



نتائج فحوصات كيميائية في مكب نفايات الفخاري الصحي

المياه الجوفية (عدد 4 أبار)
عصارة النفايات (بركة العصارة)
مياه بركة تجميع مياه الأمطار

19.10.2020



Date: 19-10-2020

Name: *Municipal Development & lending Fund (MDLF)*

Result Report
El Fkhari area landfill

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BZLET

Introduction

On 11 Oct. 2020, Birzeit Laboratory for environmental Testing (BZLET) has conducted the testing samples as part of the assignment contracted between (BZLET) and Municipal Development & lending Fund (MDLF).

Bir zeit Laboratory was contracted for analysis of water samples from the monitoring wells and leachate that are located around El Fukhari area and the groundwater wells located in transfer statins in KhanUnis and Rafah. , BZLET staff collected water samples from the assigned areas, all analysis parameters were selected by MDLF staff.

Methodology

MDLF staff assigned the required parameters for analysis of the collected samples surrounding the Al Fukhary Sanitary landfill area. The assigned parameters chosen for analysis were selected by MDLF specialists, as mentioned in **table 1** for water samples and leachate sample.

Table 1: The assigned parameters for water sample

Parameter for water sample	Unit
pH	-
EC	$\mu\text{S}/\text{cm}$
TDS	mg/l
TSS	mg/l
BOD	mg/l
COD	mg/l
TKN	mg/l
NH ₄ -N	mg/l
NO ₃	mg/l
Total N	mg/l
PO ₄ -P	mg/l
SO ₄	mg/l
K	mg/l
Na	mg/l
Cl	mg/l
FC	mg/l
Cd	mg/l
Zn	mg/l
Pb	mg/l
Cu	mg/l



Hg	mg/l
Cr	mg/l
As	mg/l
Al	mg/l
Fe	mg/l
Ni	mg/l
Mn	mg/l
CN	mg/l

The sampling precautions and protocols and analysis methodology were used as described in the references

1. *Standard methods for the examination of water and wastewater, 23th edition.*
2. *The testing of water, E.merck, Darmstadt.*

Citation of the methodology used for sampling, preservation and analysis are described in table 2

Table 2: Methods and their detection limits (APHA AWWA) 23thEd

Parameter	Method No. and Name	Detection limit
pH	4500-H ⁺ B. electrical method	-
Conductivity	2510 B: Lab method	1 μ S/cm
BOD	5210B. 5-Days BOD test	5mg/l
COD	5220D. Closed reflux colorimetric method	10mg/l
TKN	4500-NOrg Macro Kjeldahal method	-
NH ₃ -N	Nesslerization method	0.03mg/l
NO ₃	Photometrically by means of sodium salicylate method	0.1 mg/l
PO ₄ -P	4500-P C.Vanadomolybdophosphoric acid colorimetric method	0.2 mg/l
SO ₄	4500-SO ₄ ⁻² E. Turbidimetric method	1 mg/l
K	3500-K B. Flame photometric method	0.1 mg/l
Na	3500-Na B. Flame Emission photometric method	0.1 mg/l
Chloride	4500-Cl B Argentometric method	1 mg/l
FC	9222B. E Standard fecal coliform membrane filter procedure	-
Metals and heavy metals (Cd, Zn, Pb, Cu, Hg, Cr, As, Al, Fe, Ni, Mn, CN)	3120B. Inductivity coupled plasma (ICP)method	-



Results

Date: 19-10-2020

Code: GW-1779-10-020

Name: MDLF

Type of Sample: Ground Water Sample

Source: Well #1 El Fukhari area

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.39
EC	μS/cm	13950
TDS	mg/l	9000
TSS	mg/l	98
BOD	mg/l	<10
COD	mg/l	80
TKN	mg/l	0.5
NH ₄ -N	mg/l	0.2
NO ₃	mg/l	42
Total N	mg/l	10
PO ₄ -P	mg/l	0.4
SO ₄	mg/l	2200
K	mg/l	19
Na	mg/l	2550
Cl	mg/l	2950
FC	CFU/100ml	Nil
Cd	mg/l	< 0.002
Zn	mg/l	0.01
Pb	mg/l	< 0.005
Cu	mg/l	<0.0006
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND

ND: Not Detected

Date: 11-10-2020

Code: GW-1780-10-020

Name: MDLF

Type of Sample: Ground Water Sample

Source: Well #2 El Fukhari area

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.52
EC	μS/cm	9000
TDS	mg/l	5900
TSS	mg/l	100
BOD	mg/l	<10
COD	mg/l	20
TKN	mg/l	Nil
NH ₄ -N	mg/l	Nil
NO ₃	mg/l	46
Total N	mg/l	10.5
PO ₄ -P	mg/l	0.6
SO ₄	mg/l	1700
K	mg/l	9
Na	mg/l	2200
Cl	mg/l	1640
FC	CFU/100ml	Nil
Cd	mg/l	< 0.002
Zn	mg/l	0.01
Pb	mg/l	< 0.005
Cu	mg/l	<0.0006
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND



Date: 11-10-2020

Code: GW-1781-10-020

Name: MDLF

Type of Sample: Ground Water Sample

Source: Well #3 El Fukhari area

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.29
EC	μS/cm	19180
TDS	mg/l	13200
TSS	mg/l	99
BOD	mg/l	18
COD	mg/l	120
TKN	mg/l	Nil
NH ₄ -N	mg/l	Nil
NO ₃	mg/l	44
Total N	mg/l	10
PO ₄ -P	mg/l	0.5
SO ₄	mg/l	3300
K	mg/l	16
Na	mg/l	3800
Cl	mg/l	4360
FC	CFU/100ml	Nil
Cd	mg/l	< 0.002
Zn	mg/l	0.01
Pb	mg/l	< 0.005
Cu	mg/l	0.001
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND



Date: 19-10-2020

Code: GW-1782-10-020

Name: MDLF

Type of Sample: Ground Water Sample

Source: Well #4 El Fkhari area

Date of sampling: 19-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.529
EC	μS/cm	16000
TDS	mg/l	10000
TSS	mg/l	180
BOD	mg/l	18
COD	mg/l	50
TKN	mg/l	Nil
NH ₄ -N	mg/l	Nil
NO ₃	mg/l	56
Total N	mg/l	13
PO ₄ -P	mg/l	0.5
SO ₄	mg/l	1450
K	mg/l	8
Na	mg/l	3000
Cl	mg/l	3660
FC	CFU/100ml	8
Cd	mg/l	< 0.002
Zn	mg/l	0.01
Pb	mg/l	< 0.005
Cu	mg/l	0.001
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND



Date: 19-10-2020

Code: W-1783-10-020

Name: MDLF

Type of Sample: Storm water Lagoon

Source: El Fukhari area

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.5
EC	μS/cm	1800
TDS	mg/l	1100
TSS	mg/l	15
BOD	mg/l	<10
COD	mg/l	30
TKN	mg/l	2
NH ₄ -N	mg/l	2
NO ₃	mg/l	Nil
Total N	mg/l	2
PO ₄ -P	mg/l	0.6
SO ₄	mg/l	300
K	mg/l	7
Na	mg/l	350
Cl	mg/l	340
FC	CFU/100ml	10
Cd	mg/l	0.002
Zn	mg/l	< 0.001
Pb	mg/l	< 0.005
Cu	mg/l	0.001
Hg	mg/l	ND
Cr	mg/l	<0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	0.01
Mn	mg/l	< 0.002
CN	mg/l	ND



Date: 19-10-2020

Code: GW-1784-10-020

Name: MDLF

Type of Sample: Ground Water Sample-

Source: Transfer Station Well- Khan Yunis

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.4
EC	μS/cm	700
TDS	mg/l	400
TSS	mg/l	Nil
BOD	mg/l	<10
COD	mg/l	20
TKN	mg/l	Nil
NH ₄ -N	mg/l	Nil
NO ₃	mg/l	88
Total N	mg/l	20
PO ₄ -P	mg/l	0.4
SO ₄	mg/l	68
K	mg/l	3
Na	mg/l	100
Cl	mg/l	90
FC	CFU/100ml	Nil
Cd	mg/l	< 0.002
Zn	mg/l	<0.001
Pb	mg/l	< 0.005
Cu	mg/l	<0.0006
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	< 0.007
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND



Date: 19-10-2020

Code: GW-1785-10-020

Name: MDLF

Type of Sample: Ground Water Sample

Source: Transfer Station Well-Rafah

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	7.25
EC	μS/cm	4180
TDS	mg/l	2600
TSS	mg/l	Nil
BOD	mg/l	<10
COD	mg/l	25
TKN	mg/l	Nil
NH ₄ -N	mg/l	Nil
NO ₃	mg/l	185
Total N	mg/l	42
PO ₄ -P	mg/l	1
SO ₄	mg/l	80
K	mg/l	8
Na	mg/l	400
Cl	mg/l	820
FC	CFU/100ml	Nil
Cd	mg/l	< 0.002
Zn	mg/l	<0.001
Pb	mg/l	< 0.005
Cu	mg/l	<0.0006
Hg	mg/l	ND
Cr	mg/l	< 0.0007
As	mg/l	ND
Al	mg/l	0.002
Fe	mg/l	0.03
Ni	mg/l	< 0.002
Mn	mg/l	< 0.002
CN	mg/l	ND

Date: 19-10-2020

Code: L-1786-10-020

Name: MDLF

Type of Sample: Leachate Sample

Source: Leachate treatment lagoon, El Fukhari area

Date of sampling: 11-10-2020

Table of Results

Parameters	Unit	Results
pH	-	8.46
EC	$\mu\text{S}/\text{cm}$	25800
TDS	mg/l	17000
TSS	mg/l	950
BOD	mg/l	550
COD	mg/l	3000
NH ₄ -N	mg/l	570
NO ₃	mg/l	0.5
Total N	mg/l	750
PO ₄ -P	mg/l	72
SO ₄	mg/l	170
Cl	mg/l	5500
FC	CFU/100ml	7×10^4
Cd	mg/l	0.08
Zn	mg/l	2.4
Pb	mg/l	0.005
Cu	mg/l	0.85
Hg	mg/l	ND
Cr	mg/l	0.23
As	mg/l	ND
Al	mg/l	1.27
Fe	mg/l	3
Ni	mg/l	0.58
Mn	mg/l	0.2
CN	mg/l	ND

Date: 19-10-2020

Code: L-1787-10-020

Name: MDLF

Type of Sample: Leachate Sample

Source: Leachate collection pool, El Fukhari area

Date of sampling: 11-03-2020

Table of Results

Parameters	Unit	Results
pH	-	8.08
EC	$\mu\text{S}/\text{cm}$	33000
TDS	mg/l	22000
TSS	mg/l	1300
BOD	mg/l	980
COD	mg/l	4600
NH ₄ -N	mg/l	1800
NO ₃	mg/l	3
Total N	mg/l	2200
PO ₄ -P	mg/l	96
SO ₄	mg/l	175
Cl	mg/l	5800
FC	CFU/100ml	1×10^5
Cd	mg/l	0.08
Zn	mg/l	2.8
Pb	mg/l	0.009
Cu	mg/l	0.9
Hg	mg/l	ND
Cr	mg/l	0.28
As	mg/l	ND
Al	mg/l	1.3
Fe	mg/l	3
Ni	mg/l	0.64
Mn	mg/l	0.24
CN	mg/l	ND