	
Wind (MPH)	Actual	Historic Avg.	Record	*
Max Wind Speed	ария чине «эти стот природительного судетне дине учествення достот селя нуте не достоння и на мажды и основня достот основня для достот основня достот осно	The state of the s	T	
Visibility	10			
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record	•
Sea Level Pressure	27.41	*		
Astronomy	Day Length	Rise	Set	
Actual Time	изгламиниция до таки подел в неговарине почение на почение и чествение почение на почен	7:20 AM	5:23 PM	
Civil Twilight		6:53 AM	5:50 PM	
Nautical Twilight		6:22 AM	6:20 PM	
Astronomical Twilight		5:52 AM	6:50 PM	
Moon: waning crescent		•	•	

Daily Observations

12:53 AM	46 °F	2 *F	16%	E	20 mph	32 mph	27.41 in	0.0 in	Fair
1:53 AM	45 °F	2 °F	17 %	E	18 mph	30 mph	27.40 in	0.0 in	Fair
2:53 AM	46 °F	0 °F	15%	SE	33 mph	48 mph	27.40 in	0.0 in	Partly Cloudy / Windy
3:53 AM	44 'F	3 *F	18%	SE	22 mph	36 mph	27.39 ln	0.0 tn	Partly Cloudy / Windy
4:53 AM	46 °F	4 *F	18%	ESE	32 mph	49 mph	27.37 in	0.0 ln	Partly Cloudy / Windy
5:53 AM	45 °F	7 °F	21 %	ESE	30 mph	43 mph	27.37 in	0.0 in	Partly Cloudy / Windy
6:53 AM	45 °F	8 °F	22 %	ESE	28 mph	43 mph	27.37 in	0.0 kn	Mostly Cloudy / Windy
7:53 AM	46 °F	8 *F	21 %	ESE	31 mph	51 mph	27.37 in	0.0 in	Mostly Cloudy / Windy
8:53 AM	48 °F	10 'F	22 %	ESE	29 mph	45 mph	27.39 in	0.0 in	Mostly Cloudy / Windy
9:53 AM	49 °F	10 °F	21 %	ESE	29 mph	46 mph	27.38 in	0.0 in	Partly Cloudy / Windy
10:53 AM	53 'F	12 *F	20 %	SE	25 mph	41 mph	27.36 in	0.0 in	Fair / Windy
11:53 AM	56 °F	13 °F	18%	ESE	24 mph	35 mph	27.33 in	0.0 in	Fair / Windy
12:53 PM	61 'F	14 'F	16%	ESE	23 mph	37 mph	27.29 in	0.0 in	Partly Cloudy / Windy
· Bill Circum Page	u desta presentado de esta	or the Spacker of the	grand by the control	AUXICUL	DEPOSIT A PROPERTY	(4) (1) (4) (4) (4)	CHAPSEC LAN	ALC: HEAVEY	SKI BURNERSON

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