

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.1 Damascus DFEA

Syrian Arab Republic

Ministry of Local Administration and Environment

Directorate for Environmental Affairs - Damascus

The first annual report
For Environmental Monitoring
In Damascus DFEA

2006

Executive summary

Contents:

Objective of the report:

It covers one year of lab work in Environmental Monitoring for different kinds of water in Damascus Governorate, in order to evaluate the quality of water, so it will be an accurate scientific reference in the hand of decision makers and public. To correct the ways of conserving water from pollution, through the interpretations that the report gives about the analyses results of different kinds of water in Damascus Governorate

Objectives:

We tried to achieve the following objectives during this plan:

- Give training to the lab staff in Environmental Monitoring
- Take an idea about the volume of pollution in the sampling stations
- Know how to put more accurate, comprehensive, and reliable plan in the future
- Know how to deal with disorderly cases
- Inform the public about our lab and activities to inform us about any emergency case

Introduction:

We put the EMP for the year 2006 by supervision of JICA Expert Team, it was the first one we did, this plan is a training one and it aims to develop the capacity of Environmental Monitoring for the lab staff as for collecting samples, and make the analyses; for that, it considered the following:

- Monitoring industrial wastewater to support environmental inspection processes when the lab will be certified officially.
- Monitoring underground water quality (wells), near prospective pollution resources, or depending on the request of decision makers, or complaints
- Monitoring the quality of some natural resources (rivers) in some important locations

We implemented this plan in parallel with other Environmental Monitoring activities done by Damascus DFEA, and as a result, we analyzed additional samples. We also cooperated with other bodies as Water Resources Directorate, and Environmental Studies Center for water quality monitoring.

We also dealt with AEC within the program of QA/QC through participation in four courses / a year, and we analyzed these parameters

PH-TDS-EC-PO4-COD-BOD-clorid-NO3-NH4-

The General Company for Drinking water and Domestic water monitors the wells in the governorate, and has an authorized lab for drinking water analyses only.

EMP for the year 2006 began in March 2006, and ended in December 2006, and it covered 16 sampling stations:

Environmental Monitoring Plan 2006

Damascus:(28/2/2006) No. 551

Prepared by: Reem Sadriddeen

Director of Damascus DFEA:
Bassam Kheir Bek

1. Logical basis:

Damascus DFEA prepared this EMP according to the law No. 50.

Damascus DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Damascus Governor.

2. Objectives of Environmental Monitoring

- 1- Analyzing industrial wastewater for many factories that polluted wastewater
- 2- Monitoring & analyzing Barada River and its distributaries within Jobar Area
- 3- Sampling stations:

remarks	locations	No. of stations	Water body
	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomeasieh 4) Wella factory 5) (Fa) soap factory 6) Zamzam 7) Tello factory 8) (Javeil) factory 9) Galvanization /Kaboona/ 10) Hilwani sweets factory	10	Industrial wastewater
		-----	Domestic wastewater
Covering Jobar and surrounding areas, to Bab Alsalam and Damascus castle	- Tora - Da'iaee - Akrabani	3	Rivers and Lakes
		-----	Sees and coastal regions
			others

3. Monitoring duration and frequency

Duration of this EMP is from January 1 to December 31 2006, frequency shown below:

No. of times	frequency	stations	Water body
6 times • 6 times • 6 times • 12 times • 12 times • 12 times • 12 times • 12 times • 12 times • 12 times •	Once / 2 months • Once / 2 months • Once / 2 months • Once / 1 month • Once / 1 month • Once / 1 month • Once / 1 month • Once / 1 month • Once / 1 month • Once / 1 month •	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomasieh 4) Wella factory 5) (Fa) soap factory 6) Zamzam 7) Tello factory 8) (Javeil) factory 9) Galvanization /Kaboon/ 10) Hilwani sweets factory	Industrial wastewater
			Domestic wastewater
12 times • 12 times • 12 times •	Once / 1 month • Once / 1 month • Once / 1 month •	Tora Da'iaee Akrobani	Rivers and Lakes

No. of sample in the year: /138/

4. Parameters have to be monitored and analyzed:

Lakes and Rivers	Industrial wastewater	parameters	No.
1- field measures			
+	+	PH	
+	+	DO	
+	+	EC/TDS	
+	+	temperature	
2- lab measures			
		color	
+	+	SS	
+	+	COD	
+	+	BOD	
+	+	NO3-N	
+	+	PO4	
+	+	CL	
+	+	NN3-N	
+	+	U ₃ HVM	

5. Analysis method:

Remarks	Analysis method	Parameters
	Electrode method	1- PH
	Thermometer	2- water temperature

	Platinum -cobalt APHA	3- color
	Electrode method	4- TDS
	Membrane electrode method	5- DO
	Photometric method	6- SS
	Reactor digesting method	7- COD
	Cadmium reduction method	8- NO ₃ – N
	Salicilate method	9- NH ₃ – N
	Amino acid method	10- PO ₄ ⁺³
	Silver nitrate method	11- CL ⁻
	Pressure sensor method	12 BOD ₅ .
	Electrode method	13- EC-
	Niphilometric method	14- turbidity

7. Data and publication records:

- a. Record in DFEA
- b. Record in the directorate of labs at GCEA
- c. Record in the Governorate
- d. Preparing data book
- e. Annual report (to be prepared and published)

remarks	Duration	In charge with	background	stuff
	From the beginning of the project	Water quality	Chemist, Lab chief	Reem Sadriddeen
	From the beginning of the project	Water quality	Chemist	Inas Webbi
	From the beginning of the project	Water quality	Chemist	Iyman Sulayman
	From the beginning of the project	Water quality	Civil engineer	Rania Sulayman
	From the beginning of the project	Water quality	agronomist	Leila Aldurra

Water pollution تلوث الماء



Smog phenomenon Air pollution

- غمامة سوداء فوق مدينة دمشق بسبب احتباس الدخان الناتج عن مداخل التدفئة والسيارات



Field Measurements



Field Sampling



Laboratory Analysis

قياسات حقلية ومخبرية

Activities of the C/P

We tried through this report to give an idea about the pollution volume at the sampling stations mentioned above, within the 14 parameters we have got trained in from JICA Expert Team through the results of field and lab analyses. Here are some of them:

هذه التحاليل تظهر القيم العالية للتلوث في بعض الأماكن في دمشق فمثلاً عند تحليل مياه الصرف الخارجة إلى شبكة الصرف العام من مصنع للمياه الغازية.

The analysis indicated high values of the pollutants in some areas in Damascus and as an example when analyzing waste water discharged to the public sewage network for a beverage factory

Parameter	Analysis	Standards
COD	2200 mg/l	1600 mg/l
SS	69 mg/l	500 mg/l
Temperature	28 C°	35 C°
PH	10.24	6.5-9.5
NH3-N	-	100 mg/l
PO4	40 mg/l	20 mg/l

وبالنسبة لتحاليل المياه الخارجة إلى النهر فإن نتائج التحاليل تشير إلى ارتفاع عالي في نسب التلوث نذكر مثال: الاعتيان من مخرج التصريف إلى نهر بردى من معامل سباكة المعادن.

As for the analysis when discharging to the river some analysis showed high increase in the pollutants. As an example when sampling from the discharging point to Barad River from the metal factories

Parameter	Analysis	Standards
COD	350 mg/l	150 mg/l
SS	250 mg/l	30 mg/l
PH	7.8	6.0- 9.0
NH3-N	44 mg/l	5 mg/l
PO4	13.5 mg/l	14 mg/l
DO	14.14 mg/l	4 mg/l

And hereinafter some of the results according to the EMP:

شكل السجل لتحليل الأساس للمياه																			
Recording Format for Basic Water Analysis (for all 14 DFEAs)																			
الرمز	مشرق	المحافظة	مشرق	المدينة	البلدة				منطقة الدباغات				القرية						
Code: I-002	Governorate	DAM	Damascus	City	Town				Damascus				Village						
صرف صناعي			معمل جلاب للمياه الغازية										وصف موقع الاعتيان						
Industrial Water		Sampling site description																	
2006		السنة																	
تاريخ الاعتيان اليوم / الشهر																			
sampling date (day/month)																			
وقت الاعتيان (ساعة/ دقائق)																			
sampling time (hh:mm)																			
المادة	الطريقة	الوحدة	العمق	15-Mar	18-Apr	2-May	9-May	10-Jun	11-Jul	12-Sep	10-Oct	14-Nov	10-Dec	/	/	/	الأمسي	الآل	المعدل السنوي
Item	Analysis Method	Unit	Depth														min	max	av.
الطقس	يدوي	لرجوع إلى الأسفل		صحح	صحح	صحح	صحح	صحح	صحح	صحح	صحح	صحح	صحح	:	:	:			
weather	manual	ref. below																	
Air Temperature	manual	°C		17.0	18.0	17.1	25.0	32.2			18.0	17.2	10.8				10.8	32.2	19.4
River Width		m															0.0	0.0	#DIV/0!
عمق المياه في نقطة الاعتيان	يدوي	m															0.0	0.0	#DIV/0!
water depth	manual	m															0.0	0.0	#DIV/0!
سرعة تدفق المياه عند نقطة الاعتيان	يدوي	m/s															0.0	0.0	#DIV/0!
flow velocity	manual	m/s															0.0	0.0	#DIV/0!
الرائحة	يدوي	-																	
odor	manual	-																	
pH	pH meter	-	سطح	10.2	10.2	10.19	7.6	10.2	10.3	6.2	10.2	9.6	10.3				6.2	10.3	9.5
			m														0.000	0.000	#DIV/0!
			m														0.000	0.000	#DIV/0!
درجة الحرارة	pH meter	°C	سطح	27.6	27.9	20.46	20.0	31.5		26.3	22.1	18.1	18.0				18.0	31.5	23.6
Temp			m														0.00	0.00	#DIV/0!
			m														0.00	0.00	#DIV/0!
اللون	portable colorimeter	-	سطح	414.66	414	415	84	367	407	3160	397	423	366				84.0	3160.0	670.2
Color			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
Total dissolved solids (TDS)	portable EC/TDS meter	mg/l	سطح	414	426	306.6	140	544	420	69	450	477	428				68.9	543.6	367.3
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
DO	portable DO meter	mg/l	سطح	6.56	6.54	6.48	8.47	7.60	6.80	21.93	6.72	8.42	6.93				6.48	21.93	8.65
			m														0.00	0.00	#DIV/0!
			m														0.00	0.00	#DIV/0!
Total suspended solids (SS)	portable colorimeter	mg/l	سطح	65	69	72.33	11	78	63	227	68	77	68				11.0	226.6	79.9
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
COD	colorimeter	mg/l	سطح	1554	2095	2033.3		1957	2107		2037	1230	2183				1230.0	2183.3	1899.5
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
BOD ₅	culture	mg/l	سطح		276	246.6		290	262		887	640	276				246.6	886.6	411.0
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
NO ₃ ⁻	portable colorimeter	mg/l	سطح	10	8.2	5.73	1.1	12.1	2.2	<0.2	8.5	8.4	7.9				1.1	12.1	7.1
			m														0.000	0.000	#DIV/0!
			m														0.000	0.000	#DIV/0!
PO ₄ ³⁻	portable colorimeter	mg/l	سطح	13.33	40.00	38.33	<0.05	57.66	43.00	<0.05	43.00	43.00	42.00				13.33	57.66	40.04
			m														0.00	0.00	#DIV/0!
			m														0.00	0.00	#DIV/0!
Cl	Digital Titrator	mg/l	سطح	43	120	127.03	20	187	112	88	122	125	123				20.0	187.2	106.6
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
NH ₃ -N	portable colorimeter	mg/l	سطح				<1	1		5		<1					1.3	5.2	3.3
			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
التقنية الكهربائية	portable EC/TDS meter	µS/cm	سطح	854	840	838	291	937	797	22	768	697	855				21.9	936.6	689.8
Electrical Conductivity			m														0.0	0.0	#DIV/0!
			m														0.0	0.0	#DIV/0!
العكارة	portable turbidity meter	NTU	سطح	88.00	88.00	85	5.83	96.33	90.00	135.90	98.00	126.60	93.00				5.83	135.90	90.67
Turbidity			m														0.00	0.00	#DIV/0!
			m														0.00	0.00	#DIV/0!
الرجوع صف حلة لجر خلال فترة الاعتيان وعند نقطة الاعتيان مضمرا إلى التالي:																			
صحومشمس، غائم، ماطر (خفيف)، ماطر (بشدة)▲																			
ther on sampling time at a sampling point referring to the following marks;																			
my: ☉ overcast: ☾ rain (gentle): ☽ rain (heavy): ▲																			
اسم الشخص المسؤول عن إدارة البيانات																			
Name of Person in charge of Data Management																			
د. لمتنى غام																			

2- Results of Wella Dying factory analyses

شكل السجل للتحليل الأساسي للمياه

Recording Format for Basic Water Analysis (for all 14 DFEAs)

الرمز Code: I-005	دمشق Governorate	المحافظة DAM	دمشق Damascus	المدينة City	البلدة Town	منطقة الدباغات منطقة الدباغات	القرية Village			
صرف صناعي Industrial Water		منطقة الإحدى عشرية-صرف صناعي					وصف موقع الاعتيان: Sampling site description			
2006	السنة Year									
تاريخ الاعتيان اليوم / الشهر sampling date (day/month)		26-Feb	27-Mar	6-Apr	14-Aug	/	/			
وقت الاعتيان: (ساعة/دقائق) sampling time(hh:mm)		10:00	9:30	11:00	9:30	:	:			
المادة Item	الطريقة Analysis Method	الوحدة Unit	العمق Depth					الاقصى min.	الاقلى max.	المعدل السنوي av.
الطقس weather	يدوي manual	المرجع في الأسفل ref. below	غائم	صحو	غائم	غائم				
Air Temperature	manual	°C	19.0	16.8	18.0	35.0		16.8	35.0	22.2
River Width		m						0.0	0.0	#DIV/0!
عمق المياه في نقطة الاعتيان water depth	يدوي manual	m						0.0	0.0	#DIV/0!
سرعة تدفق المياه عند نقطة الاعتيان flow velocity	يدوي manual	m/s						0.0	0.0	#DIV/0!
الرائحة odor	يدوي manual	-	strong	strong	strong	strong				
pH	pH meter	-	سطح	8.1	7.8	7.6	7.9	7.6	8.1	7.9
			m					0.000	0.000	#DIV/0!
			m					0.000	0.000	#DIV/0!
درجة الحرارة Temp	pH meter	°C	سطح	15.6		16.0	18.4	15.6	18.4	16.7
			m					0.00	0.00	#DIV/0!
			m					0.00	0.00	#DIV/0!
اللون Color	portable colorimeter	-	سطح	96	949	2050	813	96.3	2050.0	977.1
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
Total dissolved solids (TDS)	portable EC/TDS meter	mg/l	سطح	233	406	422	2480	232.7	2480.0	885.3
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
DO	portable DO meter	mg/l	سطح	6.35	14.14	5.49		5.49	14.14	8.66
			m					0.00	0.00	#DIV/0!
			m					0.00	0.00	#DIV/0!
Total suspended solids (SS)	portable colorimeter	mg/l	سطح	<22	127	200	72	72.0	200.0	133.0
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
COD	colorimeter	mg/l	سطح	13	203	27		13.3	203.0	81.0
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
BOD ₅	culture	mg/l	سطح					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
NO ₃ ⁻	portable colorimeter	mg/l	سطح	1.5	40.0	6.6	1.3	1.3	40.0	12.4
			m					0.000	0.000	#DIV/0!
			m					0.000	0.000	#DIV/0!
PO ₄ ³⁻	portable colorimeter	mg/l	سطح	0.73	7.70	<0.05	13.40	0.73	13.40	7.28
			m					0.00	0.00	#DIV/0!
			m					0.00	0.00	#DIV/0!
Cl ⁻	Digital Titrator	mg/l	سطح	27	49	57	153	26.7	153.3	71.6
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
NH ₃ -N	portable colorimeter	mg/l	سطح	<1	25	20	36	20.0	35.9	27.1
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
التقنية الكهرديتية Electrical Conductivity	portable EC/TDS meter	µS/cm	سطح	481	832	863	3363	481.3	3363.3	1384.7
			m					0.0	0.0	#DIV/0!
			m					0.0	0.0	#DIV/0!
المكارة Turbidity	portable turbidity meter	NTU	سطح	9.00	109.16	132.16	22.90	9.00	132.16	68.31
			m					0.00	0.00	#DIV/0!
			m					0.00	0.00	#DIV/0!

الرجوع صفحته لجزء آخر خلال فترة الاعتيان وعند نقطة الاعتيان مشيراً إلى التالي:
صحو/مشمس ☀، غائم ☁، ماطر (خفيف) △، ماطر (شدة) ▲

other on sampling time at a sampling point referring to the following marks:
ny: ☁ overcast; Q rain (gentle); Δ rain (heavy); ▲

اسم الشخص المسؤول عن إدارة البيانات

Name of Person in charge of Data Management

د. المثنى غانم

4- Results of tanning houses area analyses

شكل السجل للتحليل الأساسي للمياه															
Recording Format for Basic Water Analysis (for all 14 DFEAs)															
الرمز	متمشق	لمحافظة	متمشق	المدينة	البلدة				منطقة الدباغات			القرية			
Code: I-008	Governorate	DAM	Damascus	City	Town				منطقة الدباغات			Village			
Industrial Water		منطقة الدباغات													
2006		السنة	وصف موقع الاختبار:												
Year		Sampling site description													
تاريخ الاختبار اليوم / الشهر		14-Apr	15-May	27-Jun	25-Jul	22-Aug	19-Sep	17-Oct	14-Nov	12-Dec	/	/	الأقصى	الأقل	المعدل السنوي
sampling date (day/month)		10:00	9:30	9:30	10:00	9:30	10:00	9:30	11:00	11:30	:	:	min.	max.	av.
وقت الاختبار: (ساعة/دقائق)															
sampling time(hh:mm)															
المادة	الطريقة	الوحدة	العمق												
Item	Analysis Method	Unit	Depth												
الطقس	يدوي	المرجع في الأسفل		مشمس	مشمس	مشمس	غائم	مشمس	مشمس	مشمس	مشمس	مشمس			
weather	manual	ref. below		مشمس	مشمس	مشمس	غائم	مشمس	مشمس	مشمس	مشمس	مشمس			
Air Temperature	manual	°C		25.2	35.1	21.8		35.3	36.0	28.0	20.0	25.0	20.0	36.0	28.3
River Width		m					3						3.0	3.0	3.0
عمق المياه في نقطة الاختبار	يدوي						0.3						0.3	0.3	0.3
water depth	manual	m					0.3						0.3	0.3	0.3
سرعة تدفق المياه عند نقطة الاختبار	يدوي						0.4						0.4	0.4	0.4
flow velocity	manual	m/s					0.4						0.4	0.4	0.4
الرائحة	يدوي	-					strong	strong	strong	strong	strong	strong			
odor	manual	-					strong	strong	strong	strong	strong	strong			
pH	pH meter	-	سطح	8.3	7.5	7.3	10.9	7.4	7.3	7.5	7.3	7.3	7.3	10.9	7.9
			m										0.000	0.000	#DIV/0!
			m										0.000	0.000	#DIV/0!
درجة الحرارة	pH meter	°C	سطح	15.3	31.3	13.6	35.2	35.0	30.0	28.0	17.8	25.0	13.6	35.2	25.7
Temp			m										0.00	0.00	#DIV/0!
			m										0.00	0.00	#DIV/0!
اللون	portable colorimeter	-	سطح	525	651	410	2550	375	313	383	369	382	312.6	2550.0	662.1
Color			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
Total dissolved solids (TDS)	portable EC/TDS meter	mg/l	سطح	361	4480	354	2750	355	350	350	336	332	332.3	4480.0	1074.2
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
DO	portable DO meter	mg/l	سطح	5.26	2.77	6.36	1.42	6.70	6.24	6.30	6.23	6.29	1.42	6.70	5.29
			m										0.00	0.00	#DIV/0!
			m										0.00	0.00	#DIV/0!
Total suspended solids (SS)	portable colorimeter	mg/l	سطح	48	52	42		40	52	32	42	47	32.0	51.7	44.2
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
COD	colorimeter	mg/l	سطح	4	7	5	1300	30	32	31	31	27	4.0	1300.0	163.0
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
BOD ₅	culture	mg/l	سطح	2	5	2		5	5	5	6	4	1.5	5.7	4.1
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
NO ₃ ⁻	portable colorimeter	mg/l	سطح	1.6	1.0	<0.2	280.0	<0.2	<0.2	<0.2	<0.2	<0.2	1.0	280.0	94.2
			m										0.000	0.000	#DIV/0!
			m										0.000	0.000	#DIV/0!
PO ₄ ³⁻	portable colorimeter	mg/l	سطح	<0.05	5.73	<0.05	8.00	<0.05	<0.05	<0.05	<0.05	<0.05	5.73	8.00	6.87
			m										0.00	0.00	#DIV/0!
			m										0.00	0.00	#DIV/0!
Cl	Digital Titrator	mg/l	سطح	78	932	84	900	77	70	70	82	75	69.6	931.7	263.1
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
NH ₃ -N	portable colorimeter	mg/l	سطح	2	20	1	50	1	1	2	2	2	1.2	50.0	9.0
			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
التدفق الكهربائي	portable EC/TDS meter	μS/cm	سطح	722	1876	689	5240	710	695	729	688	713	688.3	5240.0	1340.2
Electrical Conductivity			m										0.0	0.0	#DIV/0!
			m										0.0	0.0	#DIV/0!
المكارة	portable turbidity meter	NTU	سطح	55.00	72.33	44.60	57.90	44.00	44.60	40.80	41.30	41.16	40.80	72.33	49.08
Turbidity			m										0.00	0.00	#DIV/0!
			m										0.00	0.00	#DIV/0!
المرجع صف حلة لحو خلال فترة الاختبار وعند نقطة الاختبار مشيراً إلى التالي:															
مسحور/مشمس، غائم، مطار (خفيف)، مطار (بشدة) ▲															
ther on sampling time at a sampling point referring to the following marks;															
ny: ☉ overcast: Q rain (gentle): ☔ rain (heavy): ▲															
اسم الشخص المسؤول عن إدارة البيانات															
Name of Person in charge of Data Management															
د. المتنى غام															

5- Results of Alkhomeasieh company analyses

شكل السجل لتحليل الاساسي للمياه

Recording Format for Basic Water Analysis (for all 14 DFEAs)

الرمز Code:1-009	دمشق Governorate	لمحافظة DAM	دمشق Damascus	المدينة City	البلدة Town							منطقة الدباغات	القرية Village				
نهر river			الشركة الخامسة							وصف موقع الاعتيان							
2006		السنة Year	Sampling site description														
تاريخ الاعتيان اليوم / الشهر sampling date (day/month)			6-Mar	2-Apr	12-May	2-Jul	16-Jul	15-Aug	19-Sep	13-Nov	22-Nov	/	/	/	الاقصى min	الاقلى max	المعدل السنوي av.
وقت الاعتيان (ساعة/دقائق) sampling time (hh:mm)			11:00	9:30	10:00	12:00	11:00	12:15	12:00	9:30	11:25	10:00	:	:	:		
المادة Item	الطريقة Analysis Method	الوحدة Unit	العمق Depth														
الطقس weather	يدوي manual	المرجع من الاعلى ref. below		غائم	صحو	صحو	غائم	صحو	صحو	صحو	صحو	صحو	صحو				
Air Temperature	manual	°C		20.0	18.0	25	29.8	35.1	43.2			15.0			15.0	43.2	26.6
River Width		m						2							2.0	2.0	2.0
عمق المياه في نقطة الاعتيان water depth	يدوي manual	m						0.5							0.5	0.5	0.5
سرعة تدفق المياه عند نقطة الاعتيان flow velocity	يدوي manual	m/s						0.4							0.4	0.4	0.4
الرائحة odor	يدوي manual	-						strong			strong						
pH	pH meter	-	لسطح m	11.2	7.4	11.8	5.1	12.6	11.4	10.5	10.6	12.3	11.0		5.1	12.6	10.4
			m											0.000	0.000	#DIV/0!	
			m											0.000	0.000	#DIV/0!	
درجة الحرارة Temp	pH meter	°C	لسطح m	34.0	10.5	36.5	29.6	32.4	50.3	36.8			42.0		10.5	50.3	34.0
			m											0.00	0.00	#DIV/0!	
			m											0.00	0.00	#DIV/0!	
اللون Color	portable colorimeter	-	لسطح m	378	2000	5400		4350	4680	3960	340	4216	4500		340.0	5400.0	3313.8
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
Total dissolved solids (TDS)	portable EC/TDS meter	mg/l	لسطح m	1518	406	1920	471	4380	42	245	202	12520	7300		41.6	#####	2900.3
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
DO	portable DO meter	mg/l	لسطح m	3.32	5.31	5.25		0.76	4.73	2.00	4.70	6.01	4.20		0.76	6.01	4.03
			m											0.00	0.00	#DIV/0!	
			m											0.00	0.00	#DIV/0!	
Total suspended solids (SS)	portable colorimeter	mg/l	لسطح m	58	205	700		871	680	620	32	576	640		32.0	871.0	486.9
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
COD	colorimeter	mg/l	لسطح m	1650	20	940	79			11	520		435		10.6	1650.0	522.0
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
BOD ₅	culture	mg/l	لسطح m				44						53		44.0	53.0	48.5
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
NO ₃ ⁻	portable colorimeter	mg/l	لسطح m	>0.2	7.3	10	5.3	12.0	>0.2	5.1	>0.2	11.3	10.2		5.1	12.0	8.8
			m											0.000	0.000	#DIV/0!	
			m											0.000	0.000	#DIV/0!	
PO ₄ ³⁻	portable colorimeter	mg/l	لسطح m	20.00	0.33	<0.05	4.40	<0.05	<0.05	6.00	3.10	3.00	3.70		0.33	20.00	5.79
			m											0.00	0.00	#DIV/0!	
			m											0.00	0.00	#DIV/0!	
Cl ⁻	Digital Titrator	mg/l	لسطح m	25	56	3050	3100	3100				463	520		25.0	3100.0	1473.4
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
NH ₃ -N	portable colorimeter	mg/l	لسطح m			800	9	900	2	20	1.3	14	16		1.3	900.0	220.2
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
التقنية الكهربائية Electrical Conductivity	portable EC/TDS meter	µS/cm	لسطح m	28500	867	37000	960	8150	64		417	21500	15000		63.8	#####	12495.3
			m											0.0	0.0	#DIV/0!	
			m											0.0	0.0	#DIV/0!	
المكارة Turbidity	portable turbidity meter	NTU	لسطح m	1200.00	129.56	145	124.00	124.00	235.00	304.00	23.75	29.60	153.00		23.75	#####	246.79
			m											0.00	0.00	#DIV/0!	
			m											0.00	0.00	#DIV/0!	

المرجع صف حلة لير خلال فترة الاعتيان وعند نقطة الاعتيان مشيراً إلى التالي:
 صحو/مشمس ☉ ، غائم ☁ ، مطر (خفيف) △ ، مطر (شدة) ▲

Refer on sampling time at a sampling point referring to the following marks:
 ☉ overcast; ☁ rain (gentle); △ rain (heavy); ▲

اسم الشخص المسؤول عن إدارة البيانات

Name of Person in charge of Data Management

د. لهثي غانم

Basic problems:

- We faces difficulties when collecting samples in Summer from Barada River distributaries, because they become dry and that affects the frequency of sampling process
- The production of some factories, (as soft drinks factories), reduced in Winter and that affects the frequency of sampling process, in spite of stopping for maintenance

Recommendations for future work

Environmental Monitoring Plan 2007

Damascus DFEA

Damascus:(1/4/2007) No. 001

Prepared by: Reem Sadriddeen

Director of Damascus DFEA:
Bassam Kheir Bek

3. Logical basis:

Damascus DFEA prepared this EMP according to the law No. 50. Damascus DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Damascus Governor.

4. Objectives of Environmental Monitoring

- 1- Analyzing industrial wastewater for many factories that polluted wastewater
- 2- Monitoring & analyzing Barada River and its distributaries within Jobar Area
- 3- Sampling stations:

remarks	locations	No. of stations	Water body
	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomasieh 4) Wella 5) Hayat soap 6) Zamzam 7) Jallab 8) Galvanization /Kaboon/ 9) Dye house /Bab Sharki/ 10) Diary factory /Ghoota/ 11) Glysolid factory /lotion/ 12) Dietetics factory /Aleen/	12	Industrial wastewater
		-----	Domestic wastewater
	Tora Da'iaee Akrabani	3	Rivers and Lakes
		-----	Sees and coastal regions
	Quality samples Samples coming from other DFEAs	2	others

3. Monitoring duration and frequency

Duration of this EMP is from January 1 to December 31 2007, frequency shown below:

No. of times	frequency	stations	Water body
6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 12 times • 6 times • 6 times •	Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 1 month • Once / 2 months • Once / 2 months •	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomasieh 4) Wella 5) Hayat soap 6) Zamzam 7) Jallab 8) Galvanization /Kaboon/ 9) Dye house /Bab Sharki/ 10) Dairy factory /Ghoota/ 11) Glysolid factory /lotion/ 12) Dietetics factory /Aleen	Industrial wastewater
			Domestic wastewater
12 times • 12 times • 12 times •	Once / 1 month • Once / 1 month • Once / 1 month •	Tora Da'iaee Akrabani	Rivers and Lakes
			Sees and coastal regions
12 times • •	For circles / year •	quality samples Samples sent from other DFEAs	others

4. Parameters have to be monitored and analyzed:

Lakes and Rivers	Industrial wastewater	parameters	No.
1- field measures			
+	+	PH	
+	+	DO	
+	+	EC/TDS	
+	+	temperature	
2- lab measures			
		color	
+	+	SS	
+	+	COD	
+	+	BOD	
+	+	NO3-N	
+	+	PO4	
+	+	CL	
+	+	NN3-N	
+	+	U;HVM	

5. Analysis method:

Remarks	Analysis method	Parameters
	Electrode method	1- PH
	Thermometer	2- water temperature
	Platinum -cobalt APHA	3- color
	Electrode method	4- TDS

	Membrane electrode method	5- DO
	Photometric method	6- SS
	Reactor digesting method	7- COD
	Cadmium reduction method	8- NO ₃ – N
	Salicilate method	9- NH ₃ – N
	Amino acid method	10- PO ₄ ⁺³
	Silver nitrate method	11- CL ⁻
	Pressure sensor method	12 BOD ₅ .
	Electrode method	13- EC-
	Niphilometric method	14- turbidity

7. Data and publication records:

- f. Record in DFEA
- g. Record in the directorate of labs at GCEA
- h. Record in the Governorate
- i. Preparing data book
- j. Annual report (to be prepared and published)

remarks	Duration	In charge with	background	stuff
	From the beginning of the project	Water quality	Chemist, Lab chief	Reem Sadriddeen
	From the beginning of the project	Water quality	Chemist	Inas Webbi
	From the beginning of the project	Water quality	Chemist	Iyman Sulayman
	From the beginning of the project	Water quality	Civil engineer	Rania Sulayman
	From the beginning of the project	Water quality	agronomist	Leila Aldurra
	From July 2007	Water quality	Mechanical engineer	Ameera Alhamwi

At last, our DFEA has achieved a remarkable advance in the field of Environmental monitoring, as - (in the past) - we were depending on visual monitoring or getting help from other approved labs

The number of Chemists who received training from JICA Expert Team increased to become 21 members for water & air quality, public awareness, and atomic absorption. We are seeking to certify our lab and activate its role: to assist environmental inspectors work and train them on interpretation of Environmental monitoring data, and use these data to apply the low 50 for Environmental safety.

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.2 Damascus Countryside DFEA

Syrian Arab Republic

Ministry of Local Administration and Environment

**Directorate for Environmental Affairs – Damascus
Countryside**

The first annual report
For Environmental Monitoring
In Damascus Countryside DFEA

2006



Contents

- 1- Executive summary
 - 1-1. Introduction
 - 1-2. objective of the report
 - 1-3. summaries of results
- 2- Environmental Monitoring Plan in 2006
 - 2-1. logical basis
 - 2-2. objectives of Environmental Monitoring
 - 2-3. parameters to be monitored
 - 2-4. environmental stations
 - 2-5. duration and frequency of monitoring
 - 2-6. staff in charge of monitoring
- 3- Recommendations and future work
 - 3-1. Environmental Monitoring Plan in 2007

1- Executive summary

1-1. Introduction:

Due to the specialty of Damascus Countryside Governorate, that contains 16000 industrial establishments, and has a big area land. It was very hard to give a complete evaluation for the governorate during one year, so that we concentrated on the industrial wastewater and took an example (Sbeine) area, which contains several kinds of industries; we made a simple study for this area and got these results:

NH3	CL2	PO4	NO3	BOD	COD	SS	TDS	PH	Kind of industry
5	801	16.30	4.1	189	735	494	2711	9.4	Dying
7	10420	7097	11.1	646	1303	630	2320	10.5	detergents
6	459	17.40	6.5	200	3035	2910	236	7.7	paints
9	953	4.90	5.8	300	770	194	1846	7.6	medicines
10	282	58.92	12.9	1254	2021	529	882	7.3	food

1-2. Objective of the report:

- 1- Spotighting on the pollution resources discharged from the industrial establishments, which are randomly widespread in wide areas in the Governorate, and concentrating on those establishments, which discharge wastewater to agricultural lands or irrigation channels.
- 2- Concentrating on the big pollution resulted from the leakage of wastewater from the treatment station plant in Adra to the groundwater in the surrounded areas.

1-3. summary of results:

Number of samples analyzed within the EMP 2006 was 115 samples, (industrial wastewater, domestic wastewater, drinking water, and rivers). We realized that big number of industrial establishments have no treatment stations.

2- Environmental Monitoring Plan 2006

No. 001 Damascus countryside DFEA february/5/2007

Prepared by Eng. Muna Jumaa

Director of Damascus Countryside DFEA

2-1. Logical Framework:

This EMP prepared by Damascus Countryside DFEA according to the law No. 50.

Damascus Countryside DFEA has the right to implement this plan authorized by Minister of MOLAE and Damascus Countryside Governor.

2-2. Environmental Monitoring objectives:

- a- Monitoring industrial wastewater discharged from factories, defining the pollution, and then force these factories to establish treatment stations.
- b- Monitoring wastewater discharged from some restaurants built at the bank of Barada River, and estimating the influence of their pollution to the river
- c- Monitoring groundwater quality (wells....) near prospective pollution resources, depending on complains

2-3. Parameters to be monitored and analyzed:

wells	Seas and cistern areas	Rivers and lakes	Domestic water	Industrial wastewater	parameter	No.
1- field measurements						
O			O	O	EC	(1)
O			O	O	TDS	(2)
O			O	O	PH	(3)
X			X	X	DO	(4)
O			O	O	Temperature	(5)
O			O	O	flow rate	(6)
wells	Seas and cistern areas	Rivers and lakes	Domestic water	Industrial wastewater	parameter	No.
2- lab analyses						
O			X	X	Color	(1)
X			O	O	SS	(2)
O			O	O	COD	(3)
O			O	O	BOD	(4)
O			O	O	NO3-N	(5)
O			O	O	PO4	(6)
X			O	O	CL	(7)
O			O	O	NH3-N	(8)
O			X	X	turbidity	(9)
					Oil separation	(10)
X			X	O	Heavy metals	(11)

2-4. sampling stations:

remarks	locations	No. of stations	Water body
	1- Ashrafiyet Sohnaya 2- Sohnaya 3- Harasta 4- Adra 5- Mayda'a 6- Deir Salman 7- Drousha 8- Alrayhan 9- Hatitet Alturkman 10-Misraba 11-Khyaret Dannoun 12-Shifonyeh 13-Hala 14-Aladliyah	46 stations plus complains	1- industrial wastewater

2-5. Monitoring duration and frequency:

EMP duration is from first of February to 31st of December 2006, frequency shown below:

No. of times	frequency	Locations	Water body
3	4 months	1- Albeetar chemicals	1- industrial wastewater
3	4 months	2- Albizre paints	
2	6 months	3- Albirghly paints	
2	6 months	4- Mardini cosmetics	
2	6 months	5- Sheikh Sa'ad detergents	
3	4 months	6- Rafeek Almunla paints	
2	6 months	7- Sar for detergents	
2	6 months	8- Fayez Kassas Paints	
3	4 months	9- Ghassan Sukkar detergents	
3	4 months	10-Amin Shuhade paints	
3	4 months	11-Albaba paints	
3	4 months	12-Ahmad Fallaha shampoo	
2	6 months	13 Seirawan detergents	
2	6 months	14-Mawlawi detergents	
2	6 months	15-Alhalabi shampoo	
2	6 months	16-Alhalal detergents	
3	4 months	17- Habboub raw materials for detergents	
2	6 months	18-Khan Shakkour paints	
3	4 months	19-Syrian Soils for oxides	
2	6 months	20-Alshark medicines	
3	4 months	21-Alinaiyeh fertilizers	
2	6 months	22-oil industry	
2	6 months	23-Reema cosmetics	
2	6 months	24-AlAbideen medicines	
2	6 months	25-Skeif medicines	
2	6 months	26-oil filling	
2	6 months	27-Adamco medicines	

2	6 months	28-Zu'bi for dying	
3	4 months	29-Alhaffar chemicals	
2	6 months	30-chemical dyes	
2	6 months	31-Alhallak oil	
2	6 months	32-Wahbi dyes	
2	6 months	33-Khalil Ramzi for veterinary medicines	
2	6 months	34-Nader Hallak for Soap	
2	6 months	35-Ahmad Abboud for adhesive tapes	
3	4 months	36-Alnamaa' detergents	
2	6 months	37-Krayyem for mineral oil	
2	6 months	38-Sankar for mineral oil	
2	6 months	39-Hammoud for silicone industry	
2	6 months	40-Chemical dyes	
2	6 months	41-Juma'a for adhesive tapes	
3	4 months	42-Alazme paints	
2	6 months	43-Salfane	
2	6 months	44-Madar detergents	
2	6 months	45-Pico paints	
3	4 months	46-Al'elf for mineral oil	
3	4 months	Sbeine channel	2- domestic water
3	4 months	A brunch of Barada River	3- rivers and lakes
			4- seas and costal areas
2	6 months	- Shifonieh well for irrigation	5- wells
2	6 months	- Shifonieh well for drinking water	
2	6 months	- Alreihan well for irrigation	

Remarks

☀: We couldn't comply with this EMP because of some reasons like:

- We could not find the location of some factories
- We received some complains about some factories

So that what made us modify it

2-6. the stuff:

remarks	The period	In charge with	background	name
	2006/1/1 from ----- to	Chief of lab	Chemical Engineer	Eng. Muna Jumaa
	2006/3/1 from ----- to	Data management	chemist	Eng. Assistant Dana Tahhan
	from ----- to	Data management	Textile engineer	Eng. Ali Shawish
Moved out	2006/1/1 from ----- to	Lab analyses	chemist	Munir Sarhan
	2006/1/ from ----- to	Lab analyses	chemist	Eng. Assistant Malek Suleiman
	2006/2/8 from ----- to	Lab analyses	chemist	Eng. Assistant Rania Kara'awi
Moved out	2006/1/1 from ----- to	Lab analyses	chemist	Eng. Assistant Aeda Halaweek
Moved out	2006/2/1 from 2006/5/1 إلى	Lab analyses	chemist	Shereen Awad
	2006/7/3 from ----- to	Lab analyses	agronomist	Eng. Lina yousef
	to 2006/9/ from -----	Lab analyses	petrochemical	Eng. Nadir Taim
	2006/9/6 from ----- to	Lab analyses	agronomist	Eng. Muna Sroujy
	2006/9/5 from ----- to	Lab analyses	agronomist	Eng. Ammar Hasan
Moved out	2006/12/1 from ----- to	Lab analyses	chemist	Eng. Assistant Deema Ash'oush

☀ **Remarks**

All staff members do all jobs of the lab (sampling, analyzing, cleaning, and lab safety)

Lack in lab furnishings, like air condition, curtains, closets...etc.

3- Environmental Monitoring Plan 2007

No. 001 Damascus countryside DFEA february/5/2007

Prepared by Eng. Muna Jumaa

Director of Damascus Countryside DFEA

3-1. Parameters to be monitored and analyzed:

In addition to the parameters mentioned in 2006 EMP, we added:

- Oil separation test
- using spectrophotometer equipment for making lab analyses

3-2. sampling stations

remark	locations	No. of stations	Water body
	1- Ashrafiyet Sohnaya 2- Sohnaya 3- Harasta 4- Adra 5- Mayda'a 6- Deir Salman 7- Drousha 8- Alrayhan 9- Hatitet Alturkman 10-Misraba 11-Khyaret Dannoun 12-Shifonyeh 13-Hala 14-Aladliyah	46 stations plus complains	1- industrial wastewater

3-3. Monitoring duration and frequency:

EMP duration is from first of January to 31st of December 2007, frequency shown below:

No. of times	frequency	stations	Water body
1	One year	1- Ahmad Burghli	1- industrial wastewater
1	One year	2- Abdeen dyes	
2	6 months	3- Rawas	
2	6 months	4- Alaqa for oil	
2	6 months	5- Kassas paints	
1	One year	6- M. Imad Bola	
2	6 months	7- Da'bool & Sadat Detergents	
1	One year	8- Syral	
1	One year	9- French Bell	
2	6 months	10-Hager Glycerin	

2	6 months	11-Al Arabia manufacturing & marketing	
1	One year	12-nestle	
1	One year	13-Alhadeeth medicine	
2	6 months	14-Nazeer Kais paints	
1	One year	15-Damascus Countryside yeast	
2	6 months	16-Tammouz Canned food	
1	One year	17-Sukkar chemical	
1	One year	18-Alareek oil filling	
2	6 months	19- Alkubtan cheese	
2	6 months	20-Sabbagh pesticides	
2	6 months	21-Alrawas Chemicals	
2	6 months	22-Debs board	
1	One year	23-Alzayed medicine	
1	One year	24- AlAalamyeh string	
1	One year	25- Almanar printing & packaging	
2	6 months	26-Somar canned meat	
2	6 months	27-Alwatanyya batteries	
2	6 months	28-Unifarma medicines	
1	One year	29-Madar detergents	
1	One year	30-Middle East chemicals	
1	One year	31-Tameco medicine	
1	One year	32-Arar for oil sweetening	
1	One year	33-Midfarm medicines	
1	One year	34-Hammami paints	
2	6 months	35-Imaduddin Khatib paints	
1	One year	36-Alarabyyeh Almuttahide fertilizers	
1	One year	37-Almara'ee diary	
1	One year	38-Alfanniyeh for printing and packaging	
1	One year	39-Barada beer	
1	One year	40-Alhadithe conserved food	
1	One year	41-Ruba medicines	
1	One year	42-Ghassan Sukkar detergents	
1	One year	43-Abu Ghone oil mixing	
1	One year	44-Alwatanyeh ceramic	
1	One year	45-Alsouryeh diary	
2	6 months	46-Amir Hakmoor pains	

1	One year	47-M. Adnan Ma'took medicine	
1	One year	48-Firas Adam medicines	
2	6 months	49-Alsourieh medicines	
2	6 months	50-Ahmad Subhi Tukle diary	
2	6 months	51-Kamal Tabakfin diary	
1	One year	52-Imaduddin Halabi dyes	
2	6 months	53-General Company diary	
2	6 months	54-Jamal Abdulkarim dyes	
2	6 months	55-Upico paints	
2	6 months	56-Alsalfane	
2	6 months	57-Zannouibia ceramic	
2	6 months	58-Alreef ceramic	
2	6 months	59-Bashar Da'bool detergents	
2	6 months	60-Walid Da'bool detergents	
2	6 months	61-Ziade&Sukkar pesticides	
2	6 months	62-Alsharq tissues	
2	6 months	63-Alhadeethe for protecting plants	
2	6 months	64-Alwatanyyeh for protecting plants	
2	6 months	65-Albahra dye house	
2	6 months	66-Zakareya dye house	
2	6 months	67-Bilal Da'bool mineral oil	
2	6 months	68-Khalil Ramzi medicines	
2	6 months	69-kabbani medicines	
2	6 months	70-Almahayni medicines	
2	6 months	71- Veterinary medicines Co.	
2	6 months	72-Albahri medicines	
2	6 months	73-Alnamaa' detergents	
2	6 months	74-Alwazeer detergents	
2	6 months	75-Ammoura Aluminum	
2	6 months	76-Sar detergents	
2	6 months	77-Bashar Almankoosh diary	
1	One year	78-Sheikh Alard	
2	6 months	79-Naser Alsoos	
2	6 months	80-M.Hisham Kasm veterinary medicines	
2	6 months	81-Alhuda veterinary medicines	
1	One year	82-Akdima veterinary	

		medicines	
2	6 months	83-Hamdan Tu'me medicines	
2	6 months	84-Awad Ammoura mineral oil	
2	6 months	85-Amer Malas dyes	
2	6 months	86-M.Salem Da'bool veterinary medicines	
1	One year	87-Alazme paints	
2	6 months	88-Raja'a Rustom veterinary medicines	
2	6 months	89-Ammar A'ishe detergents	
2	6 months	90-Sawki Kasoota veterinary medicines	
2	6 months	91-Alsha'er chemicals	
2	6 months	92-Sheikh Alsroojyyeh	
2	6 months	93-M.Hallak Sons for soap	
2	6 months	94-Ayyash Board	
2	6 months	95-Altawfeek board	
2	6 months	96-Sifco veterinary medicines	
2	6 months	97-Alsharq for halva	
2	6 months	98-Halal detergents	
2	6 months	99-M.Osama Habboub detergents	
2	6 months	100-Antwan Naseef veterinary medicines	
2	6 months	101-Majico medicines	
1	One year	102-Yahia Mnajjed medicines	
2	6 months	103-RAfik Almunla detergents	

3-4. the stuff:

remarks	The period	In charge with	background	name
	2007/1/1 from ----- to	Chief of lab	Chemical Engineer	Eng. Muna Jumaa
	2007/1/1 from ----- to	Data management	chemist	Eng. Assistant Dana Tahhan
	2007/1/1 from ----- to	Data management	Textile engineer	Eng. Ali Shawish
	2007/1/1 from ----- to	Lab analyses	chemist	Eng. Assistant Malek Suleiman
	2007/1/1 from ----- to	Lab analyses	chemist	Eng. Assistant Rania Kara'awi
	2006/7/3 from ----- to	Lab analyses	agronomist	Eng. Lina yousef
	2006/9/ from ----- to	Lab analyses	petrochemical	Eng. Nadir Taim
	2006/9/6 from ----- to	Lab analyses	agronomist	Eng. Muna Sroujy
	2007/1/1 from ----- to	Lab analyses	agronomist	Eng. Ammar Hasan

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.3 Aleppo DFEA

Aleppo Annual Report 2006

Of the Lab for Environmental affairs

In Aleppo Directorate

Introduction:

Water considered as the main source for the life of human and other living beings, so that monitoring of water pollution became necessary to avoid dangers resulted of this pollution.

Aleppo DFEA is the one, which is responsible of this monitoring.

Big number of pollutants resulted from factories and discharged to the sewage water network, have monitored. Hereinafter, some kinds of these waters related to their recourses, like:

- Wastewater resulted from dying and printing clothes factories
- Wastewater resulted from food factories (like diary, soft drink water, ice-cream, mills.....)
- Wastewater resulted from medicine factories
- Wastewater resulted from oil factories
- Wastewater resulted from tanneries, starch and alcohol factories, paper, and insecticide factories

This table shows the number of sampling stations, their locations, and the kind of industry:

remarks	locations	No. of stations	Kind of wastewater
dying	Alanees, Aljandol square	/25/	1- industrial wastewater
=	Mhd. Ali Mallah, airport way		
=	Makki and company, Mansoor		
medicines	Obari- Alzurbe		
=	Asia- Hreitan		
sterilizers	Tadfi- Alzurbe		
Starch	Alwees- Alzurbe		
diaries	Ka'ke- Mansoor		
Soft drink	Bishr Alnaser- Allermon		
Vegetable oil	Sabouni- A'bad		
detergents	Ebaji- Nakkarin		
=	Bushra- Zahra'		
Artificial leather	Usico- Zurbe		
Natural leather	Khaled Abdul'aziz Hababa- Kafarnaha		
tannery	Omar Kattash- Ramouse		
=	Dlewati- Ramouse		
Mineral oil	Reyad Hreittani- Tayyara		
Paint filling	Ayman Tarakji- Zurbe		
Mill	Garbage mill- Albab way		
alcohol	Sarkis KIwanian- Shkayyef		
paper	Bathenkjy- Khan Alasal		
insecticides	Altahhan- Indan		
=	Klab & Kzeibre- Shamer		
Ice-cream	Esticano- Allermon		
Olive press	Abdullatif Abdur'ooof- Alatareb		
Assan village	South of Aleppo	/2/	2- wells
Humra village	north of Aleppo		

Wastewater resulted from industrial establishments discharged either to the public sewage network or to Quake River or to groundwater wells, and many times to irrigate harvests.

So we put a monitoring plan for these establishments and took samples from these Wastewaters, then put a map to the sampling stations as shown in this diagram, and the following tables show the monitoring plan, the frequency of sampling, the parameters analyzed pictures of sampling, and some parameters analyzed in the field:

Time and frequency of monitoring

From first of January until 31st of December 2006, the frequency shown below

remark	locations	No. of sampling per year	frequency
dying	Alanees	3 times	Once every 4 months
=	Mhd. Ali Mallah	=	=
=	Makki and company	=	=

medicines	Obari	=	=
=	Asia	=	=
sterilizers	Tadfi	=	=
Starch	Alwees	=	=
diaries	Ka'ke	=	=
Soft drink	Bishr Alnaser	=	=
Vegetable oil	Sabouni	=	=
detergents	Ebaji	=	=
=	Bushra	=	=
Artificial leather	Usico	=	=
Natural leather	Khaled Abdul'aziz Hababa	=	=
tannery	Omar Kattash	=	=
tannery	Dlewati	=	=
Mineral oil	Reyad Hreittani	=	=
remark	locations	No. of sampling per year	frequency
Paint filling	Ayman Tarakji	3 times	Once every 4 months
Mill	Garbage mill	=	=
alcohol	Sarkis KIwanian	=	=
paper	Bathenkjy	=	=
insecticides	Altahhan	=	=
insecticides	Klab & Kzeibre	=	=
Ice-cream	Esticano	2 times	Once every 6 months
Olive press	Abdullatif Abdulra'oof	1 time	Once every 1 year
Assan village	South of Aleppo	=	=
Humra village	north of Aleppo	=	=

Parameters to be analyzed and monitored:

remarks	locations	Field analyses	Lab. analyses
dying	Alanees	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
=	Mhd. Ali Mallah	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
=	Makki and company	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
medicines	Obari	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
=	Asia	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
sterilizers	Tadfi	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3

Ice-cream	Esticano	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Starch	Alwees	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
diaries	Ka'ke	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Olive press	Abdullatif Abdulra'oof	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Soft drink	Bishr Alnaser	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Vegetable oil	Sabouni	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
detergents	Ebaji	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
=	Bushra	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Artificial leather	Usico	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Natural leather	Khaled Abdul'aziz Hababa	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
tannery	Omar Kattash	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
tannery	Dlewati	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Mineral oil	Reyad Hreittani	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Paint filling	Ayman Tarakji	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Mill	Garbage mill	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
alcohol	Sarkis KIwanian	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
paper	Bathenkjy	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
insecticides	Altahhan	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
insecticides	Klab & Kzeibre	PH-TEMP-TDS	SS -CoD-BoD-Po4-CL-NH3
Assan village	South of Aleppo	PH-TEMP-TDS-DO- EC	SS -CoD-BoD-Po4-CL-NH3- Color-Turbidity – NO3
Humra village	north of Aleppo	PH-TEMP-TDS-DO- EC	SS -CoD-BoD-Po4-CL-NH3- Color-Turbidity – NO3

remarks	Analysis method	parameters
	Electrode method	PH
	Thermometer	Water temperature
	Platinum -cobalt APHA	color
	Electrode method	TDS
	Membrane electrode method	DO
	Photometric method	SS

	Reactor digesting method	COD
	Manometer measuring method	BOD
	Cadmium reduction method	NO ₃
	Salicilate method	NH ₃
	Amino acid method	PO ₄
	Silver nitrate method	CL
	Electrode method	EC
	Niphilometric method	turbidity







After applying the monitoring plan and making analyses to the samples, we got these results

After comparing our results with Syrian Standards, we realized that the ratio of pollutants was above the allowed values for most of industries

End

Environmental monitoring of industrial wastewater is very important to put a limit for the pollutants discharged to the environment.

And that depends on the obligation of the manufacturers to treat wastewater discharged from their factories, so that the stuff of DFEA acquaint them of the unacceptable results in order to make the right treatment.

The number of factories included in the monitoring plan is related to the number of stuff, to achieve the whole plan correctly.

We will prepare the monitoring plan of 2007 and add new other factories

Appendix:

The results of samples during the time of the monitoring plan

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.4 Homs DFEA

The Capacity Development of Environmental Monitoring at Directorates for Environmental Affairs in governorates

Annual Report for Homs DFEA (2006)

Exertive summary

Contents:

***Task report:**

After training the lab staff of Homs DFEA more than one year on environmental monitoring of the different water pollution sources, which lead to assess the water quality in the governorate and present information to the authorized bodies and public in order to protect environment from pollution. During the interpretation of the analysis's results through different samples taken from industrial waste water of surface water (Katina Lake, Orantes River), and ground water, the results to be displayed in this report are not very accurate because of:

- 1-The lab staff in environmental capacity development are still under training up till now.
- 2-There is a lack of instruments as chemical reagents required to analysis, and also there is no fuel for the lab car as the distances between lab DFEA& monitoring points are very long.
- 3- The reachable results during this short period give primary assessment of water quality and lighten the water pollution issue.
- 4-Anlysing polluted water needs high experience, scientific knowledge and informatics background in order to interpret the results.
- 5-There is a lack experience in chemical intersections occurred during analysis measurement because polluted water contains a lot of chemical compounds that prevent accessing to accurate analysis results; especially the supplied equipments are very simple.

The monitored water resources are summarized as following:

- 1-The Polluted wastes liquid of industrial establishment in Homs governorate.
- 2-Dischrge waste water /waste water treatment station.
- 3- Ground water (surface water) nearby pollution sources or according to environmental complaints which sent to us in a regular way by governorate.
- 4- Water of Orantes River and Katina Lake.

We should take into our consideration the following remarks:

- Homs Governorate is one of the biggest industrial cities in Syria since to the big industrial various as for products and great productivity like:
- 1- Industry of Nitrogen and phosphate fertilizer
 - 2- Oil refinery in general company for Homs refinery.
 - 3- Industry of sugar.
 - 4 -industry of textile and dying.
 - 5- Industry of plant oil (extracting and refinery of Soya, cotton seeds, corn and sunflower)
 - 6- Industry of plant fat.
 - 7- Industry of cheese and dairy products.
 - 8- Industry of concrete.

It should mention to the great expand into different type of industry in industrial city (Hesia) which, includes a lot of industries, factory, and companies were established by private sector depending on investment low /10/.

The Industries distributed into 4 keys sections:

- 1- Food industries.
- 2- Textile industries.
- 3- Chemical industries.
- 4- Engineering industries.

In addition to Hesia city, there are many existing industries in different areas of Homs. such as huge number of olive presses, (More than 60) discharge polluted liquid wastes in big amount especially organic load which reaches to high percentage comparing with domestic waste water .waste water discharged by olive presses pours out (without treatment) into waste water lines, river flow and valleys and that may cause a ground water pollution.

Beside to the mentioned problems above there are also the following:

*There is no treatment of domestic waste water discharged by residential areas in cities, towns and villages. This domestic water poured out into rivers, springs and beside to drinking water wells, plus irrigating plants with this waste water.

*Pollution of Orantes river, its branches and wintry water way which poured into it.

The riverbed, which is already polluted, enters the city with increasing of pollution during its path among the city since there aren't any practical procedures to protect it from solid and liquid wastes .pollution inductors increase because of low flow especially in summer.

***Introduction:**

We set up an EMP for Homs DFEA lab under supervision of JET. The plan mainly aims to develop the capacity of environmental monitoring for lab staff on sampling, making analysis and the other integrated work. The monitoring should include all kinds of water in Homs.

***Objectives of EMP:**

-Monitoring waste water discharged by industrial establishment and that is for supporting the environmental inspection when the lab officially accredited

-Monitoring domestic waste water discharged by the city and village related to Homs governorate.

- Monitoring ground water quality which is closed to pollution recourses.

- Monitoring surface water quality (Orantes River –Katina Lake)

***EMP for 2006**

The EMP was set up under supervision of JET according to available information about water resources and existing industrial establishment in Homs governorate.

1-Logical framework:

EMP was set up by Homs DFEA according to law no. /50/ Homs DFEA authorized by MOLAE and the governor of Homs to execute EMP.

2-EMP Objectives:

*Monitoring wastes discharged by industrial establishments in order to support environmental inspection after accreditation the lab officially

*Monitoring domestic waste water for the city and key towns.

*Monitoring ground water quality (wells) which are closed to pollution recourses or according to complaints produced to the governor.

3-Parameters to be analyzed and monitored

Well water	Lakes & river	Domestic waste water	Industrial waste water	Parameters	No.
Fields measurements					
+	+	+	+	PH	1
+	+	+	+	Temperature	2
+	+	+	-	EC	3
+	+	+	+	TDS	4
-	+	-	-	DO	5
Lab measurements					
+	+	-	-	Color	1

-	+	+	+	SS	2
+	+	+	+	COD	3
+	+	+	+	BOD	4
+	+	+	-	NO3	5
+	+	+	+	NH3	6
+	+	+	+	PO4	7
+	+	+	+	CL	8
+	+	-	-	Turbidity	9

4-Monitoring stations:

remarks	locations	Stations no.	
A-Industrial waste water			
	1-Treatment station input 2- Treatment station output	2stations	Textile and dyeing International company
	1-Treatment station input 2 – Treatment station output	2	Sadro Food company
	Refinery output	1	Ms refinery
	Slaughter wastes	1	Slaughter
	1-Treatment station input	1	Ibn Hayan for medicine
	1-Treatment station input 2- Treatment station output	2	Abo Alaben for oil
	1-Treatment station input 2- Treatment station output	2	Elma medicine company
	1-Treatment station input 2- Treatment station output	2	Homs company for textile and spinning
	1-Treatment station input 2- Treatment station output	2	Ferzat for oil
	1-Treatment station input 2- Treatment station output	2	Alwaleed food company
	1-Treatment station input 2- Treatment station output	2	Anboba for agricultural industries
	Final output	1	Sugar factory
	Collections pond	1	Fruity juice
	Discharging wastes of company	1	Lamsat almoda Company (jeans scrubbing)
	Collections pond	1	Medeco factory
	1-Treatment station input 2- Treatment station outlet	2	Aljaje dyeing factory
	Discharged waste water company	1	Rendel Alcoholic drink
	1-Alsour Alshamali 2-The first biological treatment station.	2	(Alrahbe Alaskariea) Wide military
	1-Station output 2- Activation results +Industrial wastewater 3-BoilersBlowdown. 4-Activation results	4	Jender station
B-Domestic waste water			
	1-Final outlet before mixing	6	Treatment station of

	with sugar company 2-Final outlet of station and sugar company 3-Treatment station input. 4-Sugar factory input at treatment station. 5-Station input after sieves 6-Treatment station outlet.		domestic waste water
C: Lakes and rivers:			
	1-Alskia Alhaeia. 2-After discharged waste of the municipal slaughter 3-After treatment station. 4-After the refinery next to the bridge. 5-Deik Algen restaurant. 6-Next to Engineers club. 7-Before Homs refinery. 8-Before fertilizer outlet	8	1-Orantes river
	1-First biological treatment station 2-West –north area. 3- Cannel comes out from the lake. 4-Static water in pumping station to fertilizers 5-Lake outlet at the pumping station 6-At south outlets of fertilizers company. 7-At outlet of fertilizers company 8-North discharge point of fertilizers factory at the lake.	8	2-Kattina lake
D: Ground well water			
	1-Reda Shood well 2-Water establishment well. 3-Hayder shahood well 4-Ayman Khayroot well 5-Khayroot Bader well.	5	1-Alzarzoria village wells
	1-Raw water tank 2-Collection pond of industrial waste water 3-treatment station outlet. 4-Boilers Blowdown 5-Industrial waste treatment station.	5	2-Aljander station
	Drinking well	1	3-Moutaz alfarra
	Drinking well	1	4-Well for Aljaja dying factory
	Drinking well	1	5-Well for Zaydal alcoholic drink factory
	Drinking well	1	6-Well for international textile and dying company .

	Drinking well	1	7-Well for Sadro Syrian company
	Drinking well	1	8-Well for Ibn Hayan medicine company
	Drinking well	1	9-Special drinking well related to Abo Alaban
	Drinking well	1	10-Well for Homs textile and spinning company .
	Drinking well	1	11- Well for Alwaleed food company
	Drinking well	1	12-Well for Anboba food industries company .
	Drinking well	1	13-Well for fruity juice company .
	Drinking well	1	14-Well for Ferzat oil company
	Drinking well	1	15-drinking well for medico factory.

5-Monitoring period and frequency:

EMP duration is one year, as for frequency it is summarized as following :

Remarks	Frequency per a year for each station	Station no	
a-Industrial waste water			
	1	2	Textile and Spinning International Company
	1	2	Sadroo Food Company
	1	1	Homs Refinery
	2	1	Local Slaughter
	1	1	Ibn Hayan for Medicine
	1	2	Abo Alaban for Oils
	2	2	Elma Medicine Company
	1	2	Textile and Spinning Homs Company
	2	2	Ferzat Oil Company
	1	2	Alwaleed Food company
	1	2	Anbob Food industries company
	1	1	Factory of sugar
	1	1	Fruity juice
	1	1	Lamsat Almda Company (Jeans scrubbing)
	1	1	Medico factory
	2	2	Aljaja dying factory

	1	1	Zaydal drinki
	1	2	Alrahba Alaskaria
	1	4	Jender station
b-Domestic wastewater			
	1	6	Wastewater treatment station
c-Lakes & rivers			
	1 (before & after the discharging point of the refinery)/twice	8	1-Orantes river
	1	8	2-Kattina lake
d: Ground water wells			
	1	5	1- Wells for village Alzarzoria
	1	5	2-Jender station
	1	1	3-Mou'taz Alfara
	2	1	4-Aljaja dying factory.
	1	1	5-Zaydal alcoholic drink factory .
	1	1	6-Well for dying and textile international company
	1	1	7-Well for Sadroo Syrian company
	1	1	8-Well for Ibn Hayan medicine company
	1	1	9-Drinking water well related to Abo Alaban
	1	1	10-Well related to Homs textile and spinning company .
	1	1	11-Well related to Alwaleed food company .
	1	1	12-Well related to Anboba industrial food company .
	1	1	13-Well related to Fruity juice company
	1	1	14-Well related to Ferzat oils company .
	1	1	15-Drinking water well for Midico factory

6-Analysis Method

Analysis method	Parameters
Electrode method	PH
Thermometer	Water temp.
Electrode method	EC
Electrode method	TDS
Membrane Electrode method	DO
APHA Platinum-Cobalt method	Color
Photometric method	SS
Reactor Digestion method	COD
Manometric (Pressure sensor) method	BOD
Cadmium Reduction method	NO ₃ -N
Amino Acid method	PO ₄
Silver Nitrate Method	CL
Salicylate method	NH ₃ -N
Colorimeter (DR/890	Turbidity

7-Other remarks:

Lab staff

Name	In charge of	Period
Mr. Muhamed Ali Al Husien	Lab chief	At the banging of the project
Ms. Sana Mansour	Lab chief of water quality	At the banging of the project
Ms. Itidal Awad	Lab chief of standard solution preparation	At the banging of the project
Ms. Lubna Al- Ahmad	Lab analyst	At the banging of the project
Ms. Nida'a Toghaji	Lab analyst	At the banging of the project
Ms. Heba Kassab	Lab analyst	At the banging of the project
Ms. Rasha Jabbour	Lab analyst & data management	At the banging of the project

Water Analysis Results for 2006

Tur	SO4 mg/l	CL mg/l	PO4 mg/l	NH3 mg/l	NO3 mg/l	SS mg/l	BOD Mg/l	COD mg/l	PH	TDS Mg/l	EC	Color	Temp. C	Date	Station	Water body
Industrial waste water_g																
7.7	3		0.7	2	11.0	9	155	197	4.3	1799	3490	325	20.9	5/2	Station input	Dying &Textile International Co.
18.6	380		0.2	1	4.7	30	48	157	7.6	1716	3340	145	20.3	5/2	Station outlet	
	130		20.0	4	13.0				7.4	332	628		25.4	4/19	Station input	Sadro Food Co.
	150		24.0		1			180	7.5	3.9	7		22.5	4/19	Station outlet	
17.3		86	1.6	13	4.4	15	13		7.6	532	1083	179	22.4	7/13	Station outlet	Homs Refinery
							11200	23450						5/23		Slaughter house
72.4	50		39.0	13	900	192	2500	2880	7.7	599	1214	30200	26.3	7/16		
11.0	110		7.4	1	13.0	22	20	110	8.0	341	701	177	19.4	5/2	Company discharging	Ibn Hayan Medicine Co.
	21		8.6	1	50.0		980	1300	6.9	4370	8140		20.8	4/19	Station outlet	Abo Alaban for Oils
	580		12.5	9	1030			7730	11.4	3	6		20.6	4/19	Station input	
7.5	8		1.6	1	0.8>	>22	4	30>	8.0		402	102	22.5	5/15	Station outlet	Alema Medicine Co.
3.5	11		1.0	1>	1.2	>22		30>	8.0		388	102	20.4	6/18		
7.4	31		0.8	8	15.8	60	180	14406	7.1	288	594	550	23.0	5/5		
5.7	30		1.9	1<	7.8	25	13	37	9.1	364	740		21.9	5/3	Station outlet	Homs Spinning Co.
	80		2.6	3	0.8>	116	26	153	9.8	1421			28.7	5/3	Station input	
206.0	230		8.1	7	7.6	237	200	703	9.6	1079	2140	550<	28.1	4/26	Station input	Ferzate Oils Co.
107.0	69		1.9	5	350.0	1067		8050	11.6	1541	3000	550<	27.1	8/28		
72.0	56		10.2	39	14.7	116	155	308	8.0	814	1634	550	16.6	4/26	Station outlet	Alwaleed Factory
361.0	10		14.6790	28	27.7	330	900	1458	6.2	660	1345	550	17.1	4/26	Station input	
	69		129.0	17	65.0			12310	5.1	7	12		23.1	4/19	Station input	Anboba Agricultural Industries Co.
	730		10.3	1>	37.0			780	7.1	4	8		22.5	4/19	Station outlet	
68.6	188		2.5	2.0	6.6	133	760	1548	7.8	835	1674	550	29.1	5/30	Final discharging point	Sugar factory
20.0	50		7.6		106.0	27		1257	7.2	425	888	268	18.8	4/24	Collection tank	Fruity Juice
106.0	150		22.2	1	7.1	123	150	340	7.6	731	1472	550<	18.9	4/26	Station outlet	Ferzate Oils Co.
248.0	180		3.1		5.0	470		1066	7.9	1079	2140	550	26.6	8/28		

64.2	20		0.6	1	31.4	303		98	8.0	538	1093	187	22.1	7/3		Lamsat Almouda /Jeans scrubbing
10.4	11		8.7		37.0	17	180	82	6.9	492	1002		17.4	4/24	Collection tank	Mdico Factory
30.6	80		8.7	4	58.0	85	26	358	8.2	1342	2640		18.9	5/3	Station outlet	
27.4	1600		11.4	1>	1.7	142		606	6.9	2190	4170				Station input	
12.4	80		1.3	1>	6.9	61		157	9.1	1905	3630		40.0	8/31	Station input	
48.0	1240		14.0	1>	8.5	140		726	3.0	181800	532	550<	18.3	5/3		
			24.0	2	15.8			30>	8.7	491	999		42.3	8/31		Zaydal Alcohol Factory
2.6	1480		6.4	1>	1.6	5		30>	4.5	1387	2720	33	26.7	8/28	outlet	Jender Station
0.8	360		49.0	1>	0.4	2		30>	8.5	495	1008	10	26.1	8/28	Activation results/(1)	
4.1	180		11.3		0.7	6		30>	8.8	216	216	72	29.2	8/28	Boiler blow down	
1.6	6600			1>	8.0	1		24	3.1	5300	9730	1	36.7	8/28	Activation results/(2)	
Lakes and rivers																
Tur	SO4	CL	PO4	NH3	NO3	SS	COD	BOD	PH	TDS	EC	Color	Tem	Date	Station	Orantes river
37.3	74		8.7	15	1.6	58	109	49	7.3			539	23.3	5/23	Canal	
13.8	90		16.0	6	21.0	20	30>	31	7.6	392	794	370	27.2	7/16	After discharged waste of the municipal slaughter.	
22.1			13.5	8	2.3	35	79	23	7.9	367	754	340	15.0	3/2	At the bridge after treatment station	
23.4			12.6	3	2.3	18			7.6	5.7	13	172	14.1		After the refinery at the bridge side.	
		32	4.0	8	2.6	31		18	7.9	323	664	286	24.8	7/13		
29.0			14.1	3	2.9	28	18	6	7.9	5.1	12	260	14.5	3/6	Beside Deek Aljen resturant	
22.4			13.8	2	3.1	20			7.7	5.7	13	188	14.4	3/6	Beside the engineers club	
23.2			9.3	5	2.8	27	1		7.9	227	479	229	13.7	3/7	Before the refinery at the bridge side	
98.1		18	5.9	3	0.5	59		11	8.0	269	554	494	23.4	7/13		
11.8			4.8	0	2.3	14	0		8.2	190.7	396	143	14.4	3/7	Before fertilizer company outlet	
																Kattina lake
	30		4.0		3.4		52	11	7.6	302	621		15.9	8/5	Alrahbeh alaskaria /outlet of first treatment tank	
	22		3.0		6.2		96	20	9.0	182	378		17.9	8/5	Alrahbeh alaskaria/North fence	
	29		3.5		0.3		43	17	8.9	181	374		19.9	8/5	Irrigation canal comes out of the lake	
	20		10.5		33.0		205	135	8.6	229	473		21.3	8/5	Pumping station to fertilizer	
	20		8.0		25.5		225	120	8.9	172	358		18.7	8/5	Raw water from the lake	
2.2			35.0	1	2.2	11	15	20	7.4	208	433	23	15.4	4/4	South discharge point of fertilizer factory	

4.4			85	2	13.6	6	13	20	2.1	7150	12940	84	16.9	4/4	Discharging point to waste water to the lake TSP
4.3			2.5	1	0.7	10.0	17	7	7.4	219.0	473	105	19.1	4/4	North discharging point of fertilizer factory on the lake
Treatment station of waste water															
			26.9	29	1.5		96	12	7.9	619.0	1252		14.8	2/3	Final discharging point before mixing with sugar company
			26.2	28	2.3		110	14	7.9	607.0	1233		16.1	2/3	Final discharging point of the treatment with company sugar at the river.
			27.9	28	7.3		415	230	7.7	568	1152			2/3	Treatment station input at waste water
			5.7	3	5.2	174	121	48	9.1	323	677		14.8	2/3	Sugar factory input at treatment station
56.5	98		30.8	70	13.4	98	491	225	7.2			550>	22.8	23/5	Treatment station input after blotters
9.2	72		19.4	45	9.1	28	145	61	7.5			402	23.7	23/5	Treatment station outlet
Ground water well															
															Alzarzoria village well
0.6	61		3.7	2	15.4	<22	<30		7.1	433	909	<25	21.3	5/22	
0.2	54		3.2	1	18.9	<22	<30		7.1	477	912	<25	20.4	5/22	Drinking well related to water association
0.4	60		4.2	2	18.6	<22	<30		7.2	451	923	<25	18.8	5/22	Haydar Shahood drinking well
0.3	55		2.7	1	23.4	<22	<30		7.1	493	1011	4	18.2	5/22	Ayman Najeeb Kharoot drinking well
0.3	63		2.4	<1	31.9	<22	<30		7.1	480	972	4	18.5	5/22	Badar Khayroot drinking well
															Jender station
1.0	19		5.0	<1	14.5	<22	<30		8.0	245	507	2	29.6	6/22	Raw water tank
2.8	10		13.6	<1	4.4	4	<30		8.9	47	99	24	40.1	6/22	Collection tank of industrial waste water
6.8	80		180	<1	5.0	6	39	8	9.1	1316	3	20	31.1	6/22	The outlet of industrial waste water treatment station
4.5	25		3.4	1	4.3	6	81	16	8.3	324	666	178	26.0	6/22	Industrial waste water treatment station
1.2	69		2.5		0.2	3	<30		8.6	172	357	10	29.0	8/28	Almarked Blowdown
1.2	37	59	7.2	<1	1.5	<22	<30		7.6	286	597	<25	24.0	7/10	Drinking well related to Mua'taz Alfara
1.2	52		1.1	<1	24.8	2			6.9	4.51	21		18.3	5/3	Well related to Aljaja dying factory
0.5	52		5.3	<1	4.7	<22	52		7.4	393	803		30.4	6/31	Well related to Zaydal factory
	10		1	1	6.9				7.5	319	657		22.2	4/19	Well related to Zaydal factory

1.1	80		2.5	<1	1.6	40			7.2	471	960	30	24.2	4/2	Well related to Textile & dyeing international company
	9		23.3	2	3.7				7.5	367	752		12.6	4/19	Well related to Sadroo company
0.5	60		1.8	<1	7.9		<4		7.3	308	634	13	19.5	5/2	Well related to Ibn Hyan company
	0		1.4	<1	3.2		<4		7.6	254	122		22.1	4/19	Well related to Abo Alabn oil company
6.2	25		5.2	<1	16.3	<22			6.8	451	921		20.5	5/3	Well related to Homs textile & spinning company
37.2	19		0.14	<1	<0.8	47	2		7.4	275	568	339	16.5	4/26	Well related to Alwaleed factory
	80		0.14	<1	0.4				7.0	457	934		27.5	4/19	Well related to Anboba Agricultural industries
4.3	80		2.0		0.1	7			7.4	448	893	139	30.2	4/24	Well related to Fruity juice
0.9	80		1.3	<1	2.7	1			7.4	431	882	128	23.6	4/26	Well related to Ferzat oil company
1.7	15		0.5		9.9	4			5.9	285	587	35	19.2	4/24	Well related to Midico factory

Index:

The mentioned results in the previous table are to be compared with Syrian standard specification in the following table

Remark	Unit	Maximum limit	Symbol	Element Name
	Celecuce	35	T	1-Temperature
	/	9.5-6.5	PH	2-pH
After 30 minutes	ml/l	10	S.S	3-Susbended Solid
	(mg/l)	500	T.S.S	4-Total Suspended Solid
	(mg/l)	2	S	5-Sulpher
	(mg/l)	1000	So ₄	6-Sulfate
	(mg/l)	100	NH ₄ -N NH ₃ -N	7-Ammonia / Ammonium
	(mg/l)	20	Po ₄	8-Phosphat
	(mg/l)	100	-	9-Oil & grease

	(mg/l)	10	-	10-Mineral oil and grease
	(mg/l)	3.0	Ba	11-Barium
	(mg/l)	1.0	B	12-Boron
	(mg/l)	0.1	Cd	13-Cadmium
	(mg/l)	0.1	Cr	14-Hexavalant Chromium
	(mg/l)	2.0	Cr	15-Total Chromium
	(mg/l)	1.0	Cu	16-Copper
	(mg/l)	1.0	pb	17-Lead
	(mg/l)	0.01	Hg	18-Mercury
	(mg/l)	2.0	Ni	19-Nickel
	(mg/l)	1.0	Se	20-Selenium
	(mg/l)	1.0	Ag	21-Silver
	(mg/l)	4.0	Zn	22-Zink
	(mg/l)	0.5	CN	23-Cyanide
	(mg/l)	0.1	As	24-Arsine
	(mg/l)	2.0	-	25-Phenol compounds
	(mg/l)	800	BOD	26-Biological Oxygen Demand
	(mg/l)	1600	COD	27-Chemical Oxygen Demand
	(mg/l)	2000	T.D.S	28-Total Dissolved Salt
	(mg/l)	600	cl	29-Chloride
	(mg/l)	8.0	F	30-Fluoride
	(mg/l)	0.005	-	31-Pesticide
	(mg/l)	5	ABS	32-Detergent
	(mg/l)	0.1	AOX	33-Halogen Organic Compounds

Maximum limits for pollution parameters of industrial waste water discharged to aqueous environment

Types of Recipients (Recipient water environment)				Unit	Code	المؤشرات Parameters	م Serial
Agricultural drainage canals	Rivers	* On Land	Seas				
no color	no color	no colour	no colour	PT	Colour	اللون	1
6-9	6-9	6-9	6-9		PH	الرقم الهيدروجيني	2
5 degrees > average- temp of recipient			10> average temp of recipient	degree Celsius	Temperature	درجة الحرارة	3
60	40	20	60	(mg/l)	BOD (5 day,20c ⁰)	الأكسجين الحيوي	4
100	150	30	200	(mg/l)	COD (Dichromate)	الأكسجين الكيماوي (داي كرومات)	5
10	10	10	15	(mg/l)	Oil &Grease	الزيوت والشحوم	6
60	30	30	60	(mg/l)	Total suspended Solids	المواد العالقة الكلية	7
1000	1200	800	-	(mg/l)	Total Dissolved Solids	المواد الذائبة الكلية	8
-	-	-	-	(ml/l)	Settleable solids	المواد المترسبة	9
10	15	1	10	(mg/l)	PO ₄	الفوسفات	10
0.5	5	5	10	(mg/l)	NH3- N- (Ammonia)	الأمونيا (نيتروجين)	11
40	50	30	50	(mg/l)	NO3- N- Nitrate	نترات- نيتروجين	12
0.5	0.02	0.01	0.5	(mg/l)	Total Recoverable Phenol	الفينول	13
0.5	1.5	0.5	1	(mg/l)	Fluorides	الفلوريدات	14
1	1	1	1	(mg/l)	Sulfide- S	الكبريتيد	15
-	1	1	-	(mg/l)	Residual chlorine	الكالور المتبقي	16
0.5	0.05	0.05	2	(mg/l)	Surfactants	المنظفات	17
4	4	4	4	(mg/l)	Dissolved Oxygen	الأكسجين المذاب كحد أدنى	18
-5	5	5	15	(mg/l)	Hydrocarbons	الهيدروكربونات النفطية	19

Table (1) Maximum allowed limits for special parameters related to treated waste water used for irrigation purpose.

Indicator	Cooked vegetables	Parks ,playground &roadside inside the city	Stadiums	Fruitful trees	Roadside	Green flats	Grains & fodder crops	Industrial harvests	Woody trees
Indicator	a			b			c		
BOD₅(mg/l)	30			100			150		
COD(mg/l)	75			200			300		
DO(mg/l)	>4 (more than 4)			-			-		
TDS(mg/l)	15000			1500			-		
SS(mg/l)	50			150			150		
SAR				9					
pH				9-6					
CL₂residual	0.5			-			-		
NO₃-N (mg/l)	20			25			25		
NH₄-N (mg/l)	3			5			-		
So₄ (mg/l)	300			500			500		

Pursuant to table no (1)

Indicator	Cooked vegetables	Parks ,playground &roadside inside the city	Stadiums	Fruitful trees	Roadside	Green flats	Grains & fodder crops	Industrial harvests	Woody trees
Indicator	a			b			c		
PO₄ (mg/l)				20					

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.5 Hama DFEA

**Annual Report for the
Environmental Monitoring Plan
For
Hama DFEA
2006**

The Environmental monitoring plan for this year at the DFEA of Hama started from Feb 2006 until Dec 2006 and the plan included the followings

- 1- Sami Factory for babies food (once/ month)
- 2- Al- Ras Cheese Factory (once/month)
- 3- Sallora cheese and dairy Factory (once/ month)
- 4- Robana for cheese and dairy factory (once/month)
- 5- Al-Hani Cheese Factory (once/ month)
- 6- Dairy factory within Hama City (once/ month)
- 7- Galvanizing Factory (once/ month)
- 8- Kernazi Oil Factory (once/ 2 months)
- 9- Kheder Abdulrazzak oil factory (once/ 2 months)
- 10- Al-Zouhour oil factory (once/ 2 months)
- 11- Al- Nawa'eer oil Factory (once/ 2 months)
- 12- Al- Safa oil factory (once/ 2 months)
- 13- Al- Nour oil factory (once/ 2 months)
- 14- Al- Omara oil Factory (once/ 2 months)
- 15- Al- Ahlieh oil factory (once/ 2 months)
- 16- Al- Fadel Oil Factory (once/ 2 months)
- 17- Hama Oil Company (once/ 2 months)
- 18- Onion Factory (once/ 2 months)
- 19- Ceramic Factory (once/ 2 months)
- 20- Wool factory (once/ 2 months)
- 21- Cotton threads factory (once/ 2 months)
- 22- Iron Factory (once/ month)
- 23- Cement Factory (once/ 2 months)
- 24- Azzara power plant (once/ 2 months)
- 25- Mohardeh power plant (once/ 2 months)
- 26- Al-Majd beverage factory (once/ 2 months)
- 27- Hama wastewater treatment plant (once/ month)
- 28- Orantes river (once/ month)

3- Goals

- 1- Identification of the existing pollution at the monitoring station locations
- 2- Know how to deal with the violated conditions
- 3- Increasing the experience of the laboratory staff in the field of Monitoring

4- Related Monitoring Activities

There are other organizations conducting the monitoring and analysis

- 1- General Foundation for drinking water and sewerage
- 2- Directorate of Orantes Basin
- 3- General Company for Sewerage

5- Details of the monitoring stations

We would mention some information about the monitoring stations

- 1- Sami dairy and cheese factory: no treatment plant for the wastewater and the wastewater discharged directly to the surface of the ground to end to an opened hole in the west direction of the factory
- 2- Al-Ras Cheese factory: there is a treatment plant for the wastewater then water is discharged after treatment to septic tank and then to the sewerage pipeline.
- 3- Sallora cheese and dairy Factory: there is an existing treatment plant for wastewater but it is not active, after the treatment wastewater discharged to the sewerage pipeline.
- 4- Al- Fadel Oil Factory: there is a treatment plant then wastewater is discharged after treatment to Qamhana sewerage pipeline.
- 5- Al-Hani Cheese Factory: there is no treatment plant and the wastewater is discharged directly to the sewerage pipeline
- 6- Hama Oil Company: there is an existing treatment plant for the wastewater resulting from the soap manufacturing then the treated wastewater discharged to the sewerage pipeline.
- 7- Wool factory: there is a treatment plant then the treated water sent to the pipeline
- 8- Ceramic Factory: there is a treatment plant then the wastewater discharged to the surrounding areas.
- 9- Iron Factory: the plant is currently under operation.
- 10- Cement Factory: no treatment plant and wastewater directly discharged to the surrounding areas.
- 11- Azzara power plant: there is a treatment plant for industrial wastewater and for Municipal wastewater then to Orantes River.
- 12- Mohardeh power plant: final discharge directly discharged to Orantes River.
- 13- Al-Majd beverage factory: there is a treatment plan and the final discharged water sent to the sewerage pipeline.
- 14- Kernazi Oil Factory: there is a treatment plan and the final discharged water is sent to the sewerage pipeline.
- 15- Al- Ahlieh oil factory: there is a treatment plan but not working properly.
- 16- Robana for cheese and dairy factory: no treatment at all but now it is proceeding
- 17- Galvanizing Factory: it was omitted from the plan due to its high pollution.
- 18- Kheder Abdulrazzak oil factory, Al-Zouhour oil factory, Al- Nawa'eer oil Factory, Al-Safa oil factory, and Al- Omara oil Factory: no treatment plants and there is high rate of oil contamination for this reason no samples were taken.
- 19- Onion Factory: there is a treatment plant and the work is seasonal from Aug-Nov.
- 20- Cotton threads factory: no industrial wastewater
- 21- Hama wastewater treatment plant: wastewater discharged after treatment directly to Orantes River.
- 22- Orantes River

6- Data Analysis

1- Orantes river: all analysis results are within the allowed standards for irrigation

- There is no standard for the river water quality for this reason we compare the results with the irrigation standards.

2- Hama wastewater treatment plant: wastewater discharged after treatment directly to Orantes River.

DO PO₄⁻³ NH₃-N: the following values are violating the discharge standards for rivers.

-3 Sami Dairy and cheese factory: the following values are violating the standards of discharging on the surface of the ground and there is no treatment.

BOD TDS SS COD PO₄⁻³

-4 Al-Ras cheese factory: the plant is not always in operation.

The following values are violating the discharging standards for pipelines

TDS CL SS BOD COD PO₄⁻³

-5 Sallora factory for Cheese and dairy: the treatment is not enough and the laboratory was closed, then it was given a grace period to activate the work of the treatment plant.

All the values of the analysis are violating the standards.

-6Al-Fadel Oil Company: there is a treatment plant

All the analysis results are violating the standards.

-7Al-Hani cheese factory: wastewater is discharged to the sewerage pipelines without treatment

All the analysis results are violating the standards.

-8Hama Oil Company: in case of the breakdown of the treatment plant all the analysis are matching the standards except COD ,SS and when the plant is on operation all the analysis are objecting to the standards for the sewerage pipeline.

-9 wool Factory: there is a treatment plant

All the analysis values are within the standards of discharging to the sewerage pipeline.

- 10 Cotton threads factory: all the analysis values are within the standards of discharging to the sewerage pipeline except SS.

-11 Ceramic Factory: there is a treatment plant, all the analysis values are within the standards of discharging to the sewerage pipeline.

-12 cement factory: wastewater is discharged to the public sewerage pipeline, all the analysis values are within the standards of discharging to the sewerage pipeline except PO₄⁻³

-13 Azzara power plant: there is a treatment plant, wastes after treatment are discharged to Ornate River, in some months we can find SS violating some standards.

-14 Mohardeh power plant: all the analysis values are within the standards of discharging to the sewerage pipeline.

-15 Al- Majd beverage company: the treatment plant is not operated continually in case the plant is stopped all the values of the analysis are matching the standards except COD. And during the operation of the plant all values will be objecting to the standards of discharging to the public sewerage pipelines

16- Kernazi Oil factory: there is a treatment plant then water is sent to the sewerage pipeline.

All the analysis values are within the standards of discharging to the sewerage pipeline.

17- Al- Ahlieh Oil Company: there is a treatment plant then water is sent to the sewerage pipeline.

All the analysis results are within the standards for discharging to the pipeline except PH, TDS, and PO_4^{-3}

18- Iron Factory: all the results of the analysis objected to the standards except COD, BOD, and SS.

7- Appendixes

1- Analysis of Orantes basin

2- Table of the consumed reagents for the years

3- Location Map of Hama

4- Table of the results

Annex 3-6: **Annual Reports 2006 (Basic Water Quality)**

3.6.6 Lattakia DFEA

**Syrian Arab Republic
MOLAE
Lattakia DFEA**

Annual Report for Environmental Monitoring

**In the lab of Lattakia DFEA
2006**

Contents:

- 1- Total objective of the project
- 2- Objectives of Environmental Monitoring
- 3- Locations monitored
- 4- O/M tables of the lab
- 5- Others

6- Annexes

- Sampling stations map
- Methods of analyses
- Stuff of the lab in 2006
- Results
- EMP 2007

1- Total objective of the project:

Developing capacity of Environmental Monitoring in Lattakia DFEA to be able to evaluate and implement regular Environmental Monitoring for the 14 parameters according to the EMP prepared by Lattakia DFEA

2- Objectives of Environmental Monitoring:

1. Monitoring wastewater discharged from different industries
2. Monitoring domestic wastewater and realize any perceptible changes
3. Monitoring water quality of rivers and lakes
4. Following up complains

Lab of Lattakia DFEA has made a periodical monitoring for some locations:

- 1- Domestic wastewater: 22 samples
- 2- Industrial wastewater: 21 samples
- 3- Rivers: 24 samples
- 4- Lakes: 12 samples
- 5- Ground water: one sample
- 6- Others: 20 samples (water bodies polluted by olive presses)
- 7- Monitoring Deefa water polluted by olive presses in three points: 63 samples

According to EMP 2006 and its modifications

1. Locations monitored:

1. Industrial wastewater

1- Jude factory for soft drinks:

considered as one of food factories, located at the entrance of Lattakia, and discharged its wastewater to Alkabeer Alshamali River, we took samples from the outlet before discharging to the river, BOD & COD values were high.



2- Ogarit factory for soft drinks:

It considered as a food factory, it is located in Jable city, has a treatment station, with high flow rate discharge, we took samples after the treatment station and before discharging to the river, BOD & COD values were high



3- Alrabee' factory for volatile oil:
Wastes of this factory are gathered in a collecting unit, then transferred away, some parameters were high.



4- Aluminum factory:

It is located at the entrance of Lattakia, and has a chemical treatment station inside the factory, then wastewater discharged into Alkabeer Alshamali River; we face difficulties in getting approval from the factory to collect samples

5- Iron factory:

It is located in Daba on the way of Lattakia-Hoffa, and discharged wastewater to the near river; we face difficulties in collecting samples because of the location of the factory



Jud iron factory	Ogarit	Alrabee' for volatile oil	Aluminum Factory	Jud for soft drink	Est. name
Annual Rate					Parameter
29	24.3	35	18	26	Air temp.
7.7	6.5	6.6	9.5	8.5	PH
22.8	22.6	27.1	20.3	27.7	Temperature
110	1737	934	92	802	color
174	907	558	563	393	TDS
5.74	3.35	0.61	4.56	3.99	DO
9	96	33	30	98	SS
158	1772	105	13	1004	COD
60	1172	60	10	635	BOD
-	4.6	19.1	2.8	11.7	NO ₃ ⁻
-	5.11	10.98	-	7.65	PO ₄ ³⁻
68	569	116	211	78	Cl ⁻
1	1	19	-	2	NH ₄ ⁺
1047	1775	1106	1144	809	Conductivity
7.1	77.1	28	59.4	177.8	Turbidity

2- Domestic wastewater:

1. Alazhari estuary:

It is the northern estuary of Lattakia; discharged into the sea without treatment, pollution indicators are high, and differ from summer to winter



2. Southern ledge estuary:

Abundant estuary in Lattakia located in the southern ledge in a tourist region



3. The port estuary:
Located inside Lattakia port, it is difficult to collect samples from it



Southern ledge	The port	Alazhari	name
Annual Rate			parameter
			Air temp
7.8	7.8	7.8	PH
22.0	20.9	22.4	temperature
1537	920	1284	color
571	360	668	TDS
1.30	2.53	1.61	DO
141	123	121	SS
349	523	373	COD
226	152.9	150	BOD
12.9	16.1	10.7	NO ₃ ⁻
21.88	37.69	28.98	PO ₄ ³⁻
176	1304	147	Cl ⁻
29	27	26	NH ₄ ⁺
1120	4087	942	conductivity
143.1	107.6	27.3	turbidity

3- Rivers and Lakes:

1. Alkabeer Alshamali River:

We monitored it in several sampling stations; it is one of the longest rivers in Lattakia, and receives pollution from different resources, it makes a self-purification because of its high flow rate, we realized high Values of some parameters in Jud factory only.

2. Alsanawbar River:

It has medium flow rate, we did not realize high values in parameters



3. Sharasheer River:

It is located at the north borders of Jable, some factories discharged into it, but we did not realize any pollution in the sampling stations we monitored

4. Alkash River:

It is an influent to Alkabeer Alshamali River. In which an iron factory discharged, pollution indicators differs depending on discharging.

5. Sixteen October Dam:

It is located on Alkabeer Alshamali River and has a high storage capacity, domestic wastewater and wastes of near restaurants discharge in it, but we

didn't realize high pollution indicators because of the self purification of the dam, and its plenty amount of water

6. Balloran Dam:

It is located in Candeel Valley north of Lattakia, domestic wastewater and wastes of near restaurants discharge in it, but we didn't realize high pollution indicators because of the self purification of the dam, and its plenty amount of water

7. Alsafarkyieh Dam:

It is located in Kurdaha, wastes of near restaurants discharge in it, but we did not realize high pollution indicators

Alkabeer Alshamali River	Alsanawbar	Alsafarkyieh	16 October Dam	Balloran Dam	name
Annual Rate					parameter
25.9	25.8				Air temp
7.4	7.3	6.8	7.7	7.4	PH
20.5	20.1	19.2	21.7	23.6	temperature
139	175	85	46	60	color
513	381	224	333	296	TDS
4.46	6.46	7.21	7.7	5.58	DO
15	35	22>	22>	23	SS
45		14	30	30>	COD
	14		9	-	BOD
0.5	1.0	0.8>	2.9	7	NO ₃ ⁻
2.62	2.8	1.20	1.66	1.87	PO ₄ ³⁻
88	6.9	38	52	50	Cl ⁻
1	1>	1>	3	3	NH ₄ ⁺
940	778	462	675	553	conductivity
13.4	14.3	11.2	7.5	10.4	turbidity

4- Complains and emergency due to olive presses pollution

We monitored all water bodies in Lattakia in the olive pressing season, and realized that some water bodies are polluted from liquid wastes of olive presses which discharge to the river without treatment, and cause death to some aqueous creatures plus contamination of underground water like drinking water of Deefa Spring in Al- Kurdaha



1. Lab O/M tables:

1. others:

We apply O/M of lab equipments regarding to O/M manual, which considered the basic reference for the stuff.

Chemicals and reagents stored carefully according to the O/M manual.

Wastes stored in plastic containers until it transferred to Damascus DFEA

Lab stuff prepare EMP by themselves

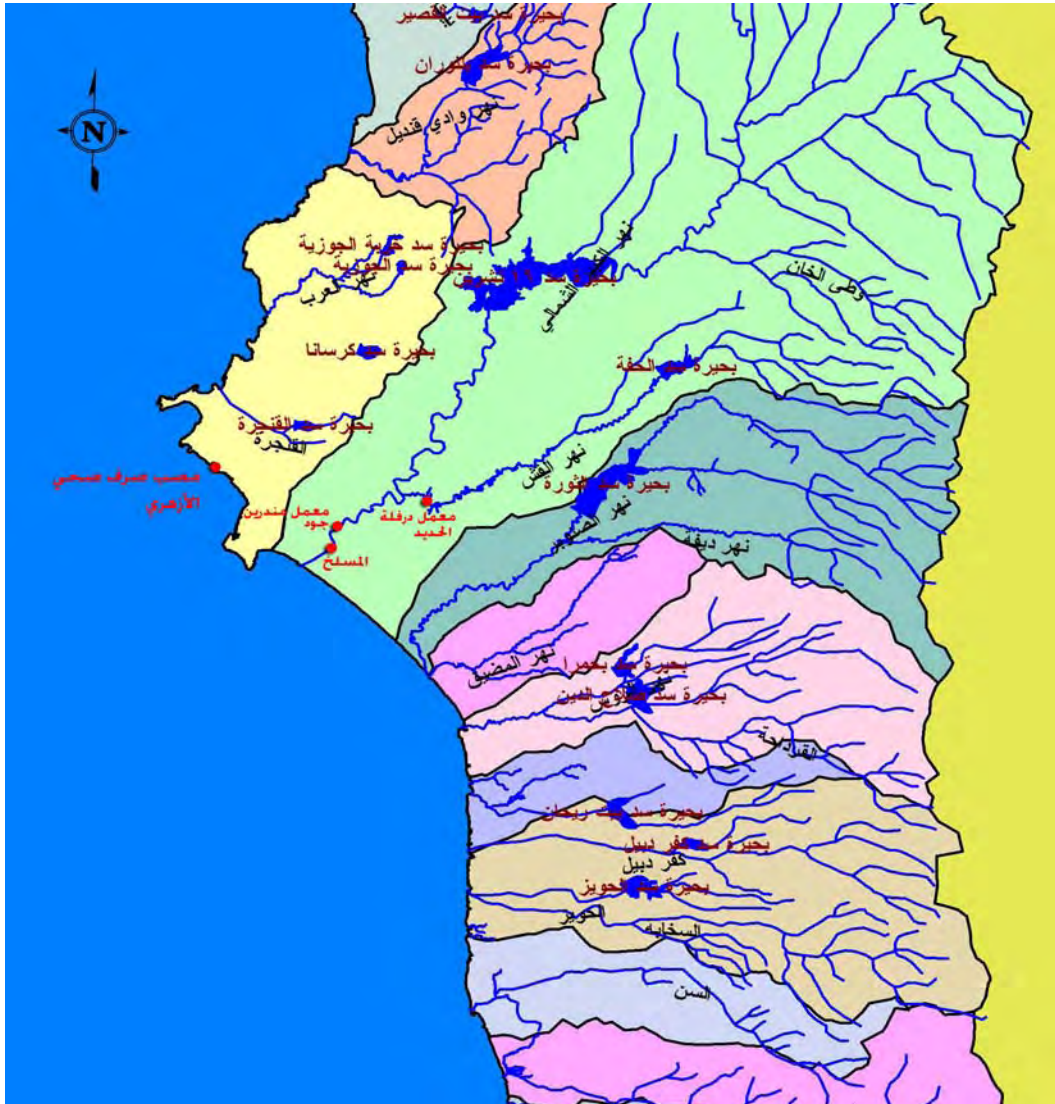
Monitoring data is put together in a special file and also within a folder in the PC contains several files for each location

Stuff can make sampling, analysis, obtain accurate results, and interpret them; they only need a larger training on interpreting and analyzing results statically.

We apply QA/QC activities in the lab through identifying sample location according to EMP, collecting it correctly, transferring and preserving it until it will be analyze. We also use special recording sheets to input data and remarks during sampling process and during analyzing in the lab; we use standard solutions to adjust equipments and check the accuracy of analysts, and apply it in data recording to avoid mistakes. We also take into consideration EDL table, then save data in files.

2. annexes:

Sampling stations map



Methods of analyses

equipment	Method of analysis	parameters
(14-1) pH meter	Electrode method	pH
		temperature
DO meter	Membrane electrode method	DO
TDS/EC meter	Electrode method	TDS/EC
Colorimeter(DR/890)	Platinum -cobalt APHA	COLOR
Colorimeter(DR/890) DRB200-1	Reactor digesting method	COD
OXiTop meter	Manometer measuring method	BOD
Colorimeter(DR/890)	Cadmium reduction method	NO3-
Colorimeter(DR/890)	Amino acid method	PO4
Digital Titrator (Model16900)	Silver nitrate method	Cl
Colorimeter(DR/890)	Salicilate method	NH3-N
Colorimeter(DR/890)	Photometric method	SS
2100p portable Turbidity	Niphilometric method	turbidity

Lab stuff in the year 2006

Our staff chose sampling stations and their frequency according to their pollution. We made analyses for 14 parameters, and got up of analysis experience, dealing with chemicals, materials, tools related to analyses. We also got up with equipments calibration, SOPs, Reagents managements. Lab safety, and data management, but we need larger training on interpreting and analyzing results statically.

In charged with	background	name
W/Q, lab safety, equip.& spare parts management	Engineer/ lab chief	E. Aamal Mrhej
W/Q, lab safety, treating lab wastes	Engineer	E. Sinan Deeb
W/Q, Reagents& Glassware management	Chemical Institute	Hadeel Wannous
W/Q, Reagents& Glassware management	Chemical Institute	Suzan Shaddoud
W/Q, spare parts	Chemical Engineer	E. Yamen Salman
W/Q, treating lab wastes	Chemical Engineer	E. Thaer Mohammed
W/Q, lab safety	Civil engineer	E. Rana Soufi
W/Q, Reagents& Glassware management	Civil engineer	E. Maya Yaseen
Data Management	Informatics	E. Bana Awad
Data Management	Data Management	Adel Habib

- Results: