

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

3.6.10 Rakka DFEA

Syrian Arab Republic
Ministry of Local Administration and Environment
Rakka DFEA

Contents of the report

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Introduction

- General information about Rakka governorate

It locates in the north east of Syria, beside Euphrates River, hot in summer (temperature sometimes reaches up to 45°), and cold in winter (temperature sometimes reaches down to 5°).

Raining rate not more than 200 mm per year

Population: 698000 in 2001

Area: 19634 km²

Ratio of Its area to the whole Syria area: 10.6%

Its rank among governorates: /4/

Average of population density: 34 person / km²

- Administrative divisions of Rakka Governorate

1- Zones: /3/

2- Districts: /7/

3- Cities: /4/

4- villages: /323/

5- Farms: /944/

Industrial reality:

There are no big factories, only small and medium workshops

No. of establishments: 1717

Ratio of establishments to all governorates: 1.9%

Quantity of drinking water consumed in 2000: 31500000 m³

Population who get used of sewer network in Rakka: 47%

Major industries:

1- Electricity Generation

2- Seeds grinding

3- Soft drink

4- Biscuits and chocolates

Agricultural reality:

Cultivable area: 805000 hectare in 2000

Cultivated area: 490000 hectare, its ratio to all Cultivable area is 60.9%

Irrigated area---: 173000 hectare, its ratio to all cultivated area is 35.3%

Forests area----: 015000 hectare

Pasture lands --: 977000 hectare

Tourism reality:

There are many archaeology sites like Ja'abar castle, Rasafa, the archaeological wall, Baghdad Gate...etc.

The governorate has a beautiful nature due to its location beside Euphrates River

In addition, that why conserving Environment is necessary and the project of Environmental Monitoring in cooperation with JICA is necessary

Sampling symbols of Rakka DFEA

<u>RKA-L-001</u>	Alasad lake	Lakes
<u>RKA-L-002</u>	Alba'th Dam lake	
<u>RKA-I-001</u>	Alzuhoor	Industrial water
<u>RKA-I-002</u>	Alna'eem	
<u>RKA-I-003</u>	Diary	
<u>RKA-I-004</u>	Sugar	
<u>RKA-I-005</u>	Soft drink	
<u>RKA-I-006</u>	Olive press	
<u>RKA-I-007</u>	Al'ojaili Est.	
<u>RKA-D-001</u>	Domestic wastewater of Rakka	waste water
<u>RKA-F-001</u>	Agricultural wastewater Shu'aib Alzikr	
<u>RKA-R-001</u>	Euphrates after Jallab	Euphrates River
<u>RKA-R-002</u>	Jallab River	
<u>RKA-R-003</u>	Euphrates after slaughter house	
<u>RKA-R-004</u>	Euphrates after domestic wastewater	
<u>RKA-R-005</u>	Euphrates at the bridge	
<u>RKA-R-006</u>	Euphrates at Ma'dan	
<u>RKA-C-001</u>	Drinking water	complain
<u>RKA-C-002</u>	well	
<u>RKA-C-003</u>	Al'ali Bajlyieh lake	

EMP

item							contents
1. general:							-1- environmen- tal Monitoring
1) <u>Environmental Monitoring Plan</u> - (date of preparing, locations, frequency, items...etc)							
1) Environmental Monitoring Plan Date of preparing (day, month, year)							
items	frequency	locations	Water body				
	3 times	1-1 sugar factory	1- industrial wastewater				
	2 times	1-2 olive presses					
	2 times	1-3 Al'ojaili Est.					
	2 times	1-4 small factories in the city					
	2 times	1-5 soft drink factory					
	6 times	2-1 estuary of domestic water in the city	2- domestic water				
	2 times	3-1 Alasad lake	3- rivers and lakes				
	2 times	3-2 Alba'th dam lake					
	2 times	3-3 Al'ekrishi lake					
	8 times	3-4 Euphrates river					
	2 times	4-1 Agricultural wastewater	4- others				
	2 times	4-2 wells					
	As frequency of complains	4-3 complains					
Remarks: 1- loss in stuff, no permanent stuff for lab work 2- we need a lab operator							
2. sampling: 1) date and time, field remarks, locations, sampling stations...etc 2) field remarks and records, names of samples takers, using sampling vehicle, sampling method							
(2) & (1)							
Sampling method	Using samplin g vehicle	Names of samples takers	Field records	Field remarks	Date & time	Samplin g stations	locations
One sample in 3 bottles, using sampling tools		- E. Shamsa Aljasem - E. Adib Ammoury - Thani Alabd	- Record of sampling tools and documents - Record of measurements and field remarks - Record of water quality results	There are agricultural lands at the banks	2006/04/22 2006/07/25 2006/10/27	When entering Syrian lands	Aljallab

Remarks:

3. lab analysis, and O/M

- 1) date and time of the analysis, No. of samples, names of analyzing persons, equipments...
- 2) days of data input, working hours, operation days of the lab
- 3) data and records of analysis
- 4) problems and obstacles

1)

Equipment used	Names of analyzers	No. of samples	Time of analyzing	Date of sampling
All related equipments	- E. Shamsa Aljaseem - E. Adib Ammoury - Thani Alabd - Abdullatif Ja'look	3	Same day of sampling	Same day of sampling

- 2)
 - Days of data input: after finishing analysis process and checking results
 - Working hours: depends on no. of samples, sometimes we have to stay overtime at the lab
 - Operation days of the lab: according to the sampling schedule, and when getting samples out of the schedule
- 3)
 - Record of sampling tools and documents
 - Record of measurements and field remarks
 - Record of water quality results
 - SOP for all elements used in the analysis process
 - Record of final results
- 4)
 - Staff don't work full time in the lab
 - Getting disconnecting in electricity
 - no lab operator is available

4. lab O/M:

- 1) date and time of equipments calibration
- 2) problems, failure, and maintenance record
- 3) reagents consumption records
- 4) cleaning and arranging lab and equipments

1)
We calibrate equipments before beginning analysis processes to obtain true results
We clean equipments after finishing analysis process

2)
As specimens approved by JICA

<p>3)</p> <table border="1" data-bbox="124 264 1276 680"> <thead> <tr> <th>Consumed quantity</th> <th>Reagent used</th> <th>type of analysis</th> </tr> </thead> <tbody> <tr> <td rowspan="6">As the number of samples in each sampling</td> <td>CAT.21259</td> <td>CODcr</td> </tr> <tr> <td>– Nitrification inhibitor seedDOB Na OH Nutrient buffer pillows</td> <td>DOB5</td> </tr> <tr> <td>Nitraver 5</td> <td>NO3-N</td> </tr> <tr> <td>Molybdates- amino acid reagent</td> <td>PO4</td> </tr> <tr> <td>Chloride1- indicator powder</td> <td>CL</td> </tr> <tr> <td>Salicylate- cyanurate</td> <td>NH3-N</td> </tr> </tbody> </table> <p>4) lab is cleaned periodically and continuously by stuff because no lab operator is available</p>	Consumed quantity	Reagent used	type of analysis	As the number of samples in each sampling	CAT.21259	CODcr	– Nitrification inhibitor seedDOB Na OH Nutrient buffer pillows	DOB5	Nitraver 5	NO3-N	Molybdates- amino acid reagent	PO4	Chloride1- indicator powder	CL	Salicylate- cyanurate	NH3-N	
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<p>5. Data management and QA&QC:</p> <p>1) data records and interpretation</p> <p>2) QA&QC activities</p>																	
<p>1)</p> <p>- We fill in tables approved by JICA like: Record of sampling tools and documents, record of measurements and field remarks, record of water quality results, and record of final results. We fill in data immediately at the field and after finishing measurements, and then we compare them with Syrian Standards.</p> <p>2)</p> <p>1- prepare equipments, calibrate them, and make sure they are ready to use before sampling</p> <p>2- take sufficient quantity of the sample, put it in bottles, then in the ice box</p> <p>3- commitment of criteria and instructions mentioned in SOPs</p> <p>4- record analyses results accurately as the pattern approved by JICA</p> <p>5- ignoring odd results in order not to affect results interpretation</p> <p>6- when we doubt in results accuracy, we have to re-analyze another time</p>																	
<p>1. recording:</p> <p>1) input data and records</p> <p>2) organizing data</p>	<p>2- data management</p>																
<p>1)</p> <p>After finishing every analysis process, we input data in tables approved by JICA after making sure of results accuracy, then we save these results in their names and date and place of sampling. Then we interpret these results and compare them with the Syrian Standards, and make statistic processes and draw charts</p> <p>2)</p> <p>We save data files in folders on the CD drive to avoid losing them if we need to format the hard disk, and make a shortcut at the desktop to reach information easily. In addition to that, we make presentation in PowerPoint for each sampling process benefiting from the lab camera. Then we copy results and lab activities on CDs, print them, and save them in a special folder.</p>																	
<p>2. data interpretation and QA/QC:</p> <p>1) data records and interpretation</p> <p>2) QA/QC activities</p>																	
<p>1)</p> <p>We interpret results when we compare them with Syrian standards to identify pollution resources and treat them as possible as we can</p>																	

2)
 To secure QA&QC, we make sure of recording results correctly, revising calculations, numbers, and mathematical mistakes; also make sure when copying data from one record to another.
 We make sure of validation, storage conditions of standard solutions used in calibrating equipments,
 We make sure of validity and storage conditions of reagents
 Calibrating equipments before analyzing

3. public awareness and environmental education plan:

Our DFEA is planning to give awareness lectures in the cultural centers in rural areas, (how to get acquainted to the surrounding environment), we gave A LECTURE IN THE Sabkha cultural center in 7/2/2006
 Holding seminars and presenting lectures in environmental occasions + awareness campaigns to schools.

Week 4	Week 3	Week 2	Week 1	Month
Euphrates after sewer	Domestic wastewater	-----	-----	Fbruary
Euphrates after Jallab	Euphrates at the bridge	Alba'th lake	Alasad lake	March
Drinking water	Jallab	Shu'aib Alzikh	Al'ojaily Est.	April
Euphrates after slatter house	Domestic wastewater	Euphrates at Ma'dan	Alsabkha treatnebt station	May
Wells water	Soft drink factory	Small factories in the city	Euphrates after Jallab	June
Jallab	Euphrates after sewer	Sugar factory	Alasad lake	July
Sugar factory	Soft drink factory	Domestic wastewater	Euphrates after Jallab	August
Shu'aib Alzikh	Sugar factory	Euphrates at the bridge	Wells water	September
Jallab	Al'ojaily Est.	Small factories in the city	Drinking water	October
Euphrates at Ma'dan	Euphrates after slatter house	Euphrates after Jallab	olive presses	November
Wells water	Alba'th lake	olive presses	Domestic wastewater	December

Environmental Monitoring Plan

No: 001 Rakka DFEA 2006

1- Logical Framework:

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

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

2- Environmental Monitoring objectives:

- 1- Monitoring industrial wastewater
- 2- Monitoring domestic water, and compare the results with Syrian Standards to identify the volume of the pollution.
- 3- Monitoring rivers to identify the effects of pollutants.
- 4- Monitoring wells
- 5- Complains and emergency.

3- Monitoring stations:

remarks	location	No. of stations	Water body
	1) Sugar factory 2) Olive presses 3) Al'ojaili. Est. 4) Small factories in city 5) Soft drink factory	5	1. Industrial wastewater
	1) Domestic wastewater outlet 2) TSP in Sabkha	2	2. Domestic wastewater
	1) Alasad lake 2) Alba'th dam lake 3) Al'akreeshi lake 4) Euphrates River 5) Aljallab	5	3. Rivers and lakes
			4. Seas and costal regions
) Agricultural wastewater Wells complains	3	5. Others

4. Time and duration of EMP:

Duration of Environmental Monitoring is from 1st of January until 31st of December 2006, frequency of the EMP summarized in the table below:

No. of times	frequency	stations	Water body
3 2 1 2 2	-Seasonal -Seasonal - Annual - twice a year - twice a year	1) Sugar factory 2) Olive presses 3) Al'ojaili. Est. 4) Small factories in city 5) Soft drink factory	1. Industrial wastewater
6			2. Domestic wastewater
2 2 15 2		1) Alasad lake 2) Alba'th dam lake 3) Al'akreeshi lake 5) Aljallab	3. Rivers and lakes
			4. Seas and costal regions
2 2 -----	- twice a year - twice a year - as needed	Agricultural wastewater Wells complain	5. Others

5. Parameters to be monitored and analyzed:

others	Seas and cistern areas	Rivers and lakes	Domestic water	Industrial wastewater	parameter	No.
1- field measurements						
O	O	O	O	O	EC- TDS	(1)
O	O	O	O	O	T	(2)
O	O	O	O	O	PH	(3)
O	O	O	O	O	DO	(4)
2- lab analyses						
All analyses available in the lab						

6. Analysis methods:

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	- NO ₃ – N8
	Salicilate method	- NH ₃ – N9
	Amino acid method	- PO ₄ ⁺³ 10
	Silver nitrate method	- CL ⁻ 11
	Pressure sensor method	BOD ₅ . 12
	Electrode method	- EC- 13
	Niphilometric method	14- turbidity

7. Data and publication records:

- Record in DFEA
- Record in the directorate of labs at GCEA
- Record in the Governorate
- Preparing data book
- Annual report (to be prepared and published)

8. Other remarks:

8.1 responsible stuff

remarks	Duration	In charge with	background	name
			Engineer	Shamsa Aljasem
			Engineer	Adib Ammory
			Eng. Assistant	Thani Alabd
			Data management	Abdullatif Ja'look







Suggestions and recommendations

1- Agricultural wastewater

We suggest converting the path of agricultural wastewater canals away from Euphrates River in order to get use of these waters for irrigation.

- In case there is no possibility to convert the path, we have to establish treatment station plants

2- Domestic wastewater

Treatment station plants have to be set up to treat domestic wastewater in order to get use of it for irrigation, especially domestic wastewater of residential crowds that discharged to Euphrates River

3- Industrial wastewater

Treatment stations have to be set up for each factory, especially sugar factory and olive mills to reduce high pollution resulted from this discharging

4- Jallab River

Treatment station plant has to be set up because water of this river consists of industrial, agricultural, and domestic wastewater coming from Turkey

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

3.6.11 Sweida DFEA

Syrian Arab republic
Ministry of local administration and environment
Directorate of environmental affairs

الجمهورية العربية السورية
وزارة الإدارة المحلية والبيئة
مديرية شؤون البيئة بالسويداء

Annual Report
Sweida 2006

Prepared by
Eng.Wael Eng. Humam
Abo Ganem Abo Raid

Directorate of Sweida
DFEA
Dr. Mutasem Alabed

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8. Technical staff of lab in Sweida DFEA

9. Annexes

9.1 Annex 1: Map shows monitoring locations .

9.2 Annex 2: Table shows standards for different kinds of water

9.3 Annex 3: Photos of some sampling locations.

1. Executive Summary

1.1 Objective of the report:

Environment becomes very important now days due to the big suffering of our planet from pollution, as the development of countries is measured by the allocated budget which cares of environmental affaires, and the capacity of finding practical solutions in order to mitigate pollution.

Since Sweida has a beautiful and pure nature comparing with other governorates, we want to preserve it.

So we want to show the following:

- Highlight on pollution resources within the result of analysis.
- Have an idea about the medium exposed to pollution and know the kind of this pollution.
- The kind and extent of pollution which governorate is exposed to.
- Present the executive steps of the environmental monitoring plan for year 2006.

1.2-The summary of result:

The numbers of samples which are analyzed in 2006 amount to /94/samples divided into (springs, well, industrial waste water, dams, and compliments) and also, there is pollution in some of natural sources which existed in industrial waste water and sewerage locations since there are no treatment stations.

2. The environmental monitoring plan for the year 2006:

2.1 The executive steps

2.1.1 The logical basis

The environmental monitoring plan is prepared by Sweida DFEA in accordance with the environmental low No./50/for the year 2002.

Sweida DFEA has the right to apply the environmental monitoring plan by delegation from the minister of MOLAE and the governor of Sweida governorate according to the mentioned low's regulations.

2.2 Objective of monitoring plan

2.2.1 Protect the human's health by limiting the location of pollution in order to treat it.

2.2.2 Determine the water quality in the Governorate.

2.2.3 Response to any kind of emergency.

2.2.4 Increase the experience in EIA and complaints.

2.2.5 Get accurate and digital measures for pollution amount and the ability to compare

2.3 Values which should be analyzed and monitored:

Springs and wells	Dam	Domestic water	Industrial waste water	Parameters	No.
1-Field measurements					-1
O	O	O	O	PH	(1)
O	O	O	O	EC+TDS	(2)
O	O	Ø	Ø	DO	(3)
O	O	O	O	Temperature	(4)
2-Lab analysis					
O	O	Ø	Ø	COLOR	(1)
O	O	Ø	Ø	SS	(2)
O	O	O	O	COD	(3)
O	O	O	O	BOD	(4)
O	O	O	O	NO3-N	(5)
O	O	O	O	NH3-N	(6)
O	O	O	O	PO4	(7)
O	O	O	O	CL	(8)
O	O	Ø	Ø	Turbidity	(9)

Analysis is not necessary Ø , Analysis is necessary O : ملاحظة

2.4 Monitoring stations:

The following table shows the kind and condition of the monitoring stations:

Notice	Number of Stations	Water body
There is no treatment station	5	Industrial waste water
There is no treatment station	4	Domestic water
	10dams	Lakes and river
	20 springs 5 wells	Others

2.5 Monitoring time and frequency:

Monitoring time is a year according to mentioned frequencies in article 2.3

2.6 Approved analysis method in lab's equipments:

Method	Parameter
Electrode method	pH
Thermometer	Water temp.
APHA Platinum-Cobalt method	Color
Electrode method	TDS
Membrane Electrode method	DO
Photometric method	SS
Reactor Digestion method	COD _{Cr}
Cadmium Reduction method	NO ₃ -N
Salicylate method	NH ₃ -N
Amino Acid method	PO ₄ ³⁺
Silver Nitrate Method	Cl ⁻
Manometric (Pressure sensor) method	BOD ₅
Electrode method	EC
Nephelometric method	Turbidity

2.7. Approved parameters:

Level and kind of pollution is determined according to the following Syrian standards specifications:

- 2.7.1.** Syrian standards specifications for drinking water no. /45/
Dated 1994.
- 2.7.2.** Treated domestic wastes water for irrigation issue no./2752/
Dated 29/4/2003/
- 2.7.3.** Liquid wastes discharged by economical activities and poured out
Into sewer . no. /2580 / dated 10/6/2002
- 2.7.4.** Maximum limits of pollution's indicators discharged from industrial
Waste water to aquatic environment, the limits are approved in
High council sessions for environment safety dated 13/5/2002.

3. Introduction

3.1. Objectives:

- 3.1.1. Set an active and regular EMO for monitoring pollution sources.
- 3.1.2. Setting solutions and suggestions to limit and reduce pollutants.
- 3.1.3. Lab accreditation in order to have authority to force who are responsible for pollution and control the pollution produced by their establishments.
- 3.1.4. Warning citizens about environmental harm caused by existed projects through results.
- 3.1.5. Rising practical experience for the lab staff.

3.2. Monitoring locations:

The total numbers of monitoring locations are /46/ distributed as dams, wells, springs, industrial wastes and domestic wastes.

3.3. Other monitoring activities:

Monitoring is not limited to the setting plan, but it extends to the complaints received by our directorate and that for checking water quality of particular sources or determining the kind of pollution whether it is biological or chemical.

4. Details:

The following table shows monitoring locations with frequency of samples per location

January December (Times)	frequency	Stations	Body water
5 times	-5 times a month 5sequent days	1) Distillation factory .	Industrial waste water
5 times	-5 times a month 5 sequent days	2)Aljabel Juice factory	
5 times	-5 times a month 5 sequent days	3)Alshahba Milk factory	
5 times	-5 times a month 5 sequent days	4)Detergent factory	
5 times	-5 times a month 5 sequent days	5)Olive Mill (Althaala,Rasas,Shahba, Alneser, Althaala alhadetha)	

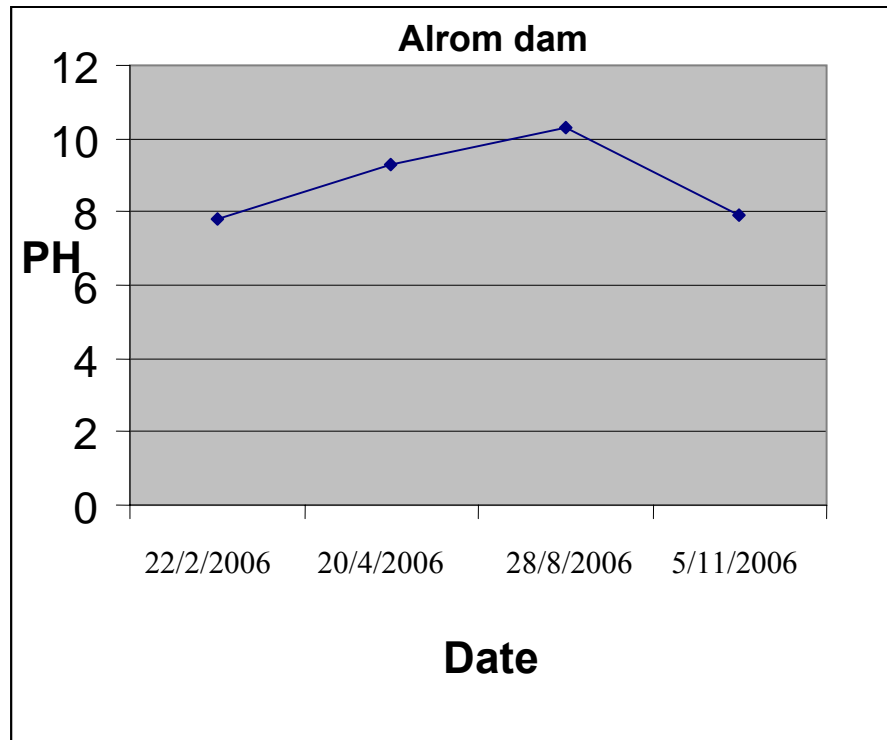
Once per station	Once a year	Salkhad – Swieda waste water – random waste(1) – waste water random waste (2)	Domestic waste water
4 times for each dam	Once per three months	Alrom- Sahwat Alkheder –Jabal Alarab-Alteba-Algeda-Hebran- Almashnaf Alshamali- Almashnaf Aljanobi –Jwelen-Sahwat Blata.	Lakes
One time for each well or spring	Once a year	Wells(Aen Albader-Alkhwabi-Aen Mousa- Aen Alrasfa-Aen Almoukbia-Moaalakat Sala- Alkram and Zaarora- Deir Aljoz- Ras Alaen-Shakara-Alhoma-Arra Altanoria-Almazraa- Am Alkasab- Aen Alsekhna-Aen Albarda-Alen Algarbia-Aloujayjat-Hebki) Wells(Jrain- Sahat Albalata- Alzeraa-Salakhed-alafena)	Others

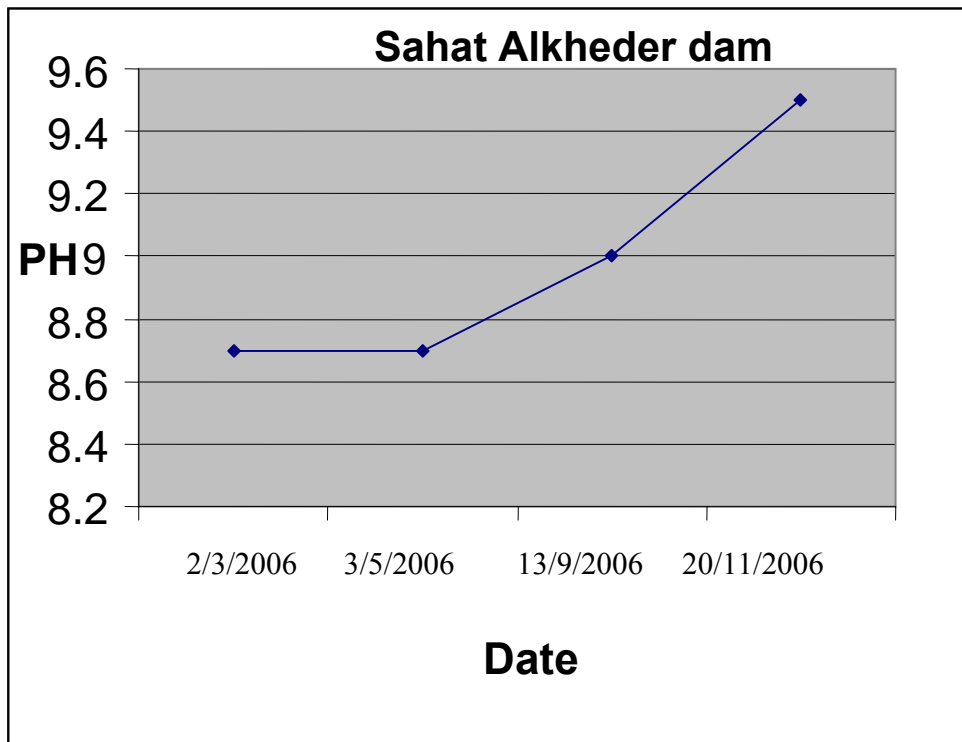
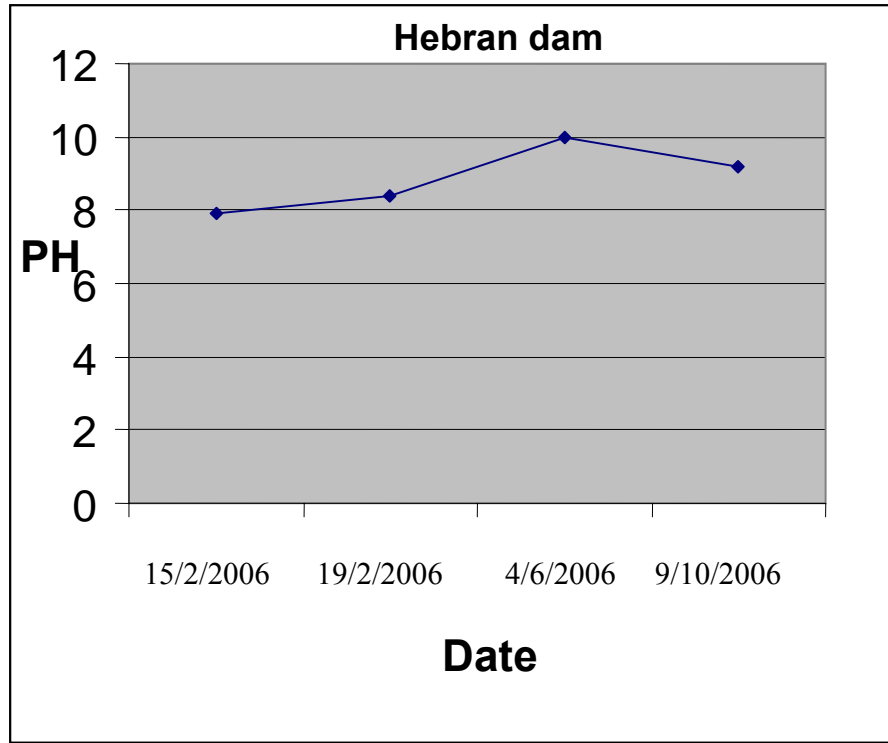
As for some factories, we didn't commit five frequencies since of low and seasonal product of these factories, and that is the same as for olive mills so we took in our consideration when we put the plan for 2007.

5. Results and Discussions:

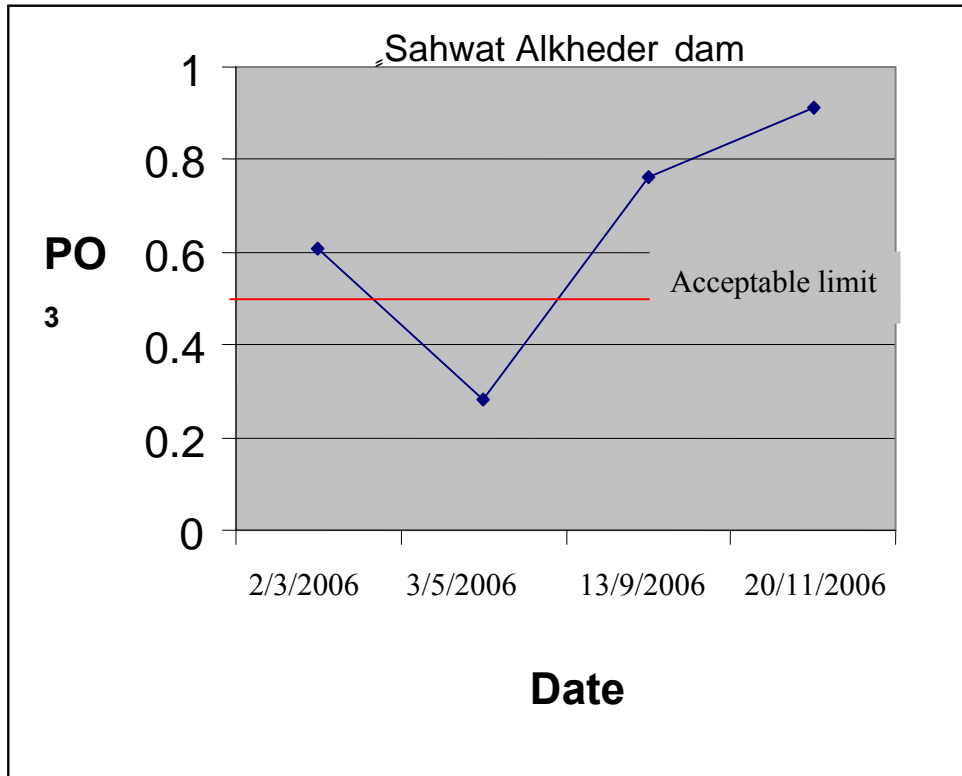
1.1. Determine the water quality:

There was increasing of "PH" in almost of dams especially in summer
And the following chart shows that:

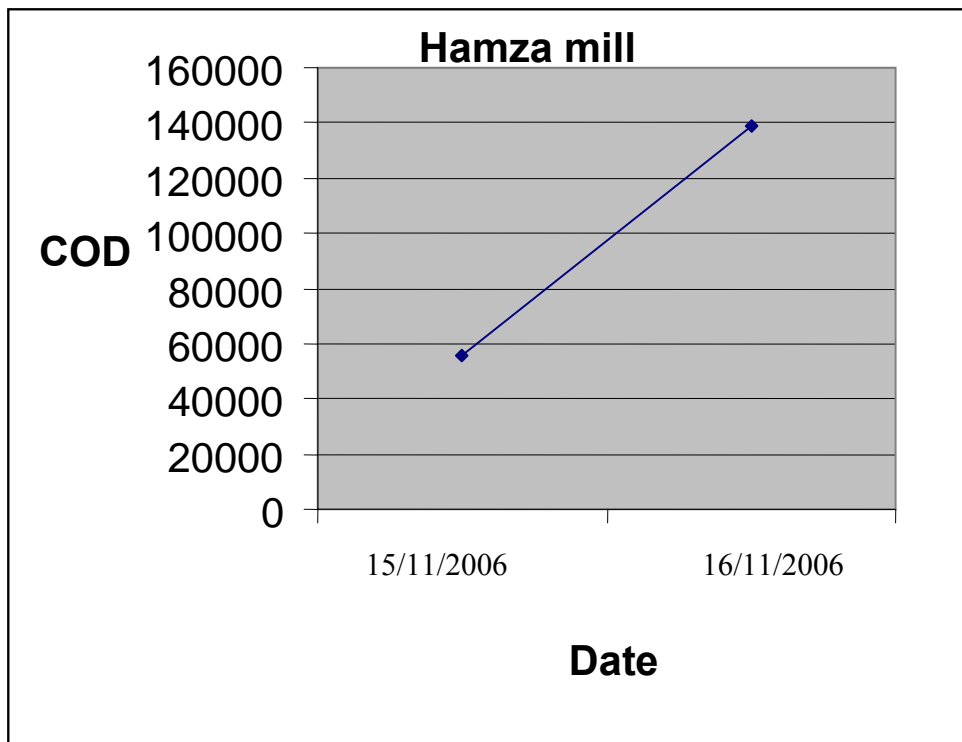


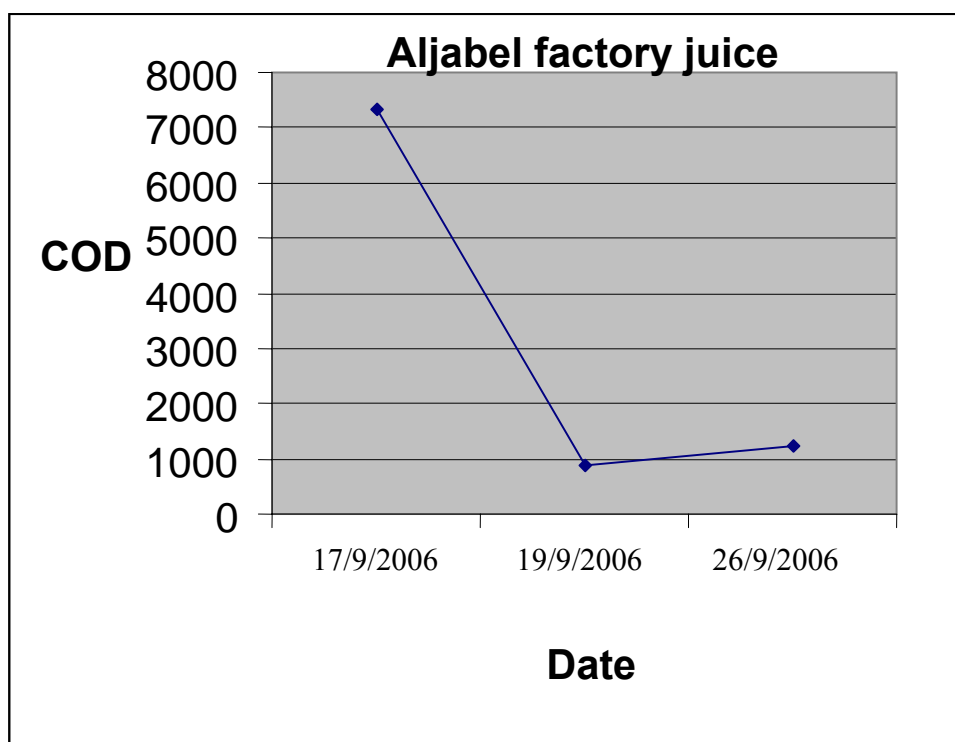


There is an increasing of PO_3 in some dams as Sahwat Alkheder:



There is an increasing of COD in the industrial waste water:





The following tables show sampling results performed during 2006 on different sampling locations according to approved symbol of sampling location:

L	Dams
G	Wells and springs
D	Sewerage
I	Industrial waste
C	Complaints

5.2 The main problems:

- 5.2.1. Some general authorities prevent lab staff to enter sampling location (especially water drinking sources)
- 5.2.2. There is no noticeable future plan for training lab staff and making specialized courses to develop skills in all fields.
- 5.2.3. So far there is no official accreditation for lab.
- 5.2.4. There isn't enough fuel for cars in order to cover received complaints out of the EMP.
- 5.2.5. There isn't any allowance which encourages lab staff.
- 5.2.6. There aren't enough rooms for lab.

6. Recommendations and future plan:

6.1. EMP for 2007:

The numbers of samples in 2007 are /74/distributed as the following:

- 6.1.1. Eight wells with low frequencies during the year for each.
- 6.1.2. Four springs with low frequencies during the year for each.
- 6.1.3. Ten dams with low frequencies during the year for each.
- 6.1.4. Five factories with three frequencies during the year for each.
- 6.1.5. Five presses with low frequencies during the year for each.
- 6.1.6. Domestic water with six frequencies.

The following table shows the locations in EMP2007 with frequencies:

Numbers of times	Frequency	Stations	Body water
5 times	-5 times a month 5sequent days	1)Distillation factory	1.Industrial waste water
5 times	-5 times a month 5sequent days	2)Aljabel factory juice	
Once	Once (Can be increased according to the productivity)	3) Shahba factory milk	
Once	-3 times a month 3sequent days	4)Detergent factory	
3 times	Twice a month 3 sequent days	5)Alrayan factory	
Twice	Twice a month 2 sequent days	6)Olive presses (Abo Hassan- Hamzeh- Alneser- Alharfoush – Aljolan)	
Once per three months	4 times inside city	Asweida waste	2)Domestic waste water
Once per six months	Twice	Random waste	
Once per six months	Twice	Alrom- Sahwat Alkheder –Jabal Alarab-Alteba-Algeda-Hebran- Almashnaf Alshamali- Almashnaf Aljanobi –Jwelen-Sahwat Blata.	3)Dams

Once per six months	Twice per year	Wells (Ein Bader-Ein Mousa-Ara) Wells (Wlga-Alsweida-Alzerraa- Almashfa-Saleem-Kanaker-Samee- Majadel)	4)Wells and springs
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Notice: As for wells and springs, we choose tow frequencies for each location, one in summer and the other in winter in order to get an idea about pollution and the causes of it.

6.2 Suggestions:

6.2.1. Setting up a schedule for training mobile lab staff (Air and noise measurements) by JICA, in order to become these measurements much accuracy.

6.2.2. Setting up a schedule for training microbiological lab staff to reach on a high level.

6.2.3. Giving an order that allows the labs of DFEAs in governorate to enter locations of water sources in purpose of sampling.

7. Technical lab staff of Sweida DFEA for 2007:

Education	In charge of	Position	Name
Agronomy	The lab and staff	Lab chief	Ms. Omay'mah Al-Sha'ar
Food Engineering	Equipment management and spare parts	Lab chief deputy	Mr.. Humam Abo Raid
Agronomy	Treatment of solid and liquid wastes	Lab staff	Mr.. Thaer Hamzeh
Chemistry	Lab safety (Electricity –Fire Health &vocational safety)	Lab staff	Ms. Raghad Abu Hasson
Middle institute of chemical industry	Reagents and glassware management	Lab staff	Mr. Samer Al Masri
Middle institute of chemical industry	Treatment of solid and liquid wastes	Lab staff	Ms.. Amal Swaidan
Middle institute of chemical industry	Lab safety (Electricity –Fire Health &vocational safety)	Lab staff	Ms. Hana Abu Zaidan
Information Engineering /Networks	Data management	Data management and network	Mr. Waeel Abo Ganem

Annex 1

Map shows monitoring stations

Annex 1

Table shows permitted limit for different kind of water

Annex 1

Photos for some sampling locations

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

3.6.12 Dara'a DFEA

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

Annual Report for Dara'a DFEA (2006)

EMP for 2006

EMP for 2007

Prepared by lab staff

**Director:
Eng. Fatima AlHariri**

1. Executive Summary

1-1 Report Purpose:

This Report gives an idea about water quality and pollutants that water sources exposed to in Darra DFEA, presents an evaluation for water quality, so this report becomes as a documentary and scientific reference

Whiten reach of discussion maker and citizens of Darra to protect water from pollution .depending on the results we reached during the samples from industrials foundation and different water sources in governorate.

1.2. Environmental plan:

EMP was set up with a lowest cost, industries which produce big amount of liquid wastes and high concentration of pollutants were chosen. Springs and wells were chosen from different areas.

This plan aims to train develops the staff who work in Environmental monitoring especially lab staff.

The objectives of plan:

- 1-Monitoring the underground water quality closed to pollution sources.
- 2- Monitoring water and waste water produced by industrial foundation in order to support environmental inspection and make sure of factory's commitment of Syrian specifications of industrial waste water.
- 3- Monitoring the water quality in lacks and dams.

2-Key information about Dara'a Governorate:

2.1. Introduction:

Darra governorate locates in south east of Syria, the total area is /373000/ hectare .it consists of a flat land surrounding with hills and mountains as Aljolan hill by west ,Jabal Alarab by east and ?Harmoon mountains series by north. Since it is a flat land the rain water flows forming valleys and floods .these floods and valleys characterize by winter flowing so many of dams were built to store water and use it in dry seasons. (Irrigate plants and livestock) The number of dams which were built at valleys's water way are (18) .They are different in the capacity and size.

Darra's inhabitants depend on farming as a main source of livings .grains and olive are planted widely, so a lot of presses olive were built, the total presses are /48/till now.

Water in Darra governorate:

The reality of water in is dangerous according to sequence dryness and continues consuming of water, that reflect badly on springs plenty , the level and quantity of underground water, and dams which are not filled in their maximum capacity .

Underground water is good, it is divided into:

**Springs: most of them locate in west south region, part of them are used for drink and the other for irrigation.

**Wells: the depth of underground water in west a is50 meter

2-2 Water in Dara'a

Water in Dar'aa is in dangerous situation because of the sequences dryness and continues consuming of the water sources so those reflect negatively at the spring water flow and ground water quantity and level.

Ground water is good quality, it divided into tow types:

- Springs that most of them concentrate in south-east area, part of these springs are Used as a drinking water
- Wells as the depth of ground water is around 50m in east area and 300-600m in north and west areas.

Surface waters as follows:

- Mzereb lake**: it is a natural lake that feeds on surrounded springs, and resulting to high consumption of water, the level's lake went down noticeably in last years.
- Dams and water tanks**: The numbers of them are **18** with storage capacity **101** million /m³.

2.3. Farming in Dara'a:

Darra depends basically on non-irrigated farming, especially grains (wheat-garbanzo). In last few years, olives has been planted as took second grade of producing olive in Syria There are some planting depends on well's and dams water as vegetables and grapes. Also there are model irrigation technologies as (by dropping –distillation –sprinkles)

2.4. Industry in Dara'a

Industry in Dara'a is simple; it concentrates on food industry which depends on agricultural products as raw material, also there are small industrial crafts.

The most important foundations are:

- Paint factories.
- Tile and concrete factories.
- Marble and stone factories.
- Refrigerator factory.
- Cables factory
- Sponge factory.
- Poly styrene.
- Plastic factory.
- CD. Factory.
- Electrical and electronic equipments factory.
- Wires and nails factory.

These industries are specialized in limited consumption of water and law discharge. There are some industries use big quantities of water and produce liquid wastes.

The following table shows the most important industries which produce liquid waste.

Notes	Estimated Waste water m ³ per year	Number of factories and foundations	Industry kind
The registered number is estimated	Drying water 60000 washing 25000 water	48	Olive press
//	81000	12	Canned food factory
			Washing car shop
		10	Pickles factory
Tow factory under constructions		4	Milk factory
		4	Halvah factory
		1	Soft drink water
		1	Starch factory
		2	Veterinary and agricultural medicine
		1	Cardboard

5.2. Waste water in Dara'a:

Up till this date the Domestic wastes water discharged by residential communities in governorate are not treated, and pour out into flood and valleys waterway which discharge into dams.

A lot of villages depend on man hole.

It was planned to execute treatment station in order to treat water discharged by key axis of sewerages. The sewerages are as following:

- Bousra –Am almyazen**, discharges into Alzaydi valley.
- Izraa-Alsheikh Meskeen**, discharges into Ibtata dam.
- Almulayhat -Daeel**, discharges into Alhareer.
- Am Waled –Alkarek-Algaraya**, discharges into Alzaheb valley.
- Asanameen –Ankel -Khabab** discharges into Aleram.
- Khat taseel-Sahm –Heet**, discharges into Heet valley.
- Nawa** discharges into **Edwan** dam.
- Authman-Alyadoda-Almzereb**.

A special treatment station is under construction in Dara'a, but it is not finished yet, also a treatment station in Daeel is under construction.

Many farmers were fined since they used waste water for irrigation, as the crop irrigated by waste water was cultivated and the engine pumps were seized.

6-2. Solid wastes in Dara'a

There is a solid waste dump related to Darra counsel city, as the wastes are treated in this dump site by burning .this dump site is as the others dumps which don't achieve the required technical and healthy conditions .

Up till now there isn't a technical dump site and the garbage spread in a random way in the governorate.

Researches about solid wastes were prepared lately in Darra, as the wastes were distributed into tow regions ,the first one centralizes in Darra downtown and the second centralizes in north in Sanameen city .It is planned to establish factory to transfer waste solid in both mentioned regions ,and it is the same for medical waste.

3 Summary about lab work for 2006

EMP plan for 2006 was set according to the environmental and healthy reality of Darra governorate and in cooperation with JICA expert team.

Monitoring stations and sampling points were chosen so we can know the degree of water's pollution.

3-1 EMP for 2006:

1-Logical framework:

EMP was set up by Darra DFEA according to law no. /50/

Darra DFEA authorized by MOLAE and the governor of Darra to execute EMP.

2-EMP objectives:

1- Monitoring Industrial waste water discharged by factories if it is achieved Syrian specifications.

2-Monitoring body water (lakes-dams),

3-Monitoring drinkable wells to check the impact of pollutants.

4- The result of evaluation

3-The monitoring stations:

Note	locations	The number of stations	Body water
	1-Tishreen press 2-Aljahmani press 3-Syrian Germany press 4-Alksabra press 5-Aleman press 6-Veterinary medicine factory. 7-Alnemma for cardboard 8-Ankhel for canned food 9-Daaeel for canned food. 10-Starch factory 11-Alnaymma for Tahina 12-Jeen for milk. 13-Darra cow yard	18	Industrial waste water

	14-Libian company cow yard 15-Alherak for pickles 16-Darra slaughter. 17-Darra dump site. 18-Fertilizer factory.		
	1-Ebtt dam 2-Edwan dam 3-Tafas dam 4-Darra dam	4	Domestic waste water
	Mzeareeb	1	Wells and rivers
	1-Alashari springs 2-Alsanameen well. 3-Maaraba well 4-stern Algazya well. 5-shekh Mesken well5 6 -lkneea well	6	Others

4- Location map:

5-Duration monitoring and frequencies:

EMP starts Jan1, 2006 till Dec31, 2006.

The frequencies of EMP are summarized in the following table:

Times(Dec-Jan)	Frequencies	location	Body water
	1 1 1 1 2 2 1 3 3 2 3 2 2 2 2 3 2	1-Tishreen press 2-Aljahmani press 3-Syrian Germany press 4-Alksabra press 5-Aliman press -Veterinary medicine factory. Veterinary medicine factory. -Alnemma for cardboard -Ankhel for canned food -Daaeel for canned food. -Starch factory -Alnaymma for Tahina -Jeen for milk. -Darra cow yard -Libian company cow yard -Alherak for pickles -Darra slaughter. -Darra dump site. -Fertilizer factory.	Industrial waste water
	2 2 2 2	Ebtt dam Edwan dam Tafas dam Darra dam	Monitoring
	3	1-Almzeareeb	Lakes and river
	2 1 1 1 1	-Alashari springs -Alsanameen well. -Maaraba well -stern Algazya well. -shekh Mesken well5 -lkneea well	Others

6-Parameters which should be analyzed and monitored

Others	Seas and costal areas	Rivers and Oceans	Domestic waste water	Industrial waste water	Parameter	No.
1-Field measurements						
	☺	☺	Δ	☺	PH	1
	☺	☺	☺	☺	air tem	2
	☺	☺	☺	☺	WATER Tem	3
	Δ	☺	Δ	Δ	DO	4
2-Lab measurements						
	Δ	☺	☺	☺	SS	
	☺	☺	☺	☺	COD	
	☺	☺	☺	☺	BOD	
	☺	☺	☺	☺	NO3-	
	☺	☺	☺	☺	PO4-	
	☺	☺	☺	☺	CL-	
	☺	☺	☺	☺	NH3-N	
	☺	☺	☺	☺	EC	
	☺	☺	Δ	Δ	Turbidity	
	Δ	☺	☺	☺	Flow rate	

7-Analysis Method

Instruments	Analysis method	Parameters
SENSION1 Portable pH meter	Electrode method	PH
Thermometer		Water temp.
sensION 6 Portable DO meter	Membrane Electrode method	DO
sensION5 Portable EC & TDS meter	Electrode method	TDS & EC
Colorimeter (DR/890)	APHA Platinum-Cobalt method	COLOR
Reactor (DRB 200-1) & Colorimeter (DR/890)	Reactor Digestion method	COD
OxiTop	Manometric (Pressure sensor) method	BOD
Colorimeter (DR/890)	Cadmium Reduction method	NO3-
Colorimeter (DR/890)	Amino Acid method	PO4
Digital Titrator (Model 16900)	Silver Nitrate Method	CL-
Colorimeter (DR/890)	Salicylate method	NH3-N
Colorimeter (DR/890)	Photometric method	SS
2100P Portable Turbidity	Colorimeter (DR/890)	Turbidity

8-Data record:

- 1-DFEA Record
- 2-GCEA & lab Directorate Record
- 3- Governorate Record.
- 4- Preparing data book
- 5- Annual report should be prepared and published.

9-Notes

9.1 Responsible staff:

Note	Period	In charge of	Background	Name
	January 2006 December 2006	Water quality	Engineer /Lab chief	Mr. Mohammad Al-hariri
	January 2006 December 2006	Water quality	Engineer	*Mr. Ahmad Kablawi
	January 2006 December 2006	Water quality	Engineer	*Mr. Diea Shabat
	January 2006 December 2006	Water quality	Engineer	*Mr. Yousef Shadaideh
	January 2006 December 2006	Water quality	Technical	*Ms. Fathiya Ahmad
	January 2006 December 2006	Data management	Engineer	*Mr. Ateea Zwayda

10-Distributing samples during the plan:

Dec				Nov				Oct				Sept				August				July				June				May				April				March										
4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1			
	±																																													Tishreen press
							±																																			Aljahmani press				
						±																																				Syrian German Y press				
					±																																					Alkasabra press				
		±																																								Aleiman press				
															±															±												Bactericidal Y Alsabeel well				
			±																										±													Veterinary Y medicine Khabab				
																																			±							Alnemma for cardboard				
							±												±																±							Ankhel for canned food				
															±																											Daaeel for				

Industrial waste water

10- Discussion and results

Because of work conditions, we changed some items of the EMP as the time and locations of sampling:

*Two locations were canceled (Alnemma cardboard since it is closed, Darra slaughter since the work in the slaughter finishes before working hours start)

* Sampling time of canned food factory has changed according to its seasonal work.

*Sampling time has changed in some location because the car is not available in required time.

12-Result of sampling analysis for 2006:

Results are existed in the following file.

13- Result discussion:

*Through the collected samples from press olive, we noticed a high rise in all indicators of pollution.

*There are rise in chemical and organic loads (BOD-COD)

*There are rise in Chloride, color and TDS.

*Canned food factory: Pollution indicators are high

-We noticed through results mentioned above that the waste water by factories should be treated before discharging to environment.

-It was also noticed that there is a big pollution in Ebtta dam especially in (NO₃ – PO₄ – NH₃-N – EC)

14-Recommendation and future plan:

Treatment stations should be setting up in order to treat waste water discharged by mentioned establishment. So pollution doesn't reach underground water, and the pollutants concentrations don't increase in soil.

1- Logical Framework:

This EMP prepared by Dara'a DFEA according to the law No. 50.

Dara'a DFEA has the right to implement this plan authorized by Minister of MOLAE and Dara'a Governor.

2- Environmental Monitoring objectives:

1- Monitoring industrial wastewater resulted from factories (whether it is corresponding with Syrian Standards).

2- Monitoring lakes, dams, and dams used for irrigation.

3- Monitoring drinking water springs to identify the effects of pollutants.

4- Result evaluation.

3- Monitoring Stations:

<u>remarks</u>	<u>locations</u>	<u>No. of stations</u>	<u>Water body</u>
	1- Tishreen press 2- Jasem press 3- Syrian-German press 4- Alkasabra press 5- Alsafa press 6- Veterinary medicines factory 7- Agricultural medicines factory 8- Inkhel for conserves factory 9- Da'el for conserves factory 10- Strach factory 11- Alna'eeme sesame sauce 12- Jilleen diaries 13- Dar'a cow farm 14- Lybian cow farm company 15- Alherak pickles 16- Albasheer buiscits 17- Natural fertilizer factory (nearest well) 18- Carbonated water factory	18	1- industrial wastewater
	<u>1-</u> Ibta' dam <u>2-</u> Uduan dam <u>3-</u> Tafas dam <u>4-</u> Dara'a dam	4	lakes
	1- Almzerim	1	
	1- Al'ash'ari springs 2- Alma well 3- Ma'raba well 4- Algharieh Algharbi well 5- Sheikh miskeen well (Tall Hamad) 6- Alqinie well	6	Underground water

4 – location map:

5- Monitoring duration and frequency:

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

From Jan. to Dec.	frequency	Locations	Water body
	2	Tishreen press	a- Industrial wastewater
	2	Jasem press	
	2	Syrian-German press	
	2	Alkasabra press	
	1	Alsafa press	
	2	Veterinary medicines factory	
	2	Agricultural medicines factory	
	2	Carbonated water factory	
	2	Inkhel for conserves factory	
	1	Da'el for conserves factory	
	2	Strach factory	
	2	Alna'eeme sesame sauce	
	1	Jilleen diaries	
	1	Dar'a cow farm	
		Lybian cow farm company	
		Alherak pickles	
	2	Ibta' dam	b- Lakes
	2	Uduan dam	
	2	Tafas dam	
	2	Dara'a dam	
	4	Almzerim	
	2	Al'ash'ari springs	c- underground water
	2	Alma well	
	2	Ma'raba well	
	2	Algharieh Algharbi well	
	2	Sheikh miskeen well (Tall Hamad)	
	2	Alqinie well	
	1	Dar'a dump (nearest well)	
	2	Natural fertilizer factory (nearest well)	

6- Parameters to be monitored and analyzed:

<u>Others</u>	<u>Sees and coastal reigons</u>	<u>Lakes and oceans</u>	<u>Domestic water</u>	<u>Industrial wastewater</u>	<u>Parameters</u>	<u>No.</u>
1- field measurements						
	☺	☺	△	☺	<u>PH</u>	<u>1</u>
	☺	☺	☺	☺	<u>Air temperature</u>	<u>2</u>
	☺	☺	☺	☺	<u>Water temperature</u>	<u>3</u>
	△	☺	△	△	<u>DO</u>	<u>4</u>
2- lab mesurements						
	△	☺	☺	☺	<u>SS</u>	<u>5</u>
	☺	☺	☺	☺	<u>COD</u>	<u>6</u>
	☺	☺	☺	☺	<u>BOD</u>	<u>7</u>
	☺	☺	☺	☺	<u>NO3-</u>	<u>8</u>
	☺	☺	☺	☺	<u>PO4-</u>	<u>9</u>
	☺	☺	☺	☺	<u>CL-</u>	<u>10</u>
	☺	☺	☺	☺	<u>NH3-N</u>	<u>11</u>
	☺	☺	☺	☺	<u>EC</u>	<u>12</u>
	☺	☺	△	△	<u>Turbidity</u>	<u>13</u>
	△	☺	☺	☺	<u>Flowrate</u>	<u>14</u>

7- Analysis Method:

Remarks (name of equipment)	Analysis Method	Parameters
PH meter (SENSION1)	Electrode method	PH
		Temperature
DO meter	Electrode membrane method	DO
EC & TDS meter	Electrode method	TDS & EC
COLORMETER (DR890)	Platinum -cobalt APHA	COLOR
DRB- 200 & COLORMETER (DR890)	Reactor digesting method	COD
OXITOP	Pressure sensor method	BOD
COLORMETER (DR890)	Cadmium reduction method	NO ₃ ⁻
COLORMETER (DR890)	Amino acid method	PO ₄
DIGITAL TITRATOR	Silver nitrate method	CL ⁻
COLORMETER (DR890)	Salicilate method	NH ₃ -N
COLORMETER (DR890)	photometric method	SS
2100P TURBIDIMETER	Niphilometric method	Turbidity

8- Data and publications 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 (must be prepared and published)

9- Other remarks:

9.1 responsible staff:

remarks	Duration	In charge with	background	name
	January-Decembar 2007	Basic Water Quality Analysis	Eng. /lab chief	Eng. Mohammed Hariri
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Ahmad Kabalawi
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Dia'a Shbat
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Yousef Alshadayide
	January-Decembar 2007	Basic Water Quality Analysis	Chem. Eng.	Eng. Assistant Fathyieh Ahmad
	January-Decembar 2007	Data Management	Engineer	Eng. Atyie Alzawaideh
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Mohammed Aba Zeid

10- Samples distribution during the plan period:

Notes	<u>December</u>				<u>November</u>				<u>October</u>				<u>September</u>				<u>August</u>				<u>July</u>				<u>June</u>				<u>May</u>				<u>April</u>				<u>March</u>				<u>February</u>				<u>January</u>				<u>Sampling station</u>	<u>Kind of Discharge</u>
	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1		
	*				*																																								<u>Tishreen press</u>	<u>Industrial Wastewater</u>				
	*				*																																				<u>Jasem press</u>									
		*				*																																			<u>Syrian-German press</u>									
			*				*																																		<u>Alkasabra press</u>									
								*																																	<u>Alsafa press</u>									
											*																								*						<u>Agricultural medicines factory</u>									
											*																	*													<u>Veterinary medicines factory</u>									
								*																							*										<u>Albasheer biscuits</u>									
											*													*																	<u>Inkhel for conserves</u>									
													*	*																										<u>Da'el for conserves</u>										

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

3.6.13 Tartous DFEA

Syrian Arab Republic

Ministry of Local Administration and Environment

Directorate For Environmental Affairs - Tartus

**Capacity Development of Environmental
Monitoring at Directorates for
Environmental Affairs in Governorates**

Annual Report

2006

Tartus

Contents:

1- Executive summary

1-1 objective of the report

1-2 summaries of results

2- Environmental Monitoring Plan 2006

3- Introduction

3-1 objectives

3-2 sampling stations

3-3 related monitoring activities

4- Details

5- Results and discussion

5.1 Water quality assessment

5.2 Major problems

6- Recommendations for future work

6-1 Environmental monitoring plan 2007

7- Appendix:

7-1 sampling stations map

7-2 River water classification

7-3 specifications of water for irrigation and
Swimming usage

1- **Executive summary:**

1-1 Functions of the report:

- Spotlight at pollution recourses through analyses results

- Mediums exposed to pollution, and the nature of this Pollution

- Executive steps of environmental monitoring plan 2006

Because of the importance of tourism in Tartus Governorate, and the big number of rivers existed, also due to using these rivers for irrigation and swimming by people, while they contain many pollutants, especially rivers with permanent flow in which domestic wastewater and olive oil pressing wastes discharging. For these reasons, the major number of monitoring stations was at these rivers (with permanent flow), in spite of some springs used for drinking and irrigation. For industrial wastewater, there are two factories, fat factory and vegetable oil factory, because of many complains about them.

1-2 summary of results

Number of samples analyzed within EMP 2006 was (55) (rivers, springs, industrial wastewater, dams, and others)

High pollution recognized in these places:

Maximum allowed	COD	Cause of pollution	Sampling station
	49	olive oil pressing wastes	Alabrash river- Sesneyeh bridge
150	334	=	Marqiyeh river- karkafti
100	70-160	vegetable oil factory	Winter flood route discharging to the see (Jammaseh)
100	68-162	Fat factory	Winter flood route discharging to agricultural lands (Jammaseh)

3.2 Environmental monitoring plan 2006: executive steps

No. 001 Tartus DFEA (15/2/2006)

Prepared by: eng. Rudaina Al-Ali

signature of director of Tartus DFEA

1. Logical basis:

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

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

2. Objectives of Environmental Monitoring

- 1) Identifying water quality assessment in the selected water recourses
- 2) Monitoring water Bodies in the governorate periodically.
- 3) Monitoring industrial wastewater resulted from factories and determining the resulted pollution

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
4	2 times a year 2 times a year	1- oil refining factory 2- fat factory	<u>Industrial wastewater</u>
9	Once/ 3 months Once/ 3 months Once/ 3 months	1- Aloaineye 2- Albreikie 3- Alzara	<u>Rivers</u> 1- Alhosain river
6	Once/ 3 months Once/ 3 months	1- near Alkadmous restaurant 2- karkafti	2- Marqiyeh river
12	Once/ 3 months Once/ 3 months Once/ 3 months Once/ 3 months	1- Alsesnieh 2- Zok Barakat- Ein Merei 3- Altwanin 4- Hakr Zahie- Wadi Aladidie	3- Al-Abrash river
8	2 times a year	Alderon	<u>springs</u>
	2 times a year	Karfas	
	2 times a year	Abu Awad	
	2 times a year	Aljakara	
2	2 times a year	Dam body	<u>dams</u> Khalife dam
Depending on complains	-	complains	<u>others</u>

4. Sampling stations

remarks	locations	No. of stations	Water body
---------	-----------	-----------------	------------

Considering Discharging times	Jammase	1	1-industrial waste water -vegetable oil refining factory
	Jammase	1	2- fat factory
Considering the possibility of reaching sampling stations Alkareem location was excluded because it is difficult to reach	Aloaineeye- Albreikie - Alzara	3	<u>Rivers</u> 1- Alhosain river
	near Alkadmous restaurant- karkafti	3	2- Marqiyeh river
	Alsensieh- Hakr Zahie- Altwanin- Zok Barakat	4	3- Al-Abrash river
<u>No. of villages get benefits from the spring</u>			<u>springs</u>
17	Alderon	1	1- Alderon
9	Aljadide	1	2- Karfas
11	Abu Awad	1	3- Abu Awad
9	Aljakara	1	4- Aljakara
	Khalife dam	1	<u>dams</u> Khalife dam

5. Parameters to be analyzed:

Complains	Dams	Springs	Rivers	Industrial wastewater	Parameters	No.
-----------	------	---------	--------	-----------------------	------------	-----

1- Field measurements						
O	O	O	O	O	PH	1
O	O	X	O	O	DO	2
O	O	O	O	O	EC -TDS	3-4
O	O	O	O	O	Water temperature	5
2-Lab analyses						
O	O	O	O	O	color	6
O	O	X	O	O	SS	7
O	O	O	O	O	COD	8
O	O	O	O	O	BOD ₅	9
O	O	O	O	O	NO ₃ ⁻	10
O	O	O	O	O	PO ₄ ⁻³	11
O	O	O	O	O	CL ⁻	12
O	O	O	O	O	NH ₃ - N	13
O	O	O	O	O	Turbidity	14

6. Analyses methods:

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 (must be prepared and published)

8. other remarks:

8.1 responsible stuff:

remarks	Duration	In charge with	background	name
	February 20 to December 31	Lab chief	Chem. Eng.	Rudayna Al Ali
	February 20 to December 31	Data management	Chemist	Amira Emran
	February 20 to December 31	Basic water analysis	Chemist	Dalal Ibrahim
	February 20 to December 31	basic water analysis	Chem. Eng.	Lama Harfoush
maternity	February 20 to December 31	basic water analysis	Chem. Eng.	Suhayla Butros
maternity	February 20 to December 31	basic water analysis	Chem. Eng. assistant	Samaher Abdul Rahman

8.2 others: some stations could be changed according to circumstances of fieldwork.

3- introduction:

3-1. Objectives of Environmental monitoring :

- 1- Input periodical Environmental monitoring system, including water quality and, (in the future), air quality.
- 2- Observing pollution recourses and trying to control them
- 3- Increasing Environmental Awareness using monitoring data

3-2. Monitoring locations:

Including locations that are most exposed to pollution, like rivers and springs, because of their vital importance in this governorate.

3-3. Related monitoring activities:

There are no related activities to the sampling stations mentioned in the EMP 2006, but Pollution Control Directorate makes analyses for some rivers but their monitoring stations differ from ours, also General Company for Drinking Water makes analyses for springs that it invests

4: Details:

1- Industrial wastewater

Remarks	Discharging place	No. of workers	Production capacity	location	Kind of industry
	Winter flood route finally discharged to the see			Al-Jammase	Refining oil factory
	Winter flood route finally discharged to agricultural lands			Al-Jammase	Fat factory

2- Rivers

remarks	Kind of	Surrounding	Type of	River
---------	---------	-------------	---------	-------

	wastewater discharging into the river	area	using river water	
Continuous flow	Domestic water, olive oil pressing wastes	Agricultural, residential	Irrigation, swimming in different points	Al-Abrash
Continuous flow	Domestic water	Agricultural, residential	Irrigation	Marqiyeh
Continuous flow	Domestic water, olive oil pressing wastes	Agricultural, residential	Irrigation, swimming in different points	Alhosain

3- Dams

remarks		Type of using water	Storage capacity	Name
		Irrigation		Khalife dam

4- Springs

remarks	Investor	No. of villages get benefits from the spring	Flow rate	Name
	Water company	17	280	Alderon
	Water company	-	152	Aldelbe
Random usage, no regular sewage network	-	Aldelbe farm village (350) persons	-	Aldelbe farm
	Water company	9	50	Aljakara
Became dry (by sink a well near it)	Special use by people	5	-	Karfas

5- Results and Discussion:

5-1. Water Quality Assessment

The results of analyses show that some locations are exposed to pollution temporally, for example, during the olives producing time, olive oil pressing discharge pollution can be recognize from the increasing of COD values as shown in the table below:

Classification of river water	BOD (water is suitable for irrigation)	COD	Sampling station
bad	4	49	Al-Abrash river (Alsesnieh bridge)
Very bad	4	344	Marqiyeh River- Karkafti
-	-	68-162	Fat factory
-	-	70-160	Refining oil factory

5-2. basic problems

- 1- The lab and the directorate are in different places.
- 2- Some monitoring stations related to some rivers become dry during summer season in spite of choosing, (as the case of Karkafti River for example).
- 3- Discharging of industrial wastewater usually occurs out of official working hours.

rivers	station		لون	TDS	PH	BOD	DO	EC	SS	COD	NO ₃ -N	NH ₃ -N	CL ⁻	PO ₄	Turbidity
Alabrash River	Alsensieh	MIN	39	133	7.4	3	4.57	313	0	49	1.2	0	19	0.80	1.0
		MAX	242	491	8.5	16	8.11	997	0	49	1.2	0	26	0.80	4.8
		AV.	140	327	7.8	11	6.56	681	0	49	1.2	0	22	0.80	3.5
	Hakr Zahie	MIN	60	393	7.9	5	6.38	804	0	0	1.4	0.1	18	0.14	0.8
		MAX	60	553	8.5	10	10.49	1125	0	0	1.4	1.0	26	0.42	1.4
		AV.	60	462	8.2	7	8.52	944	0	0	1.4	0.5	22	0.28	1.1
	Ein Maree	MIN	135	247	7.7	3	8.12	509	0	5	0.8	0	19	0.24	0.5
		MAX	135	342	8.4	15	10.84	702	0	5	0.8	0	22	1.00	4.4
		AV.	135	310	8.1	8	9.06	636	0	5	0.8	0	21	0.58	2.1
	Altwanin	MIN	25	216	8.4	3	7.53	446	0	0	0	0	18	0.05	0.9
		MAX	25	250	8.6	3	8.04	517	0	0	0	0	26	1.30	1.0
		AV.	25	233	8.5	3	7.79	482	0	0	0	0	22	0.68	1.0
Alhosain River	Albreikie	MIN	41	200	7.0	4	5.96	463	0	7	0.6	0.1	23	0.47	0.78
		MAX	41	494	8.8	8	10.34	1007	0	7	0.9	1.0	43	3.40	1.87
		AV.	41	346	8.1	6	8.20	726	0	7	0.8	0.5	31	1.68	1.31
	Aloaineye	MIN	0	227	8.2	6	5.23	469	0	<30	0.4	0	15	0.40	0.4
		MAX	0	335	8.4	7	10.61	688	0	<30	0.4	0	25	0.70	1.7
		AV.	0	296	8.3	6	8.40	610	0	<30	0.4	0	22	0.55	1.0
	Alzara	MIN	33	363	8.3	6	4.52	744	0	5	0.6	0.1	16	0.27	0.53
		MAX	41	450	8.5	9	8.91	1009	0	5	1.0	0.1	23	0.80	2.80
		AV.	37	405	8.4	7	6.50	859	0	5	0.8	0.1	20	0.54	1061
	السواقي	MIN	0	254	7.5	2	6.29	574	0	4	0.7	1.0	25	0.44	0.77
		MAX	0	357	8.6	9	51.30	732	0	4	1.6	1.0	51	3.30	5.10
		AV.	0	296	8.0	5	22.21	639	0	4	1.1	1.0	34	1.87	2.21
Marqiyeh River	karkafti	MIN	144	308	8.4	3	8.18	633	0	0	0.6	0.14	13	0.24	1.7
		MAX	144	485	8.9	13	10.28	988	0	0	1.6	0.14	22	1.10	6.0
		AV.	144	397	8.6	8	9.23	811	0	0	1.1	0.14	18	0.67	3.9
	near Alkadmous restaurant	MIN	34	369	7.5	4	6.28	757	67	0	1.6	1.0	121	0.17	3.9
		MAX	669	1008	7.5	8	9.30	2007	67	0	1.6	1.0	465	0.93	136.0
		AV.	271	735	7.5	6	7.54	1472	67	0	1.6	1.0	330	0.66	66.5

springs	station		color	TDS	PH	BOD	DO	EC	SS	COD	NO ₃ -N	NH ₃ -N	CL ⁻	PO ₄	Turbidity
	Dilbe spring	MIN	0	384	7.2	4	8.05	761	0	0	1.0	0	17	0.44	0.2
		MAX	0	513	8.0	4	8.50	1051	0	0	1.4	0	22	1.75	1.2
		<u>AV.</u>	<u>0</u>	<u>449</u>	<u>7.6</u>	<u>4</u>	<u>8.28</u>	<u>906</u>	<u>0</u>	<u>0</u>	<u>1.2</u>	<u>0</u>	<u>20</u>	<u>1.10</u>	<u>0.7</u>
	Dilbe farm spring	MIN	0	313	7.0	4	6.72	630	0	0	0.7	0	15	0.63	0.1
		MAX	0	515	7.9	10	7.33	1046	0	0	1.4	0	25	1.30	0.2
		<u>AV.</u>	<u>0</u>	<u>414</u>	<u>7.4</u>	<u>7</u>	<u>7.03</u>	<u>838</u>	<u>0</u>	<u>0</u>	<u>1.1</u>	<u>0</u>	<u>20</u>	<u>0.97</u>	<u>0.1</u>
	Jakara spring	MIN	0	309	7.4	4	7.47	638	0	4	0.9	1.0	19	0.68	0.3
		MAX	0	475	7.6	5	7.47	987	0	4	1.1	1.0	26	2.20	1.2
		<u>AV.</u>	<u>0</u>	<u>392</u>	<u>7.5</u>	<u>5</u>	<u>7.47</u>	<u>813</u>	<u>0</u>	<u>4</u>	<u>1.0</u>	<u>1.0</u>	<u>23</u>	<u>1.44</u>	<u>0.7</u>
	Deron spring	MIN	0	193	7.5	3	0	393	0	15	0.0	1.0	14	1.60	0.1
		MAX	0	333	8.0	5	0	685	0	15	0.0	1.0	18	1.60	0.1
		<u>AV.</u>	<u>0</u>	<u>263</u>	<u>7.8</u>	<u>4</u>	<u>0</u>	<u>539</u>	<u>0</u>	<u>15</u>	<u>0.0</u>	<u>1.0</u>	<u>16</u>	<u>1.60</u>	<u>0.1</u>

	Station		لون	TDS	PH	BOD	DO	EC	SS	COD	NO ₃ -N	NH ₃ -N	CL ⁻	PO ₄	Turbidity
Industrial wastewater	Oil refinery factory	MIN	70	118	7.1	70	0.75	236	54	205	2.6	34	30	1.02	9.9
		MAX	522	954	7.8	160	4.86	1902	242	293	13.0	40	95	28.00	230
		<u>AV.</u>	<u>330</u>	<u>635</u>	<u>7.4</u>	<u>120</u>	<u>2.81</u>	<u>1270</u>	<u>155</u>	<u>254</u>	<u>8.5</u>	<u>37</u>	<u>53</u>	<u>18.31</u>	<u>116</u>
	Fat factory	MIN	48	473	7.7	46	2.90	965	0	68	4.0	1.0	62	3.30	3.9
		MAX	193	834	8.0	110	4.50	1537	0	162	4.4	1.0	273	5.20	21.0
		<u>AV.</u>	<u>117</u>	<u>625</u>	<u>7.9</u>	<u>87</u>	<u>3.95</u>	<u>1218</u>	<u>0</u>	<u>115</u>	<u>4.2</u>	<u>1.0</u>	<u>137</u>	<u>4.20</u>	<u>14.2</u>

6- Recommendations:

6.1 Environmental Monitoring Plan 2007:

No. 002 Tartus DFEA (10/1/2007)

Prepared by: eng. Rudaina Al-Ali

signature of director of Tartus DFEA

3. Logical basis:

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

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

4. Objectives of Environmental Monitoring

- 4) Identifying water quality assessment in the selected water recourses
- 5) Monitoring water Bodies in the governorate periodically.
- 6) Monitoring pollution recourses and try to control them
- 7) Increasing Environmental Awareness using monitoring data

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
8	2 times a year 2 times a year 2 times a year 2 times a year	1- oil refining factory 2- fat factory 3- soap factory (taltermos) 4- Abdulmajeed Khawanda oil press (Karkafti)	<u>Industrial wastewater</u>
12	3 times/year 3 times/year 3 times/year 3 times/year	1- Aloaineye 2- Albreikie 3- Alzara 4- Alsawaqi	<u>Rivers</u> 1- Alhosain river
9	3 times/year 3 times/year	1- near Alkadmous restaurant 2- karkafti 3- Alsorani	2- Marqiyeh river
12	3 times/year 3 times/year	1- Alsesnieh 2- Zok Barakat- Ein Merei	3- Al-Abrash river
3	3 times/year	3- Ein Albarde 4- Hakr Zahie- Wadi Aladidie	
3	3 times/year	1- Almadhale	4- Alkabeer Aljanoubi River
3	3 times/year	1- Altalee'y	5- Alarous River

8	2 times a year	Baneyas	<u>springs</u>
	2 times a year	ALsheikh Hasan	
	2 times a year	Alshamamees	
	2 times a year	ALsheikh Badr	
4	2 times a year 2 times a year	Dam body	<u>dams</u> 1- Albasel Dam 2- Alsorani Dam
6	3 times a year 3 times a year	1- Albasel Lake 2- Alsorani Lake	<u>Lakes</u>
Depending on complains	-	complains	<u>others</u>

4. Sampling stations

remarks	locations	No. of stations	Water body
Considering Discharging times	Jammase	1	<u>1-industrial waste water</u> 1-vegetable oil refining factory
	Jammase	1	2- fat factory
	Taltermos	1	3- Soap factory
	Karkafti	1	4- Abdulmajeed Khawanda oil press
Considering the possibility of reaching sampling stations Alkareem location was excluded because it is difficult to reach	Aloaineye- Albreikie - Alzara- Alsawaqi	4	<u>Rivers</u> 1- Alhosain river
	near Alkadmous restaurant- karkafti- Alsorani	3	2- Marqiyeh river
	Alsensieh- Hakr Zahie- Altwanin- Zok Barakat	4	3- Al-Abrash river
<u>No. of villages get benefits from the spring</u>	Baneyas Alkafoon Alshamamees ALsheikh Badr	5 1 1 1	<u>springs</u> 5- Baneyas 6- ALsheikh Hasan 7- Alshamamees 8- ALsheikh Badr
	Dam body Dam body	1 1	<u>dams</u> 1- Albasel Dam 2- Alsorani Dam

5 Parameters have to be monitored and analyzed:

Complains	Dams	Springs	Rivers	Industrial wastewater	Parameters	No.
1- Field measurements						
O	O	O	O	O	PH	1
O	O	X	O	O	DO	2
O	O	O	O	O	EC –TDS	3-4
O	O	O	O	O	Water temperature	5
2-Lab analyses						
O	O	O	O	O	color	6
O	O	X	O	O	SS	7
O	O	O	O	O	COD	8
O	O	O	O	O	BOD ₅	9
O	O	O	O	O	NO ₃ ⁻	10
O	O	O	O	O	PO ₄ ⁻³	11
O	O	O	O	O	CL ⁻	12
O	O	O	O	O	NH ₃ - N	13
O	O	O	O	O	Turbidity	14

6. 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)

8. other remarks:

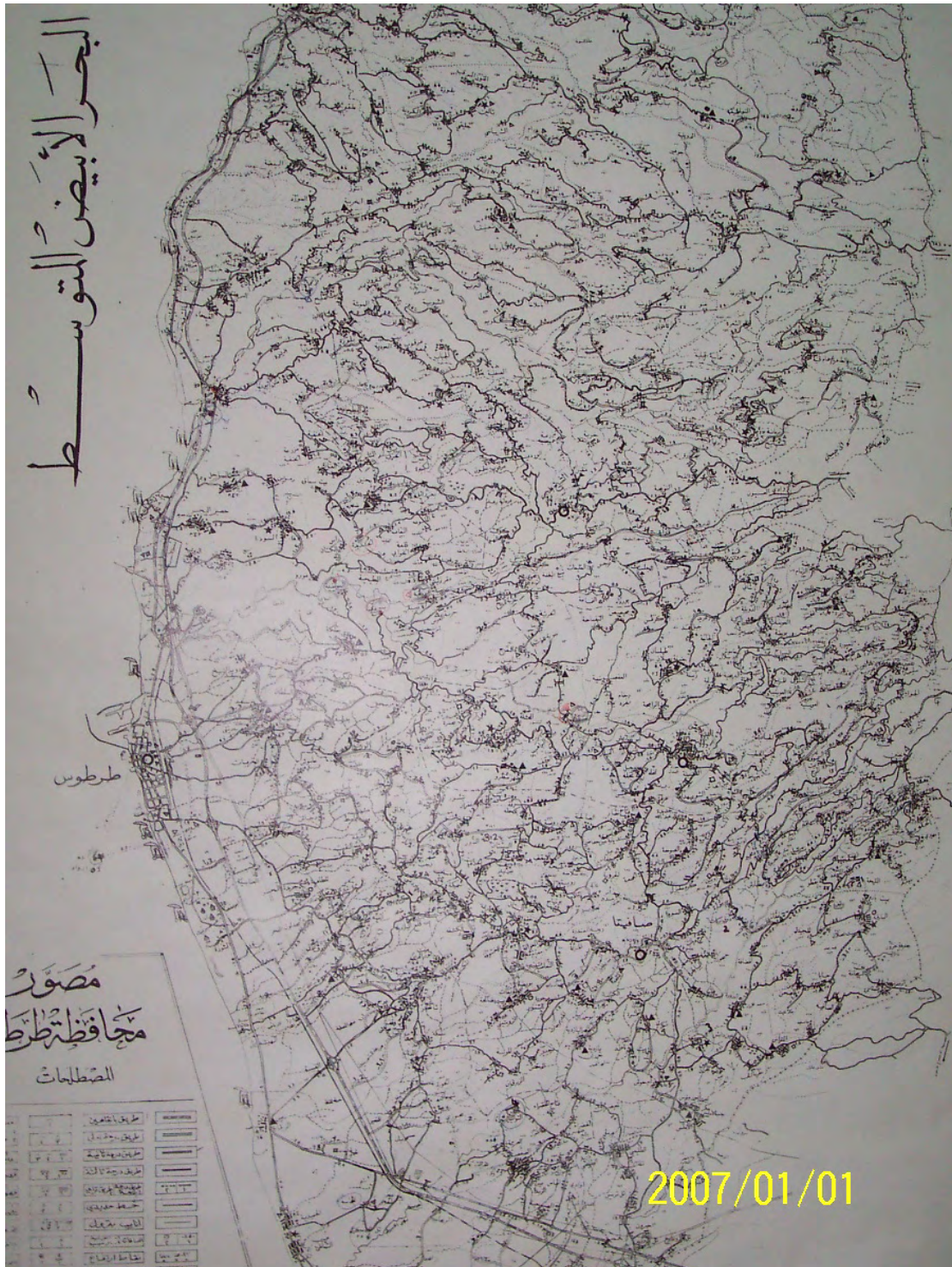
8.1 responsible stuff:

remarks	Duration	In charge with	background	name
	January 1 to December 31	Lab chief	Chem. Eng.	Rudayna Al Ali
	January 1 to December 31	Data management	chemist	Amira Emran
	January 1 to December 31	Basic water analysis + lab safety	chemist	Dalal Ibrahim
	January 1 to December 31	basic water analysis	Chem. Eng.	Lama Harfoush
maternity	January 1 to December 31	basic water analysis + equipment management	Chem. Eng.	Suhayla Butros
	January 1 to December 31	basic water analysis	Chem. Eng. assistant	Samaher Abdul Rahman
	January 1 to December 31	basic water analysis	Chem. Eng.	Manal Ajamyie

8.2 others: some stations could be changed according to circumstances of fieldwork

7- Appendixes

7.1 Location map of sampling stations:



7.2 Appendix 2: A table shows classifications of river water according to pollution indicators internationally agreed on

Value	River classification	Parameter
> 90	good	DO
75-90	Nearly good	
50-75	accepted	
< 50	Much polluted	
1	Very clean	BOD
2	clean	
3	Nearly clean	
5	accepted	
10	bad	
25	Spring water	CL
70	Weak drains	
100	Medium drains	
500	Strong drains	

Note: these values took from the book: “waters and their qualities in coastal basin” /Irrigation Directorate/

7-3. Appendix 3: A table shows classifications of irrigation and swimming water:

<u>Swimming water</u>	<u>Irrigation water</u>	<u>Unit</u>	<u>Parameter</u>
6-9	6.8 - 8.5	-	PH
4	4	mg/l	BOD
> 60	> 40 -60		DO
-	800	mg/l	Dissolved salts
-	1200	μ s/cm	conductivity
-	1.2	mg/l	ammonia
-	13	mg/l	nitrate
-	1	mg/l	chloride

Note: these values took from the book: “waters and their qualities in coastal basin” /Irrigation Directorate/

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

3.6.14 Quneitra DFEA

Syrian Arab Republic

Ministry of Local Administration and Environment

Directorate for Environmental Affairs - Quneitra

**Capacity Development of Environmental
Monitoring at Directorates for
Environmental Affairs in Governorates**

**Annual
report
Quneitra 2006**

Contents:

1- Executive summary

1-1 objective of the report

1-2 summaries of results

2- Environmental Monitoring Plan 2006

3- Introduction

3-1 objectives

3-2 sampling stations

3-3 related monitoring activities

4- Details

5- Results and discussion

5.1 Water quality assessment

5.2 Major problems

6- Recommendations for future work

6-1 Environmental monitoring plan 2007

7- Appendix:

7-1 sampling stations map

1- Executive summary

1-1 objective of the report:

Functions of the report:

- Spotlight at pollution recourses through analyses results
- Mediums exposed to pollution, and the nature of this Pollution
- Executive steps of environmental monitoring plan 2006

Due to the importance of Quneitra Governorate as it is the lung of Damascus because there are no factories to pollute Environment, and there are many springs and dams.

And because of some pollution resources that affect them, like sewage water, which discharged directly to the dams

We choose the major sampling stations on dams and some springs, which used for drinking and irrigation

In addition, two industrial stations for the only two factories we have: starch factory and bio-fertilizers factory

1-2 summaries of results:

Number of samples analyzed within EMP 2006 was (42), including groundwater, industrial wastewater, dams, domestic wastewater, and others.

Tables of results are attached

2- Environmental monitoring plan 2006: executive steps

No. 001 Quneitra DFEA (15/2/2006)

Prepared by: Majed Zeitun, Ali Ibrahim
DFEA

signature of director of Quneitra

1. Logical basis:

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

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

2. Objectives of Environmental Monitoring

- 1) Identifying water quality assessment in the selected water recourses
- 2) Monitoring water Bodies in the governorate periodically.
- 3) Monitoring industrial wastewater resulted from factories and determining the resulted pollution

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
3	Once every 4 months	1) Alsafa olive press	<u>Industrial wastewater</u>
4	Once every 3 months	2) Starch factory	
4	Once every 3 months	3) bio-fertilizers	
4	Once every 3 months	Rukad valley Domestic wastewater	<u>Domestic wastewater</u>
3	Once every 4 months	1) Rwaihenieh	<u>lakes</u>
3	Once every 4 months	2) Breka	
3	Once every 4 months	3) Ghadeer Albustan	
4	Once every 3 months	1) Farmers Union	<u>wells</u>
4	Once every 3 months	2) Ain Albayda	
4	Once every 3 months	3) Alfawar Spring	
36			total

4. Parameters to be analyzed:

others	wells	lakes	Domestic wastewater	Industrial wastewater	Parameters	No.
	○	○	○	○	PH	1
	○	○	○	○	Water temperature	2
	○	○	○	○	TDS	3
	○	○	○	○	EC	4
	△	○	○	○	SS	5
	△	○	△	△	DO	6
	○	○	○	○	COD	7
	○	○	○	○	BOD ₅	8
	○	○	○	○	NO ₃ ⁻	9
	○	○	○	○	PO ₄ ³⁻	10
	○	○	○	○	Cl ⁻	11
	○	○	○	○	NH ₃ -N	12
	○	○	△	△	Turbidity	13
	○	○	△	△	Color	14
	*	*	○	○	Flow rate	15

△ : analysis is not necessary

5. Analyses methods:

Equipment	Analysis method	Parameters	No.
sensION1 Portable pH meter	Electrode method	pH	1
Thermometer		Water temperature	2
Colorimeter (DR/890)	Platinum -cobalt APHA	Color	3
sensION5 Portable EC & TDS meter	Electrode method	TDS	4
sensION6 Portable DO meter	Membrane electrode method	DO	5
Colorimeter (DR/890)	Photometric method	SS	6
Reactor (DRB 200-1) & Colorimeter (DR/890)	Reactor digesting method	COD _{Cr}	7
Colorimeter (DR/890)	Cadmium reduction method	NO ₃ -N	8
Colorimeter (DR/890)	Salicilate method	NH ₃ -N	9
Colorimeter (DR/890)	Amino acid method	PO ₄ ³⁺	10
Digital Titrator (Model 16900)	Silver nitrate method	Cl ⁻	11
OXiTop	Pressure sensor method	BOD ₅	12
sensION5 Portable EC & TDS meter	Electrode method	EC	13
2100P Portable Turbidity	Niphilometric method	turbidity	14

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 (must be prepared and published)

8. Other remarks:

8.1 responsible staff:

remarks	Duration	In charge with	background	name
	20/2 – 31/12	Lab	The director	Hamze Suleiman
	20/2 – 31/12	Basic water analysis	Agronomist	Ali Ibrahim
	20/2 – 31/12	Basic water analysis & Data management	Chemist	Majed Zeitun

3- introduction:

3-1. Objectives of Environmental monitoring :

- 1- Input periodical Environmental monitoring system, including water quality and, (in the future), air quality.
- 2- Observing pollution recourses and trying to control them
- 3- Increasing Environmental Awareness using monitoring data

3-2. Monitoring locations:

Including locations that are most exposed to pollution, like dams and springs, because of their vital importance in this governorate.

3-3. Related monitoring activities:

There are no related activities to the sampling stations mentioned in the EMP 2006, but General Company for Drinking Water makes analyses for drinking water that it invests

Dams

Remarks	Usage of water	Capacity	Name
	Irrigation	40.200 million m ³	Almantara Dam
	Irrigation	31.000 million m ³	Kaodana Dam
	Irrigation	1.100 million m ³	Breka Dam
	Irrigation	0.850 million m ³	Alheje Dam
	Irrigation	1.030 million m ³	Rwaihenieh Dam
	Irrigation	9.200 million m ³	Alrukad Dam
	Irrigation	10.800 million m ³	Ghadeer Albustan Dam

6- Recommendations:

6.1 Environmental Monitoring Plan 2007:

No. 002 Quneitra DFEA (10/1/2007)

Prepared by: Majed Zeitun, Ali Ibrahim
DFEA

signature of director of Quneitra

1. Logical basis:

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

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

2. Objectives of Environmental Monitoring

- 4) Identifying water quality assessment in the selected water recourses
- 5) Monitoring water Bodies in the governorate periodically.
- 6) Monitoring pollution recourses and try to control them
- 7) Increasing Environmental Awareness using monitoring data

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
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3	Once every 4 months	1) Alsafa olive press	<u>Industrial wastewater</u>
4	Once every 3 months	2) Starch factory	
4	Once every 3 months	3) bio-fertilizers	
3	Once every 4 months	4) diary factory	
4	Once every 3 months	Rukad valley Domestic wastewater	<u>Domestic wastewater</u>
3	Once every 4 months	1) Rwaihenieh	<u>lakes</u>
3	Once every 4 months	2) Kodana	
3	Once every 4 months	3) Ghadeer Albustan	
4	Once every 3 months	1) Farmers Union	<u>wells</u>
4	Once every 3 months	2) Alsakhr spring	
4	Once every 3 months	3) Alfawar Spring	
39			total

4. Sampling stations

remarks	stations	No. of stations	Water body
	1) Alsafa olive press 2) Starch factory 3) bio-fertilizers 4) diary factory	4	<u>Industrial wastewater</u>
	Rukad valley Domestic wastewater	1	<u>Domestic wastewater</u>
	1) Rwaihenieh 2) Kodana 3) Ghadeer Albustan	3	<u>lakes</u>
	1) Farmers Union 2) well of Alsakhr spring 3) Alfawar Spring	3	<u>wells</u>

5 Parameters have to be monitored and analyzed:

others	wells	lakes	Domestic wastewater	Industrial wastewater	Parameters	No.
	○	○	○	○	PH	1
	○	○	○	○	Water temperature	2
	○	○	○	○	TDS	3
	○	○	○	○	EC	4
	△	○	○	○	SS	5
	△	○	△	△	DO	6
	○	○	○	○	COD	7
	○	○	○	○	BOD ₅	8
	○	○	○	○	NO ₃ ⁻	9
	○	○	○	○	PO ₄ ³⁻	10
	○	○	○	○	Cl ⁻	11
	○	○	○	○	NH ₃ -N	12
	○	○	△	△	Turbidity	13
	○	○	△	△	Color	14
	*	*	○	○	Flow rate	15

△ : analysis is not necessary

6. Analyses methods:

Equipment	Analysis method	Parameters	No.
sensION1 Portable pH meter	Electrode method	pH	1
Thermometer		Water temperature	2
Colorimeter (DR/890)	Platinum -cobalt APHA	Color	3
sensION5 Portable EC & TDS meter	Electrode method	TDS	4
sensION6 Portable DO meter	Membrane electrode method	DO	5
Colorimeter (DR/890)	Photometric method	SS	6
Reactor (DRB 200-1) & Colorimeter (DR/890)	Reactor digesting method	COD _{Cr}	7

Colorimeter (DR/890)	Cadmium reduction method	NO ₃ -N	8
Colorimeter (DR/890)	Salicilate method	NH ₃ -N	9
Colorimeter (DR/890)	Amino acid method	PO ₄ ³⁺	10
Digital Titrator (Model 16900)	Silver nitrate method	Cl ⁻	11
OxiTop	Pressure sensor method	BOD ₅	12
sensION5 Portable EC & TDS meter	Electrode method	EC	13
2100P Portable Turbidity	Niphilometric method	turbidity	14

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 (must be prepared and published)

8. Other remarks:

8.1 responsible stuff:

remarks	Duration	In charge with	background	name
	1/1 – 31/12	Lab	The director	Hamze Suleiman
	1/1 – 31/12	Basic water analysis	Agronomist	Ali Ibrahim
	1/1 – 31/12	Basic water analysis & Data management	Chemist	Majed Zeitun

8.2 others

- 1- Budget is not enough
- 2- Bad weather conditions
- 3- Stuff is not enough

Some locations may change according to work circumstances

7- Appendixes

7.1 Location map of sampling stations: