第５章　次回調査の課題、懸案事項

第５章次回調査の課題、懸案事項

５-１技術的課題、懸案事項

５-１-１地下水

次回調査の主な課題は、下記のとおりと考えられる。

（１）　モニタリング井戸の整備を前提とした調査

ワジスーク水系とワジジジ水系の地下水水質を系統立ててモニタリングするためには、現存の観測井を極力利用しても不十分である。下記観測井の追加が必要となる。

- ワジスーク水系とワジジジ水系とにおいて、帯水層の数を確認する調査ボーリングを各３本ずつ（上流、中流、下流）。
- ワジスーク水系沿いとワジジジ水系沿いに、中流域にそれぞれ２本、下流域にそれぞれ３本。仮に、帯水層が複数存在していることが確認されれば、前記の観測井をさらに帯水層毎に設置する必要がある。

したがって、帯水層の確認ができる柱状図等のボーリングデータの存在の有無と収集が必要。観測井設置工事費用の調査も望ましい。

（２）　重金属処理試験に関する調査

アルジャ鉱山およびラセイルウエスト鉱山の露天掘り跡の溜り水、廃滓堆積場直下のトレンチの水及び観測井から得られるモニタリング試料中に含まれる重金属イオンと塩分との関係を考慮した上での重金属対策立案の為の試験が必要となる。このために利用できる試験設備に関する調査（含費用）が必要。

（３）汚濁地下水を処理した後、海洋投棄を検討するために必要な情報の収集。（オマーン湾の水質、水温、海流、海底地形等）

５-１-２　大気

次回調査の主な課題は、下記のとおりと考えられる。

（１）亜硫酸ガス着地濃度測定の強化を前提とした調査

製錬所排煙の影響区域を特定するためには、現状の測定点および測定結果のみでは不十分である。従って、下記のような対策が必要と考えられ、これらを実施するための必要器材（含経費）および要員の調査が必要。

・測定区域の広域化

ワジ・スークおよびワジ・アル・ジジ流域の 20（～25） ㎞ 地点まで、それぞれ２～３点の測定点を追加。

・製錬所近隣測定区域の設定

正門および周辺１～２㎞以内の区域に２～３点の測定点を追加。

・１時間値の測定追加

現状の日平均値測定に加えて、全ての測定点に於いて１時間値も測定。

（２）降下ばいじんの測定に関する調査

降下ばいじんに関する測定実績はない。従って、前項（１）の全測定点に於ける降下ばいじん量測定および成分分析の実施が望ましい。そのための必要測定器材（含経費）および要員の調査が必要（土壌のサンプリングおよび成分分析についても本項に準じた調査方針を適用）。

（３）製錬所主煙突排ガスのモニタリングの強化を前提とした調査

亜硫酸ガス着地濃度のシミュレーション実施のためにも、一定期間の連続測定データ（排ガス量、亜硫酸ガス濃度およびダスト濃度）入手により、排煙の諸元・パターンの経時変化を把握する事が望ましい。従って、この測定のために必要な器材（含経費）および要員の調査が必要。

（４）増設計画の進捗状況の調査

増設完了後の主煙突放出ガスに関する諸元（計画値）および脱硫設備関連の排水処理計画に重点を置いた情報収集が必要である。

5-2 政策的課題、懸案事項

オマーン国として、当該調査の結果を踏まえて地下水汚染及び大気汚染防止対策等の環境対策を進めていくのかについて、MCI、MRME、MWR 等関係政府機関の機関どうしのつながりが全く無いといってもおかしくない状況にあった。

また、鉱害防止対策事業資金の調達先、調達方法等については、オマーン国側の検討

事項であり、今回調査に関与する問題ではない旨の主張がなされるのみで、具体的な情報は得られなかった。

以上の事項について、予備（事前）調査団派遣までにはある程度目処がたたれていることが望まれる。

添付資料

資料１　要請書（ＴＯＲ）及び追加要請

資料２　Ｑｕｅｓｔｉｏｎｎａｉｒｅ

資料３　面　　談　　記　　録

資料４　収　集　資　料　リ　ス　ト

資料５　水質データ（TDS測定値）

資料 1

MC:10671- 1

Unofficial Translation

MINISTRY OF FOREIGN AFFAIRS
SULTANATE OF OMAN
1803/22245/12210/31757
October 4, 1998

The Ministry of Foreign Affairs (Economic and Technical Co-operation Department) of the Sultanate of Oman presents its compliments to the Embassy of Japan in the Sultanate of Oman and has the honour to inform that extraction treatment and refining of copper in Wadi Al Jizzi, which has started since 1983, has resulted in environmental damages in the surrounding regions, particularly water in Wadi Souq.

To know the volume of these damages, find suitable technical means to remove them, and estimate the ensuing financial cost in details, the Ministry of Commerce and Industry wishes to benefit from the expertise of the friendly government of Japan, represented by the Japan International Cooperation Agency (JICA) by dispatching a qualified Japanese Technical team to prepare a comprehensive study dealing with all aspects of the subject. (Terms of Reference of the said project enclosed herewith).

It is requested to address the concerned authorities of Japan and inform the Ministry about the outcome.

The Ministry of Foreign Affairs avails itself of this opportunity to renew to the Embassy of Japan the assurances of its highest consideration.

Khadija bint Hassan bin Salman
Counsellor

To: **Embassy of Japan**
Sultanate of Oman

Ministry of Foreign Affairs
Muscat

وزارة الخارجية
مسقط

MC:10671-2

الرقم : ٣١٧٥٧/١٢٢١:/٢٢٢٤٥/١٨٠٣ Ref. .....

التاريخ : ١٤١٩/٠٦/١٣هـ Date .....

الموافق : ١٩٩٨/١٠/٠٤م

تهدي وزارة الخارجية (دائرة التعاون الإقتصادي والفني) أطيب تحياتها إلى السفارة اليابانية الصديقة في مسقط.

تود الوزارة الإفادة بأن عمليات إستخراج النحاس ومعالجة وتصفيته بوادي الجزي التي بدأت منذ عام ١٩٨٣م قد نجمت عنها بعض الاضرار البيئية في المناطق المحيطة ؛ خصوصاً بالنسبة لمياه وادي سوق.

وللوقوف على حجم هذه الاضرار وإيجاد الطرق الفنية المناسبة لإزالتها وتقدير التكلفة المادية المترتبة على ذلك بشئ من الدقه ، فإن وزارة التجارة والصناعة ترغب في الإستفادة من خبرات الحكومة اليابانية الصديقة ، ممثلة في الوكالة اليابانيه للتعاون الدولي (JICA) ، للقيام بإيفاد فريق فني ياباني مؤهل لإعداد دراسة متكاملة تتناول الموضوع من جميع جوانبه. (مرفق بالطي الشروط العامة للمشروع).

ترجو الوزارة من السفارة الصديقة مخاطبة الجهات اليابانيه المختصة وموافاتها بالنتيجة.

تنتهز الوزارة هذه المناسبة لتعرب للسفارة الصديقة عن خالص الإحترام والتقدير.

وزارة الخارجية

ر/خديجة بنت حسن بن سلمان

* السفارة اليابانية في

RECEIVED - 5 OCT 1998

MC:10671-3

TERMS OF REFERENCE
FOR
A FEASIBILITY STUDY
ON
MINE POLLUTION CONTROL
IN THE SOHAR MINE AREA,
SULTANATE OF OMAN

1.0 PROJECT TITLE:

A Feasibility Study on Mine Pollution Control in the Sohar area, the Sultanate of Oman (hereinafter referred to as "the Study").

2.0 EXECUTIVE AGENCY:

The Director General of Minerals (hereinafter referred to as "DGM"), the Ministry of Commerce and Industry (hereinafter referred to as "MCI"), the Sultanate of Oman.

3.0 PROPOSED SOURCE OF ASSISTANCE:

Japan International Cooperation Agency, Japan (hereinafter referred to as "JICA").

4.0 PROJECT SITE:

A project site includes the Sohar Mine area, Wadi Suq, and Falaj al Qabail (10 x 30 km ≒ 300 km^2) located in the Sohar Municipality, the Sultanate of Oman, as shown in Annexure – 1.

5.0 BACKGROUND:

The Sohar Mine of Oman Mining Company LLC (hereinafter referred to as "OMCO") had operated a copper mine since 1982 at the Lasail and Bayda deposits by underground method. Consequently, the mineral dressing plant and the tailing dump area, which are located at the upper stream of the Wadi Suq in the area also started their operation and waste piling. Although the Aarja and Lasail West deposits were developed by open pit method after the Lasail and Bayda deposits were mined-out, the Sohar mine was closed in 1994 because of depletion of copper reserves.

The annual production was approximately 1,100,000 t. The production of copper ore from the deposits, including the Lasail, Bayda, Aarja and Lasail West deposits which are classified as a Cyprus type copper deposits, totalled to 15,000,000 t in the 11 years operation.

The mineral dressing plant consists mainly of the facilities of crushing, grinding, flotation-concentrates filtration, outdoor thickeners, etc. These facilities have been maintained at the plantsite after mine shutdown. Operation of the Sohar copper smelter and refinery, which were built adjacent to the dressing plant, started since 1983. The nominal capacity is 80,000 t of copper concentrate and 20,000 t of copper metal per year. Imported copper concentrate was partially used since 1992 and completely shifted after mine shutdown in 1994. The processing operation continues without any stoppage since 1983.

Before water well development in 1989, seawater was used as milling water between 1982 and 1989, and, after that, it was gradually changed to fresh water from the well. Eventually, a 5,000,000 m3 of seawater was used in the plant and disposed to the tailing dump area.

Mine pollution in the area mainly includes groundwater pollution by salty water seepage from the tailing dump area, a slope failure and land subsidence at the mined out area, water pollution of mine water at the mined out area, and air pollution by soot and dust with high SO x concentrate from the smelter and refinery plant. In spite of pollution mitigation efforts taken by OMCO during its mining activities, the pollution in the area is seriously affected to the environment.

6.0 OBJECTIVE OF THE STUDY:

The objective of the Study are to –

(a) Prioritize the installation of an impervious dam capping membrane which incorporates seepage water collection / evaporation.
(b) Identify contamination sources and their distribution.
(c) Clarify contamination mechanism.
(d) Forecast the dispersion of contamination and its impact on the environment in the future.
(e) Carry out a feasibility study for restoration of the contaminated area; and
(f) Propose a future monitoring system.

7.0 SCOPE OF THE STUDY:

The scope of the Study consists of –

(a) Design an impervious capping method for the tailings dam along with a seepage water collection / containment and evaporation area which complies with the Ministry of Regional Municipalities and Environment criteria.
(b) Liaise with the Ministry of Regional Municipalities and Environment to agree all aspects resulting from (a) above.

(c) Collection and review of existing information and data, including laws, regulations and standards relevant to environment and mining, mining activities of the Sohar mine, the ore processing plant, the tailing dump area, the copper refining plant, current land use activities, socio-economic activities, etc.

(d) Geological geomorphological and hydrogeological investigations in the Study area

(e) Geotechnical investigation, including soil, wadi sediment and the plant,

- Soil – Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO_4, Cl.
- Water including wadi and water well : Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO_4, Na, Mg, Ca, Cl, HCO_3, temperature, EC, pH.
- Plant – Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO_4, Cl.

(f) Contamination source investigation at the tailing dump area and the copper refining plant, including sampling and chemical analyses of water and air:

- Soot and smoke – SO_2, Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, Volume of stack gas.
- Tailing materials – Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO_4, Cl.
- Water in the tailing dump area – Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO_4, Na, K, Mg, Ca, Cl, HCO_3, Temperature, EC, pH.

(g) Drilling investigation for groundwater contamination in the water course of Wadi Suq:

- All coring
- Groundwater – Hg, Cd, Cr, As, Pb, Cu, Mn, Fe, Ni, Sn, Zn, SO4, Na, K, Mg, Ca, Cl,HCO3, Temperature, EC, pH.
- Inserting strainer for water monitoring.

(h) Geophysical investigation at the Wadi Suq:

- CSAMT method.
- Gravity survey.

(i) Forecast of the dispersion of contamination and its impact to the environment.

(j) Study on remedial countermeasures, including alternatives.

(k) Construction of conceptual database for future monitoring, and

(l) Economic and financial analyses.

Since DGM wishes to establish a pollution control system through introducing funds from international financial institutions as soon as possible, the Study should meet the requirements of international lending agencies.

8.0 EXPERTISE REQUIRED:

Geologists, Hydrogeologists, Geophysicists, Mining Engineers, Metallurgists (Mineral dressing and smelting), Civil Engineers, Environmental Engineers for all pollution and water contamination, Mechanical Engineers for plant planning and design, Economists (including a specialist to evaluate the future damage).

9.0 STUDY TIMETABLE:

A tentative timetable for the study is presented in Annexure – 2.

10.0 EXECUTIVE ORGANISATION:

The Oman side will set up a steering committee, which monitors the Study progress, and a technical committee, which supervises technical activities required for the Study. The committees consists of –

Steering Committee : Ministry of Commerce & Industry (MCI), Ministry of Regional Municipalities & Environment (MRME), Ministry of Water Resources (MWR) and JICA.

Technical Committee : MCI, MRME, MWR and JICA.

(3)

OMAN MINING COMPANY LLC

OMCO MINING ENVIRONMENTAL ISSUES

SOHAR:

During a recent unofficial visit by OMCO to MRME, Muscat, it was ascertained that MRME are actively engaged in preparing a Hazardous Waste Management Environmental Legislation Policy. This would include such areas as the old Lasail and water evaporation pond disposal and, more recently, the re-treatment of the Refinery spent electrolyte evaporation ponds.

Since Hazardous Waste aspects of environmental control are not specifically featured in the Terms of Reference Feasibility Study by JICA, it is recommended that you pursue the matter directly during the course of your current Japan visit.

Further, the study may also be expanded to consider the most appropriate long term method for disposal of granulated copper slag arisings, in particular, reference to utilization of this material as feed stock for other industries e.g. slag wool, cement, and the criteria and specification of the slag most suited for their recommended applications.

Finally, the issue of environmental remedial action for the mine waste dumps would also be worth assessment along with the open pits. In areas with regular rainfall, the standard practice is to re-introduce appropriate flora to the dumps and landscape accordingly. This would not be possible in Oman without major re-allocation of scarce water resources for forced irrigation. Disused open pits need careful environmental consideration and the Japanese approach should be ascertained. Utilization as landfill sites or water reservoirs are practices adopted elsewhere but are not considered suitable in the Oman environment.

RAKAH:

The Japanese study is limited to OMCO activities in the Sohar region. Since OMCO actively engaged in mining gold gossan in the Rakah region, it may be prudent for the Japanese study to incorporate OMCO's Rakah activities. In particular, the issue of the disposal of the accumulated cyanide tailings hazardous waste can be addressed together with the most appropriate environmental solution for any further gold gossan development e.g. Bishara.

The environmental issues associated with the Rakah Copper development remain unanswered in the recent feasibility review undertaken by MMAJ and in view of the marginal nature of this project it is important that a positive environmental position be established.

Good luck and Best regards

M. SEXTON
General Manager

資料2

PROJECT FORMULATION STUDY
ON
MINE POLLUTION CONTROL
IN
SOHAR MINE AREA
SULTANATE OF OMAN

QUESTONNAIRE

A: Organizations related to the Project

1. The main responsible body for the Project
   Org. Name: _____
   Department: _____
   Division: _____
   Office Location: _____
   Top-responsibility person: _____
   Contact Person: _____

2. Co-operator and research manager of the field survey
   Org. Name: _____
   Department: _____
   Division: _____
   Office Location: _____
   Top-responsibility person: _____
   Contact Person: _____

3. Supporting organaization to the Project
   Org. Name: _____
   Department: _____
   Division: _____
   Office Location: _____
   Top-responsibility person: _____
   Contact Person: _____

4. Member of the Steering Committee in Oman Side

<MCI>
   Department: _____
   Division: _____
   Office Location: _____
   Representative: _____

<MRME>
   Department: _____
   Division: _____
   Office Location: _____
   Representative: _____

<MWR>
   Department: _____
   Division: _____
   Office Location: _____
   Representative: _____

<OMCO>
Department: _____
Division: _____
Office Location: _____
Representative: _____

5. Member of the Technical Committee in Oman Side

<MCI>
Department: _____
Division: _____
Office Location: _____
Representative: _____

<MRME>
Department: _____
Division: _____
Office Location: _____
Representative: _____

<MWR>
Department: _____
Division: _____
Office Location: _____
Representative: _____

<OMCO>
Department: _____
Division: _____
Office Location: _____
Representative: _____

6. List of the organizations which the final report of the Project will be submited

1)_____
2)_____
3)_____
4)_____
5)_____
6)_____

B: Laws, Regulations and Standars Relevant to the Project

- Environmental Standards:
  - --Surface(River,Lake and Sea) and Underground Water
  - --Drinking Water, Agricultural Water, Industrial Water etc.,
  - --Ambient Air
- Regulations for Waste Water, Gaseous Emission and Waste Disposal
- Environmental Control System
- Ohters relevant to Environment and Mining

C: Future extension plan and final goal of the Project

1. Main operation body of the pollution- monitoring system which will be proposed by the Project.

2. Source and type of the funds and its requirements which the Oman side need to meet to introduce.

3. The conceptual level of environmental recovery which is set as an final goal of the project.
<Water Pollution caused by the Taillings Dam>

<Air Pollution caused by the Smelter / Refinary Plant>

D: Meteorological, Environmental and Technical Data and Information on the Project Site

1. Climate

1-1 Annual Seasonal Variation

- Hot and Cold Seasons or Months
- Dry and Wet Seasons or Months

1-2 Meteorological Data

Meteorological Station: Name _____

Location _____

1-2-1 Atmospheric Temperature

Period of Record: Years from_____ to _____

- Yearly and Monthly Max., Average and Min.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Mean of Daily Max.												
Monthly Mean of Daily Min.												
Monthly Mean of Daily Mean												

1-2-2 Atmospheric Humidity

Period of Record: Years from_____ to _____

- Yearly and Monthly Max., Average and Min.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Mean of Daily Max.												
Monthly Mean of Daily Min												
Monthly Mean of Daily Mean												

1-2-3 Precipitation

Period of Record: Years from_____ to _____

- Yearly and Monthly Max., Average and Min.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Mean of Daily Max.												
Monthly Mean of Daily Min.												
Monthly Mean of Daily Mean												

1-2-4 Wind

Period of Record: Years from_____to_____

・Is there any steady direction? (Land Wind in the day time, Sea Wind in the night time)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily Prevailing Direction Number of Days or % N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW.												
Wind Velocity Daily Max. of the Month Daily Min. of the Month Daily Means. of the Month												

2. Vegetation

Vegetation(or Land Use) Map illustrating the distribution of Broadleaf Forest, Savanna, Desert Vegetation, AgriculturalLand, Town and Village etc.,

3. Population

	Present (Year_____)	Forecast Year 2000	Forecast Year 2005	Forecast Year 2010
Falaj al Qabail				
Sohar Mine Area				
Sihalt Area				
Other Area				
Total				

4. Existing Environmental Impact

Brief Categorization of Existing Environmental Impact caused by Mine and Smelter Pollution (Water, Soil and Air Pollution)

Category	Existing Environmental Impact	Remarks
Land Use		
Socio-economicProfile (Population, Age Structure, Life Expectancy, Income, Labor Force etc.,)		
Economics		
Noise		
Aquatic Ecology (Sea and Surface Water)		
SurroundingFlora and Fauna		
Transportation		
Others		

5. Topography, Geology, Mineralog y

- Topographic Map
  - --Site Location Information(Mine Site, Concentrator, Smelter, Refinery, Tailing Dump Area etc.,)
  - --Access and Transportation to and fro Masqat, Available Port etc.,
  - --Different Escalation including Surrounding Area(1/2500, 1/10000, 1/50000 etc.,)
- Geologic Map(Plan and Section)
- Drainage Network(Natural and Artificial)
  - --Hydrology Map, Surface and Underground Water, Location of Water Basin etc.,
- Hydrogeologic Map(Plan and Section)(Tailing Dump Area and Wadi Suq)
- Remaining Ore Deposit Map and Underground Geologic Map(Mine Area)
- Mineral Assemblage(Major Ore Minerals and Gangue Minerals)
- Analytical Data or Metal Grade of Remaining Ore Deposit after mined-out(Open Pit and Underground)

6. Hydrology

6-1 Water Basin and Water Course(Surface and Wadi)

- Quantity of Water(Yearly and Monthly Max., Average and Min.) etc.,

6-2 Fluvial Water System

- Flow Rate or Volume of Water(Yearly and Monthly Max., Average and Min.) etc.,

6-3 Underground Water

- Hydrological Information

6-4 Evaporation Rate

- Yearly and Monthly Max.. Average and Min.

Area Name_____	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Mean of Daily Max.												
Monthly Mean of Daily Min												
Monthly Mean of Daily Mean												

7. Water and Soil Pollution

(Monitoring Elements)

Surface Water ----------pH, SS, EC, DO, COD, Na, Cl, Heavy Metals etc.,
Underground Water -----pH, SS, EC, DO, COD, Na, Cl, Heavy Metals etc.,
Soil ----------Moisture, Na, Cl, Heavy Metals etc.,

(Monitoring Frequency)

Daily, Weekly, Monthly, Yearly, Periodically, Random etc.,

(Flow Rate or Volume)

Monthly Mean of Daily Max., Daily Min. and Daily Mean

7-1 Mined-out Area

- Analytical Data and Monitoring Frequency of Surface and Underground Water

- Flow Rate or Volume of Surface Water(and Underground Water, if available)
- Analytical Data and Monitoring Frequency of Soil
- Location Map of Monitoring Wells
- Location Map of Monitoring(Sampling)Points of Soil

7-2 Tailing Dump Area

- Analytical Data and Monitoring Frequency of Surface and Underground Water, Tailing Pond Water and Effluent of Tailing Pond
- Flow Rate or Volume of Surface Water(and Underground Water, if available)
- Estimated Volume and Analytical Data of Existing Tail and Pond Water
- Analytical Data and Monitoring Frequency of Surrounding Soil
- Location Map of Monitoring Wells
- Location Map of Monitoring(Sampling)Points of Soil

7-3 Concentrator, Smelter and Refinery Area

- Analytical Data and Monitoring Frequency of Surface and Underground Water
- Consumption and Analytical Data(Max., Min., Average) of Plant Supplied Water
- Flow Rate or Volume of Surface Water(and Underground Water, if available)
- Flow Rate, Analytical Data((Max., Min., Average) and Monitoring Frequency of Final Effluent
- Analytical Data and Monitoring Frequency of Surrounding Soil
- Location Map of Monitoring Points and Wells
- Location Map of Monitoring(Sampling)Points of Soil

7-4 Well for Living, Agricultural, Herd Breeding and Industrial Use

- Location Map of Major Existing Wells
- Analytical Data and Monitoring Frequency of Well Water

Well No. or Name	Utilization	Water Quality, Monitoring Frequency etc.,
Well_____ Well_____ Well_____ ----------		

7-5 Water Course of Wadi Suq

- Analytical Data and Monitoring Frequency of Surface and Underground Water
- Flow Rate or Volume of Surface Water(and Underground Water, if available)
- Analytical Data and Monitoring Frequency of Soil
- Location Map of Monitoring Wells
- Location Map of Monitoring(Sampling)Points of Soil

Monitoring Well No. or Name	Water Quality, Monitoring Frequency etc.,
M. Well_____ M. Well_____ M. Well_____ ----------	

7-6 Monitoring Method and Equipment

7-7 Monitoring Planning

7-8 Sampling and Analysis Methods

7-9 Availability of Existing Data Base

8. Air Pollution

8-1 Emissions from Smelter and Refinery

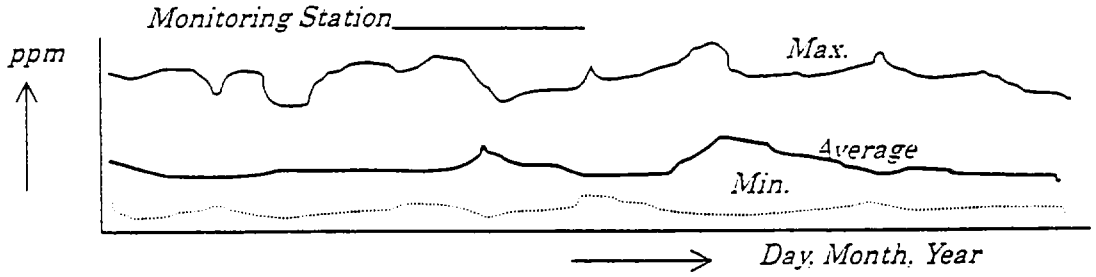
- Annual Stack Emissions
  - --Volume (t/y) and Concentration (Min., Max., Average) of SO_2, Particulates or Dust, Pb and Heavy Metals
  - --Velocity (m/s), Volume(Nm^3/h) and Temperature of Stack Gas
- Estimated Annual Fugitive Emissions (t/y)
  - --SO_2, Particulates or Dust, Pb and Heavy Metals

Period of Record: Year_____

Emissions	SO_2		Particulates		Pb	
	Volume	Concentration Min.Max.Ave.	Volume	Concentration Min.Max.Ave.	Volume	Concentration Min.Max.Ave.
Stack		(ppm)		(μ g/Nm^3)		(μ g/Nm^3)
Fugitive		- - -		- - -		- - -

8-2 Atmospheric Concentration of Air Pollutants

- Location Map of Monitoring Stations
- 1-hour SO_2 Concentrations (ppm) at Monitoring Station
  - --Total number of Observed Data, Period of Observation, Daily Min., Max. and Average, Monthly and Annual Min., Max. and Average



- 1-hour Concentrations (μ g/Nm^3) of Particulates or Dust and Pb at Monitoring Station
  - --Total number of Observed Data, Period of Observation, Daily Min., Max. and Average, Monthly and Annual Min., Max. and Average
  - --Dust Constituents

8-3 Monitoring Method and Equipment

8-4 Monitoring Planning

8-5 Sampling and Analysis Method

8-6 Availability of Existing Data Base

9. Water Management (Mine, Concentrator, Smelter and Refinery Area)

9-1 Process Waste Water

- Flowchart of Process Effluent Streams (From Effluent sources to Final Disposal)
  - --Daily Average Flow Rate, Water Quality etc.,
- Waste Water Treatment Facilities
  - --Flowchart, Brief Description of Treatment Methods, Daily Average Flow Rate and Water Quality of Input and Output etc.,
  - --Specification of Major Equipment

9-2 Site Run-off

- Map of Site Drainage System

9-3 Tailing Dump Area

- Map and Flowchart of Water Treatment or Recycling System
  - --Daily Average Treatment volumes, Water Quality etc.,
  - --Specification of Major Equipment

9-4 Total Water Balance

- Fresh Water, Process Water, Run-off Water and Tailing Dump Area Water, Effluent etc.,

10. Emission Gas Management (Smelter and Refinery Area)

10-1 Smelting Gases from Dryer, Smelting Furnace, Converters, Anode Furnaces etc.,

- Flowchart of Gas Collection, Gas Cleaning and Sulfur Recovery Systems (From Gas Sources to Stack or Final Emission)
  - --Hourly Average Volumes, Gas Quality, Dust Concentration etc.,
  - --Specification of Major Equipment
  - --Methods of Dust Treatment collected in these systems

10-2 Fugitive Emissions

Fugitive emissions have a significant impact on air quality in the immediate vicinity of the site. However, the quantification of fugitive emissions is particularly difficult.

- Estimation of Contribution of different Furnace Area to Fugitive Emissions (if available)

	SO2	Dust	Pb
Dryer	%	%	%
Smelting Furnace	%	%	%
Converters	%	%	%
Anode Furnaces	%	%	%
Others( )			
Total Fugitive Emissions	100 %	100 %	100 %

11. Mining and Mineral Processing

11-1 Mining Operation (Open Pit and Underground Methods) before Shutdown in 1994

- Operation Record
  - --Daily, Monthly and Yearly
- Treatment of Waste Rock
- Water Consumption(Sea Water and Well Water)
- Mine Water Discharge Routes and their Treatment Methods
- Exploitation Map of Each Level

11-2 Mineral Processing before shifting to Imported Copper Concentrate in 1994

- Operation Record
  - --Daily, Monthly and Yearly
- Mineral Processing Method
  - --Bulk/Straight Differential Flotation etc.,
- Mineral Processing Conditions
  - --pH, Grinding Size, Slurry Density,
  - --Kind of Concentrates, Concentrate Grade and Recovery
  - --Kind of Reagents used and their Consumptions
- Process Flowchart and Specification of Existing Major Facilities
- Water Consumption(Sea Water and Well Water) and its Recycling Rate
- Tailing and Waste Water
  - --Treatment Methods and their Flowchart
  - --Quantity and Quality of Tailings and Waste Water
- Existing Site Layout

12. Smelting and Refining Operation

12-1 Recent Typical Annual Operation Results (Year_____)

- Annual Operation Hour
  - --Smelter _____ Refinery _____
- Annual Shut-down Period for Regular Maintenance
  - --Smelter _____ Refinery _____
- Annual Material Balance(Smelter+Refinery)
  - --Sulfur Balance is especially important

	Volume	Cu		S		Pb		Remark
		Net	Distribution (%)	Net	Distribution (%)	Net	Distribution (%)	
INPUTS Concentrates Flux Reverts Others( )								
Total (Input)			100		100		100	
OUTPUTS Cathode (Anode) Anode Slime Discard Slag Dust Stack/Fugitive Emissions Reverts Effluent Sludge(Water Treatment) Others( )								
Total (Output)			100		100		100	

12-2 Concentrates and Raw Materials

・Sources of Concentrates, Annual Average Treatment Volumes, their Constituents etc.,

12-3 Discard Slag, Collected Dust and Sludge

・Volumes, Constituents, Environmental Protection Control of Deposit or Stock Areas etc.,

12-4 Site Layout

12-5 Process Flowchart and Specification of Major Facilities

13. Environmental Management of OMCO (The Sohar Mine of Oman Mining Company LLC)

13-1 Major Environmental Improvements so far undertaken

Items	Time (Year)	Effect	Remark
1. _____ 2. _____ 3. _____			

13-2 Company's Environment Policy

(The followings are general examples)

- Achieve compliance with all environmental laws and where appropriate, achieve limits of performance which go beyond the community's expectations ;
- Identify, monitor and manage risks from its operations ;
- Improve production processes, waste management, and use of resources as an ongoing part of operations ;
- Communicate regularly with employees about aims to improve environmental performance and about their individual responsibilities ;

13-3 Waste Management Strategy

- Recycling aiming to reduce the volumes of Waste and Effluent produced on Site
- Improvement of disposal methods etc.,

13-4 Site Management

- Environmental Services Department or Staff etc.,
- Organization Chart of Site Environmental Management and its Individual Function and Activity
- Communication with Residents

14. Others

14-1 Site Services

- Electricity, Natural Gas, Oil and Water Supply and their Annual or Monthly Consumptions

14-2 Employment

- Site Organization Chart
- Classification and Allotment of Employee

14-3 Transportation

- Raw Materials to Site (Transportation Means, Unit Volume, Monthly or Annual Frequency etc.,)
- Products and Shipping Materials from Site (Transportation Means, Unit Volume, Monthly or Annual Frequency etc.,)
- Pollution Protection Control during Transportation

オマーンプロ形対談記録

（1）商工省鉱物局 Qassim局長（於：ＪＩＣＡ鉱調部会議室）

日時：平成１１年2月1日

対応者：ＪＩＣＡ　資源開発調査課　永田課長、千葉課長代理、早川職員

MMAＪ　環境業務部　調査課　目次課長代理

面談概要

本件は、ワジ・スーク沿いに設置されている井戸の水が塩辛くて飲めない、という住民の苦情から端を発したものである。過去、対策工事を施したが、全く効果がない。また、オ国には、環境のエキスパートもおらず、日本の技術協力を要請した。

今回提示した追加要請については、MRME の圧力から生じている。日本側の予算の制約もあると思うので、全てを行う必要はない。例えば、精錬スラグを他産業に役立てるための素材とするという技術開発的調査などは、MCI の鉱業政策とは関係ない。OMCO の施設が汚染源となっている環境汚染の実態を解明し、その回復のために OMCO として採るべき対策の具体的な内容を明らかにしたい。過去の負を清算した上で、今後につながるような調査を行って欲しい。OMCO を民営化させることを考えており、その支援をお願いする。

具体的には、今回のプロジェクト形成基礎調査団と現地で協議するつもりだが、オ国に来る前に、日本側として何が出来るのか決めておいて欲しい。本プロジェクトで対象と出来ないと判断した部分については、別プロジェクトとして改めて日本政府へ要請することを検討する。

また、現在操業中のラカー金鉱山は、来年閉山の予定である。本地域はソハールと同様、鉱害が問題となると思われるので、今のうちに対策を練っておきたい。

なお、本日手交された質問票は、プロ形調査団がオ国に来るまでに回答出来るよう準備しておく。本プロジェクトのために、MCI 主導のもと、MWR、MRME そして OMCO のメンバーでコミッティーを設置する。将来の実際の鉱害防止対策工事等の財源としては、日本の資金協力を第一優先と考えている。

（2）商工省鉱物局

日時：平成１１年2月２７日　　９：３０～１０：４０

相手方：Mohammad H. Qassim Al Yafei　鉱物局長

Salim Omar Abdullah Ibrahi　鉱物局調査部長

Ryoichi Nobumoto　ＪＩＣＡ専門家

面談概要

本調査の調査日程変更を提案する。３月６日予定の MCI 及び MRME のラボラトリー視察を明日２月２８日に行い、ソハールへは３月１日に移動した方が効率的。（提案に従い、日程変更を行った。）

本プロジェクトについては、先般２月１日にＪＩＣＡ鉱工業開発調査部にて概要を説明したが、ワジ・スークの水質汚染問題に加えて、

①製錬所からの排煙問題

②精錬スラグの再利用計画

③ラカー金鉱山の鉱害防止対策

についても、是非とも実行して欲しい。

（３）在オマーン日本大使館

日時：平成１１年2月２７日　１１：００～１１：４５

相手方：神長　善次（特命全権大使）

松本　敬一（一等書記官）

面談概要

本プロジェクトの件も、オ国側は実際は実態がつかめていないのではないかと思う。製錬所からの排煙は、風向きによって農作物にも影響を与える。また、廃さい堆積場からの地下水への塩水問題は、一部住民から苦情かでている。オ国政府の役人は、本件に関して危機感を持っているが、住民はまだよく知らないようだ。今後、問題がますます顕在化する可能性は大きい。現地踏査においては、地域住民に危機感をあおりすぎないよう注意して欲しい。

ソハール地域は、日本で言えば京浜工業地帯の様なもので、今後大きく発展してゆくし、人口も増える。海岸沿いでは既に海からの塩の浸透による椰子林への被害が起きている。

また、オ国は銅に対する思い入れが強く、海外からの企業を誘致しようと努力している。探鉱案件と並び今回の鉱害汚染防止調査の役割は大きいし、国王は環境問題に強い関心を示しており、この点からも本プロジェクトの持つ意義は大きい。

（４）MCI Mineral Labo.

日時：平成１１年2月２８日

相手方：Barry Hepworth　　分析部門長（Head of Analytical Service）

面談概要

チーフ１名、スタッフ４名で、原子吸光分析装置を主体に水分析を主体に実施している。3台の原子吸光分析装置の内、1台はJICAの供与機材である。コンピューターの基盤を焼損したので、入手手配し入荷待ちである。1台は老朽化しており使用していない。残る1台は独パーキネルマー社製の最新型で、現在、使用頻度が最も高い。

水分析の場合、分析能力は、成分数にもよるが、35件／日程度。現地出張サンプリングも行うが、その場合は、サンプリング費用実費が加算される。場所、資料数により別途見積もりとなる。

（５）MRME Environmental Labo.

日時：平成１１年２月２８日

相手方：Firdaus Al Harthy（分析所所長）

面談概要

本分析所は、地方自治環境省（MRME）の管轄下にあり、MRME から発注されたサンプルの分析をメインに行っている。その他 MCI 経由で OMCO のサンプルの一部の分析も行っており、OMCO の月刊報告に使用されている。

今回のプロジェクトが実施され、本分析所にサンプルの分析を依頼するのであれば、MRME を通して欲しい。ただし、総員 10 数名のマン・パワーでこれ以上の分析作業は困難である。職員の残業手当等を考えると、何らかの予算措置が受けられないのであれば、対応は困難。

（６）商工省　鉱物局

日時：平成１１年３月１日　9:00～10:40

相手方：Mike. Sexton (General Manager of OMCO)

Najeeb Al Barwani (Environmental Mettalgist)

面談概要

本件の直接のカウンターパートである OMCO と商工省　鉱物局で対談を行った。調査団から事前に送っておいた質問票に対する回答票を受領、主として、同回答内容に関しての質疑応答を行った。要旨は以下の通り。

①OMCO の環境保全に対する考え方は、データは全て公開しており、OMCO としても本鉱　　害の改善方法を検討中。

②OMCO は水理地質データを持っておらず、水資源省や地方自治環境省がデータを持っている。

③OMCO は、現地（ソハール）に分析所を持っており、設備は充実している。

④鉱害対策としては、水質汚濁の方が煙害問題よりも優先度が高い。

⑤製錬プラントは、始まって以来の定期修繕により休止中、ただし電解プラントは稼働中。

⑥水質汚濁の主要因は塩害であり、重金属イオン汚染は今のところ把握されていない。

（７）地方自治環境省

日時：平成１１年３月１日　１１：２０～１２：００

相手方：Ahmed Al Sabahi (Head of Water & Waste Pollution Control)

Paul Sharples (Chieef Inspector of Water & Waste Pollution Control)

面談概要

オ国における環境政策の概要としては、1982 年に環境基本法を制定し、以後何度も見直しを行っている。本プロジェクトに関しては、鉱山設立当初は煙害問題解決が最優先と考えられていたが、現在は地下水汚染問題が優先と考えられている。水質汚濁の住民への健康、農作物、家畜への影響等のデータは、本省では持っていないので、水資源省に照会して欲しい。

環境関連の法律、基準等を提供するので参考にして欲しい。

（８）Sohar Development Office

日時：平成１１年3月3日　１１：３０～１３：００

相手方：Khadeem Ali Al-Omrani (Director of Water Dept., SDO)

面談概要

ソハール地区の上水供給を管理している機関。給水状況聞き取り調査要旨は以下の通り。

- Wadi Jiji 下流域に給水用井戸を８本（＋家畜用１本）所有。他に MOD(Ministry of Defence)が５本、OMCO が５本設置している。
- 地下水位は、-19m（～-55m Max ）。
- Wadi Jiji からの揚水量は、6,000~7,000 ・/日（夏場、冬場は需要減少のためもっと少ない）
- 淡水化プラントはない。
- 供給人口は 4,700 世帯（約５万人：Sohar 人口の約半分）であるが、井戸を所有している住民が多くいる。
- タンクローリーによる供給も行っている。対象は、Wadi Suq 下流の Falaj Al Qabail 及びその周辺の 5,800 人。同地区は井戸水が飲めないため飲料水を運んでいるが、水道を引く計画が挙がっており、近年中に工事着手する見込み。
- 現在のところ、Wadi Jiji が Wadi Suq の水で汚染されている兆候はない。

（９）MWR　Sohar Branch

日時：平成１１年3月3日　１３：２０～１４：００

相手方：Fahed Ali Alsadi (Section Chief of Network & Study Section, MWR S.B.)

Ahmed Moosa Al Farji (Technician of N & S.S., MWR S.B.)

面談概要

マスカットで行えなかった、地下水関係不足資料の補完収集を行った。資料提供には、MWR 本省の正式レターが必要であるため手続方ありたい、とのコメントがあった。

（１０）OMCO

日時：平成１１年3月3日　１０：００～１４：３０

3月4日　　９：１０～１０：３０

相手方：　Mike. Sexton (General Manager of OMCO)

面談概要

OMCO は、現在製錬所の増設を計画しており、本プロジェクト対象にこの増設計画を含めて欲しい。増設計画は現在、日本のトーメングループが立案中であり、近日中にそのレポートが提出される見込みである。増設計画の骨子は、

・現状 20,000t/y→40,000t/y（60,000t/y への含みを折り込む）

・硫酸工場、除塵設備の新設

・ＩＳＡ炉の設置

・ＩＳＡ法電解への全面切替

である。

現状プラントの水系統は、

・ Smelter 内は完全な Closed Circuit でプロセス水の排水はない

・ Refinery の最終排水は、電解廃液（１～２・/日）でこれは石灰中和後、Bayda 鉱山跡近くの蒸発池へ廃棄

・事務所、分析所等からの排水は、タンクローリーでソハール市処理施設へ運搬

となっている。

現状プラントからのスラグ、アノードスライムは、

・スラグはブラスト用として売却

・アノードスライムは缶に封入後売却

されている。

現状プラントの排ガス、ダスト処理については、

・ SO2 及びダストのメインソースである電気炉､転炉からの排ガスはバルーン煙道経由で主煙突へおくっている

・洩れガス、スクラバー、ペレットドライヤー、精製炉、回収ダストドライヤー用に各１カ所、計５カ所に小煙突を設けている

（１１）在オマーン日本大使館（現地踏査結果報告）

日時：平成１１年3月　6日　９：００～９：３０

相手方：松本　敬一（一等書記官）

面談概要

本プロジェクトは、環境影響の分野に偏りすぎては良くない。オ国にとっては、脱石油産業を育成することが、本来の目的である。従って、本プロジェクトも新規鉱山開発を妨げるようなことにならないようにしたい。

また、オ国の官庁は横のつながりが全くないため、本プロジェクト実施の暁には、MCI 鉱業局が中心となり、各省庁等の関係機関がその支援を行うような体制を作るべきである。

鉱業局長は、近年、その発言力が低下してきているようなので、次官に出てきてもらうことも考えなければいけない。

（１２）商工省鉱物局

日時：平成１１年3月　6日～9日

相手方：Mohammad H. Qassim Al Yafei　鉱物局長

Salim Omar Abdullah Ibrahi　鉱物局調査部長

面談概要（詳細は、協議結果参照）

調査結果概要説明、今後の方針打ち合わせ。

M/M 内容討議、素案作成

M/M 署名

（１３）在オマーン日本大使館

日時：平成１１年3月　9日　１１：００～１１：４５

相手方：神長　善次（特命全権大使）

松本　敬一（一等書記官）

面談概要

調査結果概要説明。今後の取り組み打ち合わせ。ラカー鉱山案件の扱い検討。港湾整備案件との兼ね合いについて大使館意見確認。

調査団に対する大使館便宜供与に関するお礼。帰国のための挨拶。

収集資料リスト

１．国勢一般

1.1 **オマーン国概要（平成１１年１月　在オマーン日本国大使館）**

1.2 **国家行政主要組織図**

1.3 **商工省及び鉱物局組織図**

1.4 **地方自治・環境省組織図**

２．法規等

2. 1 PETROLEUM AND MINERALS LAW (MCI)

2. 2 REFORM OF THE REGULATORY FRAMEWORK AND FISCAL REGIME FOR THE MINERAL SECTOR IN THE SULTANATE OF OMAN Volume2:Mining Law, Mineral Rights Regulations & Model Prospecting and Mining Contract.(DRAFT:MCI)

2. 3 ROYAL DECREE 10/82 WITH AMENDMENTS AS PER ROYAL DECREE 63/85(MRME)

2. 4 REGULATIONS FOR WASTEWATER RE-USE AND DISCCHARGE(MRME)

2. 5 REGULATIONS FOR THE MANAGEMENT OF HAZARDOUS WASTE(MRME)

2. 6 REGULATIONS FOR NOISE POLLUTION CONTROL IN PUBLIC ENVIRONMENT(MRME)

2. 7 REGULATIONS FOR NOISE POLLUTION CONTROL IN WORKING ENVIRONMENT(MRME)

2. 8 REGULATIONS FOR THE CONTROL AND MANAGEMENT OF RADIOACTIVE MATERIALS(MRME)

2. 9 REGULATIONS FOR THE REGISTRATION OF CHEMICAL SUBSTANCES AND THE RELEVANT PERMITS(MRME)

2.10 REGULATIONS FOR AIR POLLUTION CONTROL FROM STATIONARY SOURCES(MRME)

３．その他

3.1 JICA QUESTIONNAIRE Feb.1999 (OMAN MINING COMPANY LLC)

3.2 GROUND WATER POLLUTION AND REMEDIATION IN WADI SUQ
(MWR Water Protection Dept. Apl 1996)

3.3 SOHAR COPPER PROJECT,NORTHERN OMAN & HYDROGEOLOGICAL SURVEY OF WADI SUQ

3.4 MONTHLY ENVIRONMENTAL REPORT Jan.'98~Nov.'98 (OMAN MINING COMPANY LLC)

3.5 GEOLOGY AND MINERAL WEALTH OF THE SULTANATE OF OMAN 1995(Ministry of Petroleum and Minerals)

3.6 FIELD GUIDE TO THE GEOLOGY OF OMAN(Samir S Hanna)

3.7 OMAN'97(日本語版　情報省）

3.5 GEOLOGY AND MINERAL WEALTH OF THE SULTANATE OF OMAN 1995(Ministry of Petroleum and Minerals)
3.6 FIELD GUIDE TO THE GEOLOGY OF OMAN(Samir S Hanna)
3.7 OMAN'97(日本語版　情報省)

資料 5

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1983	Jan 3	0													
	10	0													
	17	0													
	24	0													
	31	51.2													
	Feb 7	51.2													
	14	51.2													
	21	51.2				960		697							
	Mar 2	18.5		1,973		889	885	621				2,329			
	5	18.5		2,333		1,060	957	807				2,291			
	14	18.5		2,660		1,091	915	785				2,442			
	19	18.5		2,892		1,060	875	807							
	29	18.5		3,222		1,215	1,715	776	2,587			1,917			
	Apr 5	33.7		3,392		1,318	1,212	844	2,870			1,925			
	13	33.7		3,547		1,757	1,331	745	2,720						
	20	33.7		3,722		1,942	1,577	728	2,915			1,550			
	27	33.7													
	May 2	0		4,022		1,725	1,554	705	3,401			1,702			
	9	0													
	16	0		3,692		1,644	1,510	645	3,258			1,619			
	25	0		4,451		1,717	1,262	715	3,637			1,624			
	Jun 7	0		6,929		1,876	1,648	740	5,151			1,687			
	19	0		5,457		1,850	1,350	795	5,080			1,645			
	23	0		5,533		1,785	1,475	778	5,029			1,183			
	27	0		5,858		1,781	1,440	623	4,680			1,535			
	Jul 6	0		6,022		1,920	1,884	715	5,511			1,869			
	16	0		6,291		1,913	1,703	736	5,987			1,929			
	20	0		6,681		1,865	1,761	796	5,811			2,018			
	24	0				1,916	1,788	805	6,519			2,003			
	30	0		6,556		2,500	1,687		6,340			1,877			
	Aug 2	17.7		6,408		2,817	1,634	671	6,459			1,934			
	9	17.7		7,087		2,140	1,707	755	6,986			1,921			
	16	17.7		7,977		2,343	1,917	753	8,399			2,068			
	29	17.7		7,131		2,287	1,778	760	6,939			2,055			
	Sep 6	0		6,360		2,360	1,690	780	6,910			2,120			
	15	0		6,757		2,679	1,599	745	6,514			2,120			
	22	0		6,079		2,677	1,719	711	5,811			2,117			
	29	0		5,916		2,253	1,713	729	6,215			2,092			
	Oct 6	0		6,063		2,668	1,610	713	5,910			2,078			
	14	0		5,929		2,820	1,628	759	5,721			2,047			
	20	0		5,323		1,357	1,780	717	5,542			2,013			
	27	0		5,438		2,827	2,097	889	5,187			2,023			
	Nov 3	0													
	9	0		5,948		3,127	2,765	1,041	5,477			2,206			
	17	0		5,477		2,757	2,636	938	5,292			2,076			
	26	0		5,173		2,791	2,658	756	4,973			2,106			
	Dec 4	0													
	11	0		5,227		2,567	2,161	869	4,793			2,084			
	18	0		5,709		3,584	2,703	829	5,298			2,081			
	26	0		5,625		3,643	2,802	926	5,383			2,249			
1984	Jan 2	0		5,690		2,968	2,053	863	5,513			2,196			
	8	0		5,810		3,988	3,043	912	5,269			2,202			
	15	0		5,542		4,346	2,809	909	5,316			2,235			
	23	0		4,999		3,769	2,844	821	5,216			2,056			
	31	0		5,022		4,257	3,042	792	5,230			2,070			
	Feb 5	0		5,193		3,649	2,663	916	5,313			2,050			
	14	0		4,836		3,433	2,439	769	4,815			1,899			
	19	0		5,403		3,690	3,163	872	4,967			1,932			
	23	0		5,126		4,283	4,282	909	4,861			1,919			
	Mar 1														
	5	0		4,573		3,681	3,347	844	4,485			1,787			
	11	0		4,865		4,235	4,109	895	4,696			1,844			
	19	0		5,333		4,231	5,203	826	5,153			1,822			
	26	0		5,325		2,382	1,948	807	5,035			1,685			
	Apr 2	0		4,658		4,063	4,044	846	5,218			1,592			
	8	0													
	12	0		4,739		4,114	2,992	829	4,836			1,588			
	22	0		4,872		3,332	4,224	859	4,753			1,571			2958
	29	0		5,276		4,150	3,815	843	5,109			1,617			
	May 9	0		5,833		3,459	4,187	888	5,485			1,550			
	14	0		6,668		4,138	2,248	894	5,873			1,530			
	24	0		6,855		4,020	3,194	904	5,842			1,581			
	29	0		7,383		4,037	2,294	852	6,460			1,471			
	Jun 4	0		9,393		4,081	5,238	989	7,308			1,543			
	12	0		9,562		4,908	5,068	998	7,930			1,607			
	17	0		9,950		4,896	4,938	1,011	7,995			1,642			
	25	0		11,721		4,359	3,067	1,019	9,318			1,625			
	Jul 4	0		13,500		4,196	3,471	1,010	9,489			1,679			3044
	12	0		13,423		4,985	3,482	1,009	10,678			1,773			
	18	0		14,400		4,890	3,960	980	10,700			1,750			
	25	0		17,895		4,998	3,636	1,025	14,283			1,811			
	Aug 1	0		14,124		4,802	3,751	1,142	11,786			1,776			
	8	0		16,621		4,643	4,302	1,146	13,061			1,815			
	15	0		13,726		4,381	3,488	1,394	13,913			1,797			
	22	0		14,689		3,836	3,426	1,077	12,808			1,879			
	29	0		17,641		3,391	2,983	1,052	14,988			1,910			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1984	Sep 3	0													
	9	0		17,358		3,874	4,546	1,115	13,742			2,109			
	15	0													
	19	0		19,506		3,144	3,016	888	13,043			1,899			
	29	0		17,829		3,046	2,928	1,152	14,157			2,129			
	Oct 9	0		18,745		3,095	2,544	1,223	12,045			1,997			
	16	0													
	22	0		18,831		3,225	2,953	1,144	15,987			2,046			
	30	0		20,910		3,455	2,671	1,278	15,081			2,211			
	Nov 7	0		20,371		4,023	4,206	1,130	17,686			2,013			
	14	0		20,611		4,365	3,298	1,228	15,522			2,156			
	22	0		23,377		4,744	4,579	1,279	18,208			2,256			
	28	0		21,011		3,414	2,858	1,027	16,606			1,973			
	Dec 8	2.4		21,397		3,685	3,266	1,126	16,480			2,226			
	14	2.4													
	20	2.4		25,834		4,799	4,363	1,347	20,989			2,310			
	26	2.4		25,887		4,904	4,710	1,375	16,169			2,391			
1985	Jan 2	0		27,111		4,965	4,712	1,476	22,485			2,460			
	9	0		22,350		4,844	4,992	1,740	17,371			2,362			
	17	0		26,514		4,954	4,910	2,085	20,761			2,443			
	23	0		28,179		5,132	5,141	2,602	22,313			2,579			
	31	0		28,155		5,212	5,274	3,561	16,086			2,474			
	Feb 7	0		26,838		4,877	4,627	3,385	20,763			2,400			
	14	0		27,590		4,564	4,554	3,324	19,800						
	20	0		27,000		4,883	4,864	3,412	21,100			2,120			
	27	0		22,289		4,789	4,405	3,184	18,716			2,172			
	Mar 6	3		24,012		4,580	4,598	3,416	17,522						
	14	3		22,848		4,272	4,161	3,135	17,773						
	20	3		23,450		4,378	4,124	3,006	17,980			2,141			
	27	3		28,200		4,938	5,268	3,914	25,358			2,500			
	Apr 4	0		26,266		4,626	4,438	3,304	20,910			2,186			
	10	0		25,557		4,778	4,581	3,345	21,177			2,145			
	17	0		25,736		4,494	4,333	3,175	21,106			2,162			
	25	0		27,260		4,754	4,603	3,420	22,056			2,216			
	May 2	1.4		26,900		4,444	4,080	3,295	21,818			2,241			
	9	1.4		26,934		4,529	4,327	3,344	21,125			2,228			
	15	1.4		28,057		5,622	4,563	3,677	22,832			2,157			
	22	1.4		30,675		3,512	4,607	3,573	24,725			2,229			
	29	1.4		29,323		6,289	4,475	3,290	23,836			2,193			
	Jun 10	0		32,164		5,174	4,713	3,540	25,843			2,167			
	15	0		30,834		4,996	4,371	3,455	17,342			2,144			
	24	0		29,873		5,062	4,510	3,757	18,087			2,345			
	29	0		31,374		5,738	4,864	3,363	24,356			2,388			
	Jul 6	0		33,286		5,179	4,751	3,721	26,632			2,339			
	15	0		35,091		8,576	5,220	4,007	27,890			2,284			
	21														
	28	0		36,939		5,815	5,389	3,814	27,203			2,411			
	Aug 8	0		31,890		6,156	4,936	3,456	23,234			2,792			
	14	0		33,725		5,246	4,809	3,408	23,838			2,404			
	22	0		32,297		5,308	4,586	3,376	21,063			2,282			
	29														
	Sep 5														
	12	0		40,315		5,679	4,870	3,585	28,305			2,331			
	17	0		32,796		5,210	4,768	3,534	23,166			2,330			
	22	0		37,274		5,619	5,028	3,553	27,687			2,627			
	Oct 5	0		42,143		5,622	5,101	3,790	26,020			2,380			
	13	0		41,828		6,168	5,033	3,748	29,144			2,386			
	18														
	23	0		38,511		5,733	5,026	3,364	26,237			2,648			
	30	0		44,067		6,139	5,224	3,799	29,972						
	Nov 9	0		40,258		5,892	4,915	3,845	34,062			2,338			
	17	0		39,815		5,761	4,859	3,400	26,529			2,344			
	23	0		41,891		6,335	4,947	3,830	31,446			2,383			
	27	0		56,501		6,766	6,004	3,959	37,664			2,376			
	Dec 3	15		39,018		6,440	5,447	3,861	33,422			3,000			
	12	15		50,212		7,015	5,107	3,734	36,369			2,263			
	17	15		42,111		7,077	5,034	3,502	34,312			2,378			
	28	15		44,190		6,991	5,029	3,475	36,012			2,335			
1986	Jan 3	21.5		41,939		7,325	5,232	3,411	35,076			2,517			
	7	21.5		40,341		8,907	5,635	3,503	36,204			2,269			
	23	21.5		52,045		9,557	5,959	3,704	40,881			2,095			
	29	21.5		45,246		9,331	5,969	3,352	41,363			2,094			
	Feb 8	8.2		46,796		9,477	7,364	3,914	42,030			2,064			
	15	8.2		44,958		11,231	6,620	3,804	41,111			2,490			
	22	8.2		48,106		12,701	7,850	4,244	42,211			2,095			
	29	8.2													
	Mar 6	14.2		47,244		14,668	8,487	4,472	42,053			2,404			
	14	14.2													
	23	14.2		40,909		12,200	7,344	4,123	34,634			2,737			
	30	14.2		46,751		15,581	9,151	4,648	44,750			2,135			
	Apr 10	1.4		44,234		14,026	9,191	4,592	41,261			1,938			
	14	1.4													
	21	1.4		49,284		16,904	9,443	4,765	46,067			1,919			
	28	1.4		47,361		15,265	9,635	4,361	44,101			1,854			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1986	May 5	0		43,647		15,965	9,970	4,676	40,708			1,938			
	11	0		48,778		18,240	9,074	5,120	44,938			1,855			
	19	0		47,706		16,906	9,666	4,465	39,453			1,620			
	26	0		45,447		18,884	10,498	4,833	41,310			1,745			
	Jun 3	0		48,886		18,968	12,096	4,808	44,538			1,735			
	11	0		42,941		14,489	10,575	3,970	36,068			1,779			2812.2
	18	0		36,301		16,427	11,391	4,044	40,019			1,103			
	25	0		50,590		19,157	13,874	5,114	44,959			1,811			
	Jul 3	0.5		40,167		14,291	10,393	3,586	34,201			949			
	9	0.5		45,435		15,811	12,484	5,165	39,878			1,785			
	16	0.5		53,699		17,476	14,553	5,632	43,421			1,833			
	23	0.5		46,747		17,490	12,996	5,639	38,774			1,651			
	30	0.5		48,051		16,821	15,049	5,218	42,206			1,879			
	Aug 6	13.3		45,365		17,261	13,926	4,494	39,364			1,831			
	13	13.3													
	19	13.3		45,501		19,824	16,865	4,504	39,229			1,863			
	27	13.3		48,134		18,262	14,627	4,388	44,155			1,870			
	Sep 3	4.5		48,339		20,806	17,164	5,093	45,174			1,884			
	15	4.5		50,854		17,979	17,288	5,063	43,672			2,028			
	22	4.5		50,845		22,573	19,417	5,702	47,593						
	29	4.5													
	Oct 6	24.3		50,273		17,871	15,750	4,627	42,772			2,215			
	16	24.3		49,147		18,384	15,381	4,893	39,792			2,270			
	22	24.3		54,106		19,301	16,038	4,687	39,693			2,291			
	28	24.3		51,502		19,506	16,737	4,910	41,367			2,410			
	Nov 2	0													
	8	0		56,179		20,842	15,974	4,764	43,530			2,602			
	12	0		52,340		19,493	16,812	4,988	44,126			2,683			
	19	0		52,202		21,722	17,153	4,767	43,551			2,764			
	25	0		52,202		19,417	16,031	4,816	41,235			2,787			
	Dec 4	0.7		53,338		22,226	18,473	5,441	46,568			2,928			
	12	0.7		51,264		22,080	17,330	5,134	39,199			2,839			
	17	0.7		56,384		23,775	20,337	5,779	46,408			2,678			
	23	0.7		55,613		25,336	21,655	6,950	49,332			2,959			
	31	0.7		56,278		24,102	20,927	6,242	48,738			2,992			
1987	Jan 7	0		56,825		26,168	24,489	8,128	45,734			3,156			
	14	0		47,315		22,977	20,255	7,067	48,118			2,958			
	22	0		51,316		26,341	21,469	7,725	44,516			2,927			
	29	0		54,530		23,510	22,300	8,370	49,860			3,118			
	Feb 5	10.9		50,406		23,281	21,741	8,260	45,126						
	11	10.9		52,123		27,819	23,875	8,911	46,865			3,747			
	18	10.9		52,260		28,500	26,858	10,671	53,213			3,634			
	25	10.9		49,081		26,514	22,917	10,751	44,070			3,000			
	Mar 4	63.9		51,314		26,564	22,223	10,727	47,090			2,805			
	11	63.9		50,083		26,595	21,500	9,608	43,797			2,914			
	18	63.9		49,970		24,438	23,283	10,369	42,847			2,977			
	25	63.9		52,452		27,608	24,368	11,681	45,365			3,012			
	Apr 1	29.2		47,946		23,931		12,732	11,676			2,953			
	8	29.2		46,320		25,395	25,712	11,952	10,029			3,178			
	15	29.2		40,941		22,989	21,859	12,178	10,645			2,775			
	22	29.2		45,148		23,640	25,004	13,769	12,252			2,912			
	May 7	3.5		49,338		26,148	24,634	14,932	17,356			3,000			
	13	3.5		51,823		25,385	24,977	15,508	16,051			3,056			
	20	3.5		48,919		27,955	25,939	14,725	15,115			3,045			
	27	3.5		47,106		25,691	23,854	14,760	15,730			2,897			
	Jun 3	0.5		52,570		25,791	24,381	15,611	19,682			3,177			
	10	0.5		45,585		24,896	24,615	13,743	18,275			2,864			
	17	0.5		45,409		23,786	22,050	12,641	18,789			2,884			
	24	0.5		47,476		24,640	26,374	14,629	21,257			2,999			
	Jul 1	0		51,184		25,145	25,277	16,108	22,601			2,898			
	8	0		45,882		23,556	21,959	13,132	23,612			2,841			
	15	0		46,184		23,563	23,389	15,316	22,962			2,762			2575
	22	0		45,582		25,886	23,802	14,584	22,338			2,919			
	29	0		44,005		29,247	22,512	13,667	35,418			2,733			
	Aug 5	2.9		49,748		35,148	27,743	16,427	41,133						
	12	2.9		50,637		37,668	30,319	18,846	44,498			3,088			
	19	2.9		47,129		33,010	24,396	15,470	42,290			2,863			
	26	2.9		47,840		32,872	25,039	17,688	39,887						
	Sep 2	0		51,597		35,487	26,328	18,472	42,922			3,283			
	9	0		46,197		30,645	23,286	16,066	45,471			2,692			
	16	0		50,704		32,488	26,635	17,263	41,451			2,806			
	23	0		47,483		32,930	26,140	18,102	45,703			2,659			
	30	0		48,887		34,304	28,433	16,880	45,554						
	Oct 7	5.3		47,173		31,890	25,948	16,976	41,512			2,735			
	14	5.3		47,423		32,704	27,427	18,332	41,714			3,104			
	21	5.3		49,991		34,546	29,698	17,709	50,078			2,854			
	28	5.3		49,791		36,333	32,101	22,710	44,543			2,866			
	Nov 4	0		48,458		32,779	27,241	19,242	40,235			3,203			
	11	0		53,312		36,106	32,103	21,661	44,982			2,569			
	18	0		49,747		35,859	29,752	20,658	41,750			2,760			
	25	0		54,523		36,353	31,436	21,675	43,190			3,290			
	Dec 2	3.1		53,296		35,989	32,678	22,008	48,175			2,646			3100
	9	3.1										2,669			
	16	3.1		55,271		40,111	31,889	27,183	44,423			3,054			
	23	3.1		51,624		35,493	32,013	23,406	43,927			2,705			
	30	3.1		50,452		36,965	36,558	22,672	49,670			2,574			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1988	Jan 6	0		51,839		36,160	32,888	22,238	43,722			2,705			
	13	0		53,310		37,096	34,886	22,443	44,505			2,473			
	20	0		50,230		36,098	32,645	23,326	42,520			2,612			
	27	0		52,849		39,032	36,045	25,330	44,137			3,059			
	Feb 3	263.2		61,485		39,294	38,982	23,666	55,924			2,739			
	10	263.2		50,855		38,536	34,300	24,480	46,050			2,746			
	17	263.2		45,790		36,903	33,382	24,731	43,668			2,743			
	24	263.2		29,617		43,233	39,963	31,712	5,764			4,489			
	29	263.2		42,989		40,602	34,283	26,558	5,454			3,734			
	Mar 5	0		43,422		40,692	34,658	26,949	5,569			3,271			
	10	0		43,292		43,250	35,333	38,561	6,026			2,948			
	16	0		37,595		39,820	35,098	26,996	5,675			2,821			
	23	0		33,015		46,584	37,969	33,102	7,953			2,958			
	31	0		28,650		37,923	36,058	27,058	6,185			2,817			
	Apr 6	20.6		25,664		41,306	39,173	32,822	6,940			2,734			
	13	20.6		25,664		39,369	43,697	37,106	7,432			2,789			
	20	20.6		24,478		45,329	45,273	40,939	8,058			2,702			
	27	20.6		24,847		42,512	41,129	30,979	9,213			2,778			
	May 4	0		24,584		41,215	38,334	40,262	10,742			2,568			
	11	0		27,312		41,164	38,196	28,514	11,482			2,701			
	19	0		27,898		39,710	39,055	30,808	11,490			2,926			
	25	0		29,131		41,864	39,128	31,068	16,148			2,783			
	Jun 1	0		28,816		37,486	37,154	29,563	15,378			2,750			
	9	0		31,134		42,316	40,828	32,451	19,361			3,176			
	15	0		33,871		43,665	42,003	34,525	25,891			3,120			
	23	0		33,469		37,830	38,753	37,261	20,636			3,122			
	29	0		33,980		43,996	43,300	36,594	21,832			3,146			
	Jul 6	21.4		39,373		43,212	42,401	35,663	29,588			3,271			
	13	21.4		38,659		39,608	39,491	35,602	28,220			3,059			
	20	21.4		40,755		45,391	46,841	43,270	29,732			3,757			
	27	21.4		38,604		38,446	37,614	31,607	27,094			3,298			2220
	Aug 3	0		38,448		38,789	35,889	31,774	38,116			3,317			
	10	0		40,900		42,528	37,967	32,000	39,120			3,500			
	17	0		41,848		42,187	39,687	33,808	37,350			3,445			
	24	0		41,390		39,276	40,653	39,618	38,949			3,207			
	31	0		45,184		39,677	38,689	43,826	36,870			3,665			
	Sep 7	0		41,604		40,187	39,205	35,099	37,763			3,665			
	14	0		41,382		38,082	38,306	32,398	38,160			3,434			
	21	0		43,106		39,531	39,482	33,337	38,930			3,956			
	28	0		44,530		39,483	38,246	32,022	38,161			3,660			
	Oct 5	0		43,329		39,868	39,652	33,921	42,569			3,681			
	12	0										3,677			
	19	0		44,970		40,421	40,665	34,362	43,147			3,818			
	27	0		43,730		42,185	39,583	34,506	43,832			3,657			
	Nov 3	0		43,608		39,244	38,753	37,952	45,418			3,680			
	9	0		43,539		38,825	40,007	37,266	42,546			4,395			
	17	0		42,447		37,441	37,965	33,840	48,521			3,790			
	23	0		43,494		38,601	37,241	34,377	47,187			3,781			
	30	0		44,774		40,262	39,491	34,377	44,124			4,124			
	Dec 7	25.7		43,509		36,388	36,323	35,422	45,681			4,039			
	14	25.7		46,529		42,163	40,121	35,324	48,572			4,378			
	22	25.7		44,989		38,694	39,543	35,410	46,432			4,134			
	28	25.7		45,428		39,675	38,730	33,615	43,094			4,587			
1989	Jan 4	0		46,034		40,624	39,817	36,696	45,606			4,406			
	11	0		46,206		41,032	40,363	38,246	48,042			4,448			
	19	0		45,004		39,814	39,560	36,375	45,104			4,693			
	28	0		46,102		39,968	39,700	36,970	45,988			4,582			
	Feb 2	16.8		44,120		39,818	39,576	32,699	43,777			4,419			
	8	16.8		44,677		39,006	37,595	34,037	42,802			4,391			
	15	16.8		41,932		36,215	38,190	34,446	47,560			4,195			
	22	16.8		43,471		38,955	37,811	32,443	43,392			4,320			
	Mar 1	37.2		45,691		39,027	39,833	33,929	45,784			4,635			
	8	37.2		41,641		37,528	37,368	31,672	45,113			4,198			
	15	37.2		44,275		40,240	39,657	33,466	43,988			4,580			
	23	37.2		44,445		37,248	41,279	36,307	47,231			4,748			
	29	37.2		43,851		40,735	40,417	37,927	46,756			4,637			
	Apr 5	3.1		44,663		40,816	40,592	38,157	47,619			4,738			
	12	3.1		44,962		42,311	40,823	37,303	44,632			4,757			
	19	3.1		41,018		38,669	39,691	35,009	48,332			4,381			
	26	3.1		41,500		40,200	40,126	35,674	44,868			4,538			
	May 3	0		44,449		39,658	40,182	35,466	45,361			4,997			
	10	0		44,493		42,367	42,266	37,241	45,461			5,013			
	17	0		45,457		42,528	42,103	38,749	45,578			5,146			
	24	0		42,365		38,390	39,867	34,287	47,202			4,898			
	31	0	713	45,147		42,171	43,496	41,067	48,736			5,273			
	Jun 7	0	693	45,415		42,465	43,212	37,758	48,259			5,288			
	14	0	734	43,505		40,488	40,358	34,979	44,947			4,911			
	21	0	748	45,101		44,619	41,846	36,813	46,386			5,336			
	28	0	793	45,303		45,387	42,281	38,016	47,375			5,389			
	Jul 5	0	744	44,114		41,096	40,546	33,182	44,902			5,172			
	12	0	784	44,797		41,765	40,742	36,445	45,106			5,282			
	19	0	803	44,969		41,873	41,060	35,860	45,061			5,210			
	26	0	752	47,475		44,496	44,160	41,593	52,621			5,751			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1989	Aug 2	0	713	40.308		39.469	38.772	36.673	47.117			4.919			
	9	0	825	40.357		40.514	40.075	36.813	47.897			5.039			
	16	0	761	45.755		42.280	39.944	35.413	48.103			5.664			
	23	0	705	43.551		41.211	38.894	35.401	50.907			4.912			
	31	0	888	44.186		40.089	40.714	34.150	47.380			5.004			
	Sep 6	0	717	44.761		42.377	42.029	36.290	51.645			5.478			
	13	0	634	41.966		41.354	39.472	34.966	51.217			5.345			
	20	0	840	44.745		40.798	41.976	36.371	49.654			5.605			
	26	0	880	45.961		46.359	43.709	42.784	52.882			6.074			
	Oct 4	0	738	46.245		46.991	46.388	44.067	53.683			6.700			
	11	0	801	44.579		43.754	41.693	36.749	50.139			6.117			
	18	0	784	43.254		41.456	42.385	36.108	49.315			5.725			
	25	0	854	40.397		41.572	37.511	34.876	53.678			5.265			
	Nov 2	10.7	744	41.659		41.176	40.613	36.368	48.311			6.056			
	8	10.7	711	42.489		39.217	39.891	37.255	49.709			5.745			
	15	10.7	661	40.451		40.050	39.519	35.099	52.261			5.800			2690
	22	10.7	880	40.886		42.694	42.236	34.891	45.733			6.229			
	29	10.7	867	42.007		41.979	40.418	36.483	47.666			6.013			
	Dec 6	124.8	726	41.454		42.636	43.904	39.387	33.485			6.006			
	13	124.8	781	39.384		41.725	40.000	35.431	12.972			5.873			
	20	124.8	720	40.859		44.361	43.468	38.208	4.751			5.061			
	27	124.8	725	40.390		43.475	42.358	36.842	3.865			6.867			
1990	Jan 3	20.1	854	38.886		44.522	39.800	34.892	3.776			5.992			
	10	20.1	810	40.346		43.974	43.079	38.991	9.017			6.322			
	18	20.1	967	41.660		44.448	43.302	41.384	13.526			6.810			
	24	20.1	850	36.723		41.185	39.954	35.468	6.139			6.739			
	31	20.1	783	38.347		43.472	43.434	41.434	9.340			6.743			
	Feb 7	91.2	1002	36.200		42.185	42.127	36.878	9.765			6.863			
	14	91.2	867	33.905		42.537	41.180	36.695	23.103			6.151			
	21	91.2	671	35.832		45.909	44.555	42.341	20.140			6.662			
	28	91.2	983	32.481		42.743	42.764	37.415	44.509			6.460			
	Mar 7	0	763	32.301		44.936	43.056	35.455	28.878			7.066			
	14	0	785	34.031		44.440	41.290	41.074	32.528			6.766			
	22	0	800	33.600		44.700	43.990	41.300	29.900			6.700			
	28	0	790	31.428		45.725	44.296	37.439	47.905			7.404			
	Apr 4	3.9	728	33.177		45.023	44.396	39.159	35.471			7.492			
	11	3.9	712	33.057		46.857	48.127	50.565	53.141			7.293			
	18	3.9	707	29.884		43.027	43.484	42.206	37.949			6.849			
	25	3.9	630	29.995		43.936	43.012	36.865	41.016			6.570			
	May 2	0	700	31.040		43.528	43.221	39.112	39.100			7.000			
	8	0	786	34.031		41.375	41.100	38.695	39.707			7.435			
	16	0	786	29.878		42.290	42.062	39.939	40.013			6.938			
	23	0	640	31.704		44.973	44.118	40.273	41.776			7.550			
	30	0	875	29.681		41.650	41.590	36.525	42.752			6.271			
	Jun 6	0	667	29.345		40.236	39.545	35.138	40.331			6.299			
	13	0	679	29.680		41.960	45.388	40.702	43.351			6.324			
	20	0	704	31.093		40.602	40.905	36.498	42.386			6.246			
	27	0	709	32.704		42.544	43.828	37.748	44.147			6.475			
	Jul 4	0	663	37.446		47.055	46.584	38.198	45.859			6.908			
	11	0	657	34.171		40.914	43.309	39.555	42.955			6.885			
	18	0	674	33.949		41.226	44.973	39.600	40.891			6.901			
	25	0	671	34.253		46.864	46.168	41.339	50.669			7.248			
	Aug 1	0	688	35.451		45.078	41.553	40.667	49.822			6.756			
	8	0	685	35.905		45.986	43.516	40.917	49.907			7.008			
	15	0	664	35.457		43.043	42.823	38.251	45.919			6.959			
	22	0	704	34.647		41.176	42.106	36.585	45.342			6.797			
	29	0	683	34.077		42.013	42.983	37.818	45.898			6.825			
	Sep 5	0	720	36.004		42.156	42.761	37.357	46.755			7.368			
	12	0	675	35.406		41.001	40.886	37.753	45.692			6.940			
	19	0	696	35.327		41.783	41.098	37.486	46.133			7.071			
	26	0	687	37.885		41.769	43.006	38.086	46.824			6.826			
	Oct 3	0	818	36.285		39.862	39.580	35.316	46.367			7.044			
	10	0	783	37.809		39.813	42.737	37.126	47.442			7.240			
	17	0	778	36.760		41.582	43.761	38.425	48.650			7.081			
	24	0	800	39.127		43.673	44.599	38.639	47.649			7.284			
	31	0	851	39.096		41.152	42.013	37.620	47.012			6.696			
	Nov 7	0	711	38.469		42.337	46.386	38.914	47.674			6.950			
	14	0	780	39.865		43.257	42.648	38.203	48.337			6.704			
	21	0	801	38.572		41.137	44.728	37.202	47.176			7.069			
	28	0	801	36.684		42.454	45.721	38.129	48.129			7.164			
	Dec 6	0	822	37.876		40.661	43.941	37.731	49.210			7.375			
	12	0	688	38.241		41.742	44.107	40.248	44.973			7.369			
	19	0	702	39.036		40.851	43.900	40.226	45.097			7.429			
	26	0	704	39.348		41.022	42.584	40.008	45.932			7.503			
1991	Jan 2	8.6	723	38.256		43.939	44.772	40.952	46.673			7.532			
	9	8.6	706	38.387		42.941	43.354	38.657	47.853			7.236			
	16	8.6	709	38.236		43.772	43.776	40.866	49.899			7.737			
	23	8.6	674	37.816		42.467	49.689	41.079	48.056			7.298			
	30	8.6	719	38.928		45.870	46.528	39.829	48.516			7.462			
	Feb 6	15.1	874	36.332		41.930	42.886	38.083	48.408			7.152			
	13	15.1	735	37.661		42.825	48.445	42.573	48.702			8.301			
	20	15.1	706	39.422		45.571	46.051	40.189	47.933			7.996			
	27	15.1	740	39.930		45.587	48.343	45.910	52.535			7.924			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1991	Mar 6	41.3	724	43,787		45,190	46,049	41,155	48,805			8,083			
	13	41.3	718	37,352		45,259	47,369	39,847	50,329			7,693			
	20	41.3	742	37,310		45,547	49,141	40,912	52,718			8,258			
	27	41.3	745	37,965		46,047	50,002	41,011	52,904			8,052			
	Apr 3	0	725	38,864		47,767	50,765	40,965	53,088			8,137			
	10	0	782	40,674		48,231	51,693	42,019	51,778			8,429			
	17	0	871	37,025		44,102	46,842	41,666	4,522			7,963			
	25	0	941	37,679		49,372	53,730	53,443	5,137			8,546			
	May 2	0	833	34,788		42,894	47,925	44,558	15,918			7,851			
	8	0	830	35,750		44,472	48,063	43,152	29,072			8,258			
	15	0	721	35,194		46,103	46,925	42,924	23,976			8,125			
	22	0	734	38,458		48,193	47,421	44,235	33,053			8,787			
	29	0	720	34,358		47,086	49,684	44,820	30,291			8,101			
	Jun 5	0	689	35,801		45,440	49,529	44,246	35,988			7,644			
	12	0	731	36,084		46,712	49,207	45,262	41,022			7,702			
	19	0													
	26	0	738	34,736		43,564	47,088	41,036	35,968			8,228			
	Jul 3	0	941	35,124		47,949	48,029	44,248	47,066			7,987			
	10	0	852	35,805		50,521	50,076	45,722	47,313			9,728			
	18	0	897	36,147		44,395	49,955	46,891	43,563			9,156			
	24	0	772	36,780		47,276	50,867	48,929	47,613			9,719			
	31	0	790	35,663		45,234	51,697	40,724	49,573			8,730			
	Aug 7	0	742	35,024		44,244	45,943	39,060	41,798			9,556			
	15	0	833	37,154		42,631	45,973	41,603	41,153			8,283			
	21	0	785	36,300		45,706	46,347	41,050	47,374			8,350			
	28	0	780	36,725		43,614	49,229	44,289	43,527			9,533			
	Sep 4	0	845	36,715		45,910	46,338	41,867	45,483			8,912			
	11	0	859	36,646		44,326	48,599	39,358	44,668			8,257			
	18	0	898	37,112		43,799	45,913	41,462	52,658			9,330			
	25	0	741	36,967		42,341	46,660	38,946	45,523			8,313			
	Oct 2	0	863	36,342		42,161	44,340	41,805	48,370			8,487			
	9	0	878	37,744		46,592	45,965	41,516	50,299			8,514			
	16	0	787	37,706		46,417	50,871	46,798	52,072			8,882			
	23	0	718	38,055		43,156	47,179	47,372	51,225			7,945			
	30	0	645	36,763		46,320	43,863	47,277	52,823			7,556			
	Nov 6	2.4	729	37,924		47,857	49,779	43,394	51,941			8,412			
	13	2.4	757	37,556		43,584	47,616	42,453	48,334			8,046			
	20	2.4	860	35,930		45,419	48,739	42,598	49,167			7,964			
	27	2.4	1153	36,448		46,589	48,015	46,057	49,970			8,439			
	Dec 4	11.7	946	36,968		47,775	47,600	43,742	50,232			8,328			
	11	11.7	887	37,277		45,937	46,453	45,374	49,386			8,842			
	18	11.7	836	36,799		44,367	45,206	40,034	47,761			8,859			
	26	11.7	804	38,798		46,852	47,399	44,272	50,206			8,707			
1992	Jan 1	31.5	751	37,854		48,877	47,578	44,964	57,070			8,403			
	8	31.5	761	35,942		45,582	45,433	41,768	47,720			8,334			
	15	31.5	952	38,259		48,720	50,549	41,081	50,854			9,521			
	22	31.5	951	39,346		47,786	50,183	44,209	4,125			8,315			
	29	31.5	786	38,161		49,527	50,693	44,654	13,858			9,365			
	Feb 6	31.1	961	37,603		44,807	47,506	39,378	5,139			9,327			
	12	31.1	828	39,103		46,926	47,395	38,442	3,032			9,583			
	19	31.1	912	37,542		45,923	48,795	43,421	3,094			9,490			
	26	31.1	832	38,355		49,885	51,996	43,619	33,522			9,768			
	Mar 4	4.2	935	38,000		51,236	52,158	45,192	9,443			9,026			
	11	4.2	922	38,221		46,942	48,265	40,288	23,582			8,928			
	18	4.2	883	36,334		47,649	48,319	39,831	12,145			8,767			
	25	4.2	760	35,981		45,716	48,516	40,103	15,291			9,104			
	Apr 1	56.9	912	35,736		45,596	48,251	40,807	14,449			8,797			
	8	56.9	750	38,092		44,808	45,248	42,901	1,438			9,441			
	15	56.9	868	37,560		50,343	52,370	44,431	1,744			9,349			
	22	56.9	850	35,765		44,258	45,725	37,886	1,992			9,387			
	29	56.9	894	35,689		46,810	49,365	46,463	2,315			9,309			
	May 6	0	781	34,608		45,078	48,171	40,077	2,980			10,015			
	13	0	738	35,138		45,196	50,260	43,902	18,113			9,355			
	20	0	809	35,927		43,133	50,719	44,364	4,737			8,656			
	27	0	811	35,842		45,255	56,298	50,292	13,433			8,714			
	Jun 3	0	824	34,361		44,988	51,324	47,225	23,905			9,253			
	10	0	826	36,877		48,523	50,525	44,652	30,062			10,207			
	17	0	807	34,992		44,775	49,527	46,904	34,819			9,384			
	24	0	782	35,011		45,843	49,710	44,081	36,027			8,598			
	Jul 1	3.5	803	39,191		50,826	54,185	52,862	37,159			11,246			
	8	3.5	812	36,093		47,820	52,617	46,414	34,815			10,182			
	15	3.5	869	36,568		47,369	52,582	45,521	37,390			10,710			
	22	3.5	982	37,169		48,199	51,025	50,751	44,556			10,838			
	29	3.5	876	37,032		46,862	51,621	46,797	46,282			11,198			
	Aug 5	0	914	36,268		44,889	48,679	46,639	40,487			11,554			
	12	0	851	35,886		45,084	48,952	44,315	44,089			9,607			
	19	0	964	39,736		48,149	49,325	45,201	44,341			11,276			
	26	0		38,591		46,508	50,787	43,146	43,546			11,287			
	Sep 2	0	833	42,040		49,696	52,301	51,471	49,290			10,204			
	9	0	937	41,481		43,924	45,827	47,012	43,950			9,783			
	16	0	876	41,469		45,186	47,634	46,877	46,915			11,496			
	23	0	913	40,201		44,342	47,532	46,737	48,663			11,893			
	30	0	857	40,464		45,489	49,242	46,985	47,653			11,753			
	Oct 7	6.4	900	40,232		43,450	47,218	44,603	44,662	29,886		9,749			
	14	6.4	806	38,781		44,663	47,913	44,298	43,428	24,259	28,715	9,616			
	21	6.4	826	40,834		44,636	47,642	50,519	47,509	27,999	37,142	10,054			
	28	6.4	1602	40,464		43,954	48,977	54,902	49,955	30,094	38,934	11,287			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1992	Nov 4	0	882	42,118		47,782	47,662	49,487	46,994	28,029	33,529	10,070			
	11	0	829	39,029		44,056	45,766	41,233	42,807	24,922	32,530	10,208			
	18	0	898	40,096		42,757	45,141	42,085	44,871	24,621	32,423	10,718			
	25	0	867	39,067		44,596	45,686	44,232	44,882	26,549	36,135	9,650			
	Dec 2	4.8	930	39,120		44,844	48,375	43,361	43,322	24,485	31,252	10,019			
	9	4.8	942	40,907		44,776	48,678	43,981	45,763	26,725	31,826	9,982			
	17	4.8	811	41,231		49,907	51,519	50,055	46,735	25,403	32,071	10,582			
	23	4.8	912	39,209		43,122	45,991	44,097	43,486	23,380	30,624	9,255			
	30	4.8	951	40,730		47,079	49,900	51,674	12,587	27,070	36,085	10,108			
1993	Jan 6	3.7	878	39,550		43,821	46,448	46,806	6,806	26,198	35,343	10,086			
	13	3.7	794	37,968		44,705	46,285	46,759	28,431	25,173	34,211	9,882			
	20	3.7	833	38,736		45,203	46,515	47,113	40,568	27,062	33,364	9,950			
	27	3.7	839	37,356		44,958	46,715	45,303	40,317	26,165	34,374	10,495			
	Feb 3	30.1	897	36,372		45,424	46,152	46,326	38,811	26,040	35,684	10,149			
	10	30.1	892	36,862		45,565	47,882	47,230	38,306	26,379	35,557	9,965			
	17	30.1	964	34,975		44,938	47,906	44,787	28,153	23,518	34,208	9,832			
	24	30.1	820	38,450		46,618	49,325	49,068	32,149	25,436	34,562	9,998			
	Mar 3	1.1	883	37,026	42,691	46,186	47,220	47,227	34,372	24,195	33,777	10,115			
	10	1.1	844	33,518	41,750	42,917	44,468	43,340	38,167	22,389	29,984	9,728			
	17	1.1	882	34,262	41,493	44,449	46,074	46,823	36,278	25,536	34,480	9,590			
	24	1.1	846	33,618	39,689	44,145	46,730	48,453	37,374	22,666	30,403	9,761			
	31	1.1	880	32,615	39,253	44,698	46,891	45,795	42,298	25,088	32,972	9,489			
	Apr 7	13	931	34,414	38,048	43,185	46,512	42,616	9,105	24,323	35,196	9,889			
	14	13	884	31,805	36,648	43,157	43,317	44,670	17,485	24,507	32,681	9,523			
	21	13	855	32,576	41,208	45,855	46,884	47,255	25,499	24,961	34,431	9,985			
	28	13	1080	33,687	42,593	45,853	47,685	49,707	14,218	27,277	34,089	10,475			
	May 5	0	1026	32,598	40,452	44,858	47,568	47,325	30,354	25,656	33,660	10,289			
	12	0	843	31,266	38,920	43,023	43,911	42,390	29,860	23,023	30,047	9,824			
	19	0	818	32,697	41,240	47,267	46,117	46,448	23,549	26,522	34,901	10,098			
	26	0	1009	32,219	41,435	44,574	45,747	43,887	26,964	25,580	32,015	10,448			
	Jun 2	0	921	30,040	34,275	45,184	47,839	48,349	33,371	22,271	33,599	9,717			
	9	0	948	31,408	36,793	47,351	48,361	47,739	30,833	26,311	32,710	12,122			
	16	0	965	32,285	37,138	45,278	45,595	43,287	29,159	25,318	31,079	10,676			
	23	0	966	36,530	39,983	48,017	47,949	48,276	33,859	27,019	32,273	11,352			
	30	0	940	33,552	36,533	42,567	44,510	43,661	30,928	27,712	30,462	10,500			
	Jul 7	0	925	32,857	38,655	44,226	47,494	46,470	34,492	27,061	29,719	11,158			
	14	0	1008												
	21	0	960	35,009	38,752	44,165	46,115	44,666	40,786	28,021	31,723	12,329			
	28	0	989	32,422	35,953	43,215	42,935	47,233	44,459	27,118	26,196	10,464			
	Aug 4	0		33,205	39,428	44,576	44,683	44,981	40,028	25,509	30,187	12,182			
	11	0		34,310	38,355	42,374	46,603	46,212	43,274	27,189	30,320	11,310			
	18	0	959	33,988	35,846	44,042	45,442	45,616	44,358	27,511	29,552	11,846			
	25	0	916	34,795	36,918	43,188	46,212	43,609	42,845	27,264	29,716	11,915			
	Sep 1	0	849	36,038	39,673	45,739	47,617	44,774	45,269	28,053	30,401	13,102			31114
	8	0	979	33,792	36,221	43,803	45,318	42,784	43,981	26,903	29,112	11,166			
	15	0	969	37,654	40,63[illegible]	44,757	47,306	45,739	45,058	28,210	32,330	12,219			
	22	0	969	34,852	38,172	41,645	43,832	41,909	44,204	25,558	30,008	10,829			
	29	0	958	37,898	40,936	44,605	45,267	41,898	42,379	25,816	30,835	11,449			
	Oct 6	0	932	35,298	37,962	43,745	44,484	41,189	42,113	25,301	28,772	11,109			
	13	0	903	33,268	35,492	40,659	42,882	40,929	41,264	25,875	27,869	10,405			
	20	0	1010	33,001	35,668	40,539	42,649	40,946	42,471	25,799	28,270	13,552			
	27	0	979	34,248	37,291	41,038	44,992	42,388	43,089	26,425	27,576	10,785			
	Nov 3	1.5	897	34,379	36,628	41,854	44,289	43,072	45,272	27,857	30,370	11,491			
	11	1.5	946	33,325	37,168	40,191	42,061	42,752	44,941	26,428	28,073	11,232			
	17	1.5	892	33,752	37,173	41,292	43,414	41,082	42,137	26,533	28,172	10,951			
	24	1.5	829	33,208	36,163	39,676	43,097	43,577	41,088	27,582	28,992	10,141			
	Dec 1	0	896	34,407	38,622	41,162	42,799	41,493	42,234	26,428	27,694	10,637			
	8	0	954	33,164	37,369	41,868	44,534	41,543	42,591	26,935	27,833	10,189			
	15	0	1107	35,537	37,884	42,885	43,795	42,106	43,289	27,491	29,086	10,901			
	22	0	931	36,631	37,539	42,941	45,566	44,476	42,846	27,497	28,516	10,462			
	29	0	938	33,541	36,401	39,638	41,484	40,854	40,417	26,828	28,328	10,491			
1994	Jan 5	45.3	911	34,097	38,169	41,751	43,855	43,227	42,969	26,754	28,642	10,262			
	12	45.3	951	20,191	16,628	40,914	44,460	43,254	10,055	26,247	16,576	5,565			
	19	45.3	911	31,839	29,526	40,943	43,553	41,546	12,694	26,689	16,404	10,746			
	26	45.3	940	33,459	31,829	40,547	42,199	39,898	11,819	26,398	16,380	10,491			
	Feb 2	0	949	34,940	34,168	40,715	43,559	40,552	10,707	23,890	16,098	10,491			
	9	0	994	36,445	26,331	40,736	42,523	41,234	20,073	26,737	15,901	10,490			
	16	0	916	36,246	27,482	40,868	43,290	40,569	23,398	26,728	16,214	10,513			
	23	0	1056	35,468	30,057	40,719	44,614	41,419	29,765	27,155	17,201	10,872			
	Mar 2	5.2	920	35,052	36,199	41,160	42,456	40,891	34,197	28,716	17,585	11,192			
	9	5.2	993	34,315	36,311	41,189	43,796	41,897	31,921	27,036	17,222	11,513			
	16	5.2	947	35,565	36,394	40,648	42,353	41,313	38,480	25,257	16,257	11,345			
	23	5.2	944	34,682	37,298	39,845	44,040	40,779	28,336	26,268	17,239	10,890			
	30	5.2	943	34,867	35,976	39,181	41,986	40,130	38,594	25,462	16,866	10,965			
	Apr 6	0	970	34,829	39,259	39,942	43,056	41,542	44,014	26,191	18,162	12,236			
	13	0	990	34,663	38,844	40,604	43,135	42,788	36,768	27,071	17,694	11,660			
	20	0	985	35,446	39,397	40,258	43,596	42,632	39,619	26,705	19,413	11,259			
	27	0	970	33,387	36,664	41,951	42,909	40,502	38,927	25,993	20,966	11,611			
	May 4	0	951	33,615	34,571	38,957	40,907	39,877	41,581	25,539	18,953	11,475			
	11	0	984	33,899	35,852	39,147	42,860	39,587	38,287	25,419	22,597	10,674			
	18	0	929	33,599	35,487	40,780	42,152	40,391	38,291	25,464	24,574	11,098			
	25	0	1031	33,625	36,033	38,832	41,997	40,360	41,265	24,859	25,366	10,383			
	Jun 1	0	1037	33,860	33,137	40,872	44,115	41,703	44,197	28,386	28,785	12,531			
	8	0	1000	33,750	35,457	43,045	43,769	42,251	44,512	28,684	28,473	12,887			
	15	0	980	31,554	36,259	41,743	45,295	41,612	42,680	27,682	29,154	11,798			
	22	0	968	34,980	38,738	44,032	46,066	45,450	47,074	30,351	34,283	13,269			
	29	0	995	33,743	37,133	41,280	44,515	43,157	44,344	28,145	35,242	13,016			

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1994	Jul 6	0.9	1082	33,630	36,414	43,370	45,047	44,029	45,394	29,366	30,759	13,135			
	13	0.9	1023	35,782	39,970	45,399	47,838	45,373	47,359	32,752	32,021	14,378			
	23	0.9	1014	35,511	38,111	42,869	46,400	42,998	44,989	29,783	30,698	13,870			
	29	0.9	1082	35,450	42,465	45,864	49,585	46,634	48,317	32,610	32,953	15,057			
	Aug 4	0.1	1047	35,702	36,296	43,791	45,022	42,743	44,430	28,058	29,998	15,046			
	11	0.1	1063	35,667	42,191	42,825	44,469	43,689	45,533	29,218	30,886	14,104			
	18	0.1	984	32,262	38,326	42,621	45,840	42,387	44,316	29,280	31,925	14,482			
	25	0.1	1063	33,626	35,923	43,296	44,260	43,457	43,958	29,017	32,052	15,000			
	31	0.1	996	36,237	37,998	41,648	46,076	41,318	43,749	28,063	28,985	12,703			
	Sep 7	0	1008	34,191	36,632	40,311	42,982	41,846	41,883	26,843	29,266	11,664			
	15	0	964	34,150	38,138	40,592	43,325	48,284	43,628	27,254	26,633	12,066			
	22	0	979	36,826	38,593	41,673	43,895	42,172	43,248	26,648	27,939	13,143			
	29	0	1033	36,856	38,513	41,290	43,693	42,562	43,676	28,988	27,425	14,075	2280	1041	
	Oct 6	30.8	1019	37,265	37,596	41,959	43,952	43,582	45,815	28,072	28,172	13,256			
	13	30.8	1001	37,539	39,997	41,856	43,412	41,874	43,421	26,048	27,077	12,437			
	20	30.8	1012	35,332	37,968	40,489	42,186	42,104	43,027	26,466	27,074	12,275			
	27	30.8	989	36,971	38,511	40,483	44,825	42,827	44,296	25,960	26,900	12,937	266	220	
	Nov 2	2.6	959	22,060	10,096	41,628	43,764	41,789	3,806	25,644	9,596	12,151			
	9	2.6	1058	31,195	26,189	41,293	43,830	43,119	21,213	27,062	10,037	12,782			
	16	2.6	1035	33,100	19,379	41,639	43,260	42,712	8,261	25,820	9,220	11,893			
	23	2.6	1026	33,554	28,690	40,431	42,537	41,688	10,551	25,589	8,954	12,798			
	30	2.6		35,098	35,364	40,506	42,470	39,973	14,338	24,849	8,668	11,542	1825	1127	
	Dec 8	0	1,030	35,816	35,824	39,530	43,535	41,852	13,621	26,047	9,343	12,200			
	15	0	1,075	33,237	30,854	40,450	42,700	41,501	28,672	25,279	9,152	11,872			
	22	0	1,017	33,904	34,110	38,856	41,772	40,687	24,177	24,516	8,762	11,841			
	29	0		33,291	39,365	41,296	44,117	41,308	21,743	25,054	9,028	12,052	1657	1009	
1995	Jan 4	0	1015	34,845	37,882	39,842	43,537	41,697	24,398	25,172	9,333	12,349			
	11	0	1002	32,845	33,977	38,284	41,682	39,467	27,964	24,499	8,916	11,433			
	18	0	1090	32,955	34,467	39,766	42,881	41,869	28,347	24,511	8,978	12,199			
	25	0	1054	33,389	38,002	40,713	44,375	42,585	29,612	25,155	9,667	12,913	1614	1064	
	Feb 2	7.6	1010	36,555	33,337	39,645	42452	40199	35,000	24,489	10,389	11,697			
	9	7.6	1097	33,500	36,820	40,098	42,895	40,716	37,545	25,625	10,600	12,051			
	16	7.6	1130	32,732	36,578	39,724	42,856	41,490	37,421	25,091	12,564	11,898			
	23	7.6	1091	32,273	37,203	40,365	43,642	41,162	37,679	25,694	15,740	12,824	1631	1245	
	Mar 9	24.2	1054	32,699	37,164	39,698	42,938	40,642	40,770	25,797	18,496	11,704			
	16	24.2	968	32,186	36,930	40,691	44,384	42,208	41,421	25,982	18,385	11,780			
	23	24.2	1055	29,724	36,716	39,499	42,644	40,952	41,049	26,037	21,380	11,821			
	30	24.2	1060	30,256	37,627	41,256	43,998	42,418	38,607	25,976	15,828	13,050	1,656	1,265	
	Apr 5	0	1034	29,123	37,869	40,615	43,556	41,778	41,740	26,980	23,939	12,234			
	12	0	1026	32,051	39,096	40,816	43,612	41,255	41,645	27,549	24,504	13,860			
	20	0	1155	29,191	37,200	39,580	41,680	39,746	40,139	26,113	23,243	11,711			
	26	0	1151	31,306	38,183	41,927	43,816	40,839	42,160	26,491	23,443	11,110	1,638	1,216	
	May 3	0.5	1062	30,040	34,966	40,392	42,786	40,053	40,891	26,815	23,577	12,049			
	13	0.5	1018	28,568	34,911	38,344	42,165	40,595	41,148	27,518	24,362	11,669			
	20	0.5	1029	33,224	36,128	40,418	43,855	41,030	41,663	27,398	24,582	12,799			
	24	0.5	1024	32,149	36,075	40,270	42,409	42,167	42,968	27,897	24,971	12,186			
	31	0.5	1029	29,904	35,975	39,313	42,729	40,873	41,795	26,826	24,537	12,816	1,528	1,033	
	Jun 7	0	1028	32,788	37,582	40,124	44,355	43,733	42,272	29,975	27,678	13,164			3252.1
	14	0	1081	32,071	36,915	39,497	42,541	42,754	41,221	29,148	26,844	12,671			
	21	0	1019	32,518	36,830	40,405	42,927	41,802	41,661	27,544	25,843	13,216			
	28	0		32,642	38,315	40,068	43,413	42,197	42,873	28,479	26,960	13,173	1,796	1,371	
	Jul 6	86.9	1048	33,683	40,727	41,066	44,892	44,315	47,666	31,030	32,655	13,236			
	12	86.9	1056	35,285	38,869	41,669	45,151	43,929	43,647	31,529	30,072	13,570			
	19	86.9	1189	34,004	35,855	39,402	43,026	39,692	39,871	28,186	27,459	13,302			
	26	86.9	1141	33,683	40,727	41,066	44,892	44,315	47,666	31,030	32,655	13,236			
	Aug 2	0	1151	27,426	25,434	38,820	43,143	41,501	2,836	33,856	26,586	13,427			
	13	0	947	30,223	30,365	37,417	40,193	39,440	20,526	28,862	5,950	11,894			
	16	0	1041	29,998	30,115	38,802	40,815	39,478	8,479	39,157	6,555	11,698			
	23	0	996	29,827	30,949	36,399	40,968	40,239	8,544	29,193	6,427	11,737			
	30	0	1035	30,320	31,440	36,370	39,838	40,188	12,754	28,306	6,112	11,847	1,415	1,238	
	Sep 6	0.8	979	30,439	35,413	37,941	42,003	40,415	20,411	27,950	6,154	11,847			
	13	0.8	944	11,503	33,617	36,053	40,222	39,912	25,993	27,770	5,976	12,622			
	21	0.8	975	33,877	33,761	38,982	42,519	41,065	23,406	28,228	6,217	13,670			
	1	0.8	940	32,494	32,248	36,862	40,193	39,739	21,086	27,344	5,994	12,161	1,540	1,156	
	Oct 4	13.1	1002	32,650	32,035	37,060	40,301	39,434	23,678	28,017	6,323	12,374			
	11	13.1	941	33,327	32,132	37,154	42,546	39,993	34,058	28,203	6,669	12,592			
	18	13.1	1012	32,480	32,695	36,988	41,273	40,601	31,021	27,824	6,498	11,774			
	25	13.1	961	33,712	32,483	37,391	41,124	40,570	9,443	28,287	6,351	13,647	1,428	922	
	Nov 1	1.3	924	32,095	30,916	36,952	39,949	39,215	20,235	27,017	8,385	12,061			
	8	1.3	975	34,773	34,894	40,050	42,948	40,995	14,346	31,091	11,644	13,574			
	18	1.3	971	35,082	34,823	39,756	45,824	831	26,037	29,927	18,863	12,863			
	22	1.3	987	35,238	34,919	40,166	45,624	1,292	26,460	30,104	23,804	13,065			
	29	1.3		33,488	32,746	37,659	43,937	15,858	32,545	28,818	25,595	12,477	1,373	1,023	
	Dec 6	19.62	927	34,368	34,405	39,254	46,101	3,002	36,993	28,771	26,380	13,191			
	13	19.62	908	33,745	33,310	38,200	42,913	5,187	37,761	28,968	26,346	12,692			
	20	19.62	953	33,568	32,895	37,685	42,228	18,694	40,394	27,183	25,532	12,798			
	30	19.62	986	34,233	32,467	38,069	42,345	20,596	40,876	27,835	26,986	12,594	1,403	991	
1996	Jan 3	109	899	34,237	33,025	37,242	42,523	7,695	39,748	25,430	24,996	11,695			
	11	109	906	34,285	32,462	37,467	41,823	36,589	40,394	26,551	26,889	12,415			
	17	109	885	35,788	33,328	39,284	44,979	23,219	41,598	26,705	27,663	12,271			
	24	109	925	4,594	14,090	38,350	43,481	33,658	1,905	25,920	14,109	13,645			
	31	109	856	30,866	8,752	37,694	42,086	33,047	2,778	27,147	7,219	12,498	1,439	1,161	
	Feb 7	12.9	791	33,096	18,036	38,204	43,150	35,087	2,393	27,290	6,786	13,114			
	14	12.9													
	24	12.9	712	34,230	29,142	37,321	41,795	34,369	5,013	27,167	7,283	12,924			
	28	12.9	733	34,145	29,896	37,963	41,818	35,660	12,819	26,604	7,095	12,317	1,390	1,292	

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1996	Mar 6	75.8	707	34,971	29,784	37,579	43,096	40,375	21,848	27,688	7,230	12,853			
	13	75.8	708	33,132	22,769	37,249	42,111	39,663	10,814	25,983	6,654	12,704			
	20	75.8	700	31,544	19,719	36,597	42,276	39,333	10,846	26,215	6,657	12,728			
	27	75.8	715	34,833	23,407	38,826	44,279	41,945	28,131	25,967	5,832	12,199	1,372	1,264	
	Apr 3	0	745	35,867	26,230	41,890	42,434	41,481	21,572	26,145	6,133	12,146			
	10	0	726	35,338	32,303	37,354	42,987	39,624	15,701	26,919	6,094	12,952			
	17	0	721	35,688	33,477	38,379	44,690	40,309	17,872	27,074	6,635	13,294			
	24	0	700	35,653	31,534	39,582	43,485	40,078	22,145	27,956	6,267	12,596	1,095	1,470	
	May 1	0	682	33,744	31,203	36,086	41,774	39,417	22,836	25,130	6,603	11,937			
	8	0	682	32,159	28,973	35,023	41,094	38,424	20,834	25,445	7,110	11,958			
	15	0	703	35,179	31,118	34,950	41,084	38,285	32,353	25,692	7,292	12,194			
	22	0	681	34,118	29,594	35,347	40,977	38,962	27,411	25,115	7,535	12,177	1,092	1,513	
	Jun 4	0	1046	32,947	31,998	36,471	43,075	40,242	33,094	24,982	16,411	12,419			
	11	0	621	32,198	31,144	34,966	40,800	38,779	31,364	25,246	16,411	12,173			
	16	0	648	30,485	28,217	35,463	42,452	40,505	32,487	24,862	18,020	12,068			
	25	0	671	30,714	28,715	34,487	41,225	37,936	34,106	24,661	21,493	12,134	1,061	1,380	
	Jul 3	4.2	682	31,831	29,578	35,913	41,950	39,456	38,905	24,897	22,112	12,579			
	10	4.2	713	32,260	29,098	34,989	40,247	37,611	36,605	23,791	22,138	12,598			
	17	4.2	718	32,061	29,115	34,834	41,175	38,671	37,364	24,621	22,933	12,961			
	24	4.2	697	32,622	29,859	34,913	40,931	38,867	37,775	24,233	22,485	11,967	1,012	1,398	
	31	4.2													
	Aug 7	0	698	31,953	29,128	35,454	40,821	39,835	38,418	24,572	23,654	12,642			
	14	0	693	32,498	29,576	35,444	38,790	36,314	37,390	24,183	23,282	12,537			
	19	0	702	30,527	29,747	34,910	39,442	33,051	37,092	24,401	23,287	12,929			
	26	0	708	32,737	30,228	34,984	40,861	36,047	37,978	25,082	23,312	12,656	1,031	1,423	
	Sep 1	1	627												
	11	1		32,776	28,636	34,707	39,134	31,662	39,145	23,754	23,351	12,795			
	18	1	792	32,180	27,838	34,651	38,423	32,139	39,596	23,734	23,103	11,828			
	25	1	689	36,118	28,793	34,634	38,192	31,986	38,634	24,109	23,292	11,817	1,060	1,388	
	Oct 2	0	697	30,085	27,753	35,816	38,468	30,915	38,791	23,723	22,630	11,780			
	9	0	700	30,521	27,645	35,137	39,065	31,494	39,222	23,200	22,996	11,322			
	16	0	686	30,542	27,835	34,561	38,411	31,338	39,077	23,113	22,933	11,863			
	23	0	561	30,526	27,734	34,204	39,579	31,689	40,112	22,839	23,031	11,510	1,073	1,421	
	30	0													
	Nov 6	0	668	33,313	28,631	35,256	39,118	32,280	40,172	23,361	23,847	12,455			
	13	0	710	35,865	29,574	35,641	38,622	31,255	39,480	22,308	23,359	11,667			
	20	0	708	38,945	29,949	35,447	39,253	31,655	40,070	22,193	23,987	11,946			
	27	0	704	38,532	28,808	34,479	38,999	31,943	40,840	22,554	24,042	11,474	1,075	1,339	
	Dec 4	3	720	38,657	28,724	34,467	38,990	31,330	40,516	22,458	23,658	11,463			
	11	3	753	38,674	31,680	36,724	40,552	32,742	41,928	23,750	24,615	12,140			
	18	3	801	38,739	29,630	35,066	40,223	31,746	40,802	23,534	24,425	12,149			
	24	3	807	31,639	29,231	37,297	42,190	34,758	41,239	25,323	26,022	11,977	1,275	1,373	
1997	Jan 1	28.1	746					32,831	41,301	23,262	25,577	11,250			
	8	28.1	751					30,716	42,485	23,679	25,326	12,043			
	15	28.1	746					33,794	43,389	25,560	26,929	11,685			
	22	28.1	843					34,921	43,943	26,216	26,565	12,027			
	29	28.1													
	Feb 5	0													
	12	0	829					34,943	5,574	24,898	26,375	11,795			
	19	0	782					33,985	6,836	24,287	25,344	10,462			
	26	0	740					35,628	36,361	25,352	26,804	10,935			
	Mar 5	103.6	830					34,713	37,722	25,189	26,531	10,992			
	12	103.6	756					34,794	43,492	26,762	26,760	11,583			
	22	103.6	754					35,967	37,090	26,338	27,245	11,635			
	26	103.6	758					35,746	4,098	26,264	28,465	11,461			
	Apr 2	68	773					36,845	20,425	27,355	28,325	11,615			
	9	68	813					38,820	19,627	27,448	28,936	11,913			
	16	68	798					33,198	24,545	24,597	25,613	10,995			
	23	68	769					35,664	3,195	26,284	24,338	12,263			
	30	68													
	May 7	0	779					35,605	11,877	24,554	22,560	11,862			
	14	0	769					34,276	23,130	24,385	21,219	11,612			
	21	0	819					34,170	36,947	23,514	21,423	11,864			
	28	0	751					35,332	11,435	24,032	21,081	11,213			
	Jun 4	0	803					35,467	35,100	25,523	21,634	12,082			
	11	0	761					36,250	37,815	24,209	21,004	11,484			
	19	0	820					38,842	41,427	26,397	22,847	12,583			
	25	0	771					35,536	30,514	24,164	20,995	13,115			
	Jul 2	0	713					36,902	39,187	23,825	20,304	12,160			
	9	0	698					35,578	40,963	22,974	22,746	12,134			
	16	0	712					35,289	40,546	22,869	20,159	11,757			
	23	0	688					36,140	41,028	24,150	21,256	12,346			
	30	0													
	Aug 7	0	800					37,189	43,098	24,919	24,345	12,500			
	13	0	711					37,053	42,642	22,633	20,364	12,425			
	20	0	717					38,659	43,094	22,559	21,523	12,209			
	27	0	694					37,948	43,922	23,148	21,628	12,088			
	Sep 3	0	782					34,864	42,611	23,100	20,980	11,749			
	10	0	793					32,428	39,738	22,900	21,100	11,645			
	17	0	712					32,762	39,645	21,510	19,417	11,882			
	24	0	733					32,685	40,163	21,900	20,151	11,230			
	Oct 1	32	699					32,418	40,704	20,663	19,608	11,758			
	8	32	708					33,167	40,809	20,032	19,917	11,506			
	16	32	730					33,272	40,920	20,912	21,462	11,708			
	22	32	684					33,611	41,648	21,879	20,779	11,080			
	29	32													

Weekly Assay Record of TDS (mg/l) for underground water at Sohar Mine and Wadi Suq

	Date	Rainfall	PS1	Trench1	Trench2	MW1	MW2	MW3	MW4	MW11	MW12	KM14	KM14U	KM14D	J&P4/5
1997	Nov 5	50.9	751					32,319	1,214	20,784	11,538	11,608			
	12	50.9	719					32,917	23,923	19,811	16,546	10,986			
	19	50.9	731					32,008	27,330	20,012	11,378	11,255			
	29	50.9	833					32,413	18,027	20,591	11,312	11,299			
	Dec 3	0	856					32,278	19,463	20,028	11,116	11,665			
	10	0	749					33,979	30,087	20,259	11,334	11,129			
	17	0	799					32,655	12,200	19,703	11,316	10,981			
	24	0	778					32,473	31,486	20,418	12,125	11,104			
	31	0													
1998	Jan 7	37.2	815	31,782	38,231	39,749	41,852	33,928	22,392	20,922	12,686	11,420			
	14	37.2	776	35,672	35,584	40,493	41,761	35,720	32,244	21,332	13,748	12,293			
	21	37.2	764	37,875	32,463	38,926	42,272	35,929	40,514	21,802	15,026	11,865			
	29	37.2	647	34,190	29,467	35,859	39,852	32,092	13,194	19,926	15,207	11,140			
	Feb 4	47.3	785	21,682	12,794	38,781	41,072	32,847	12,185	19,975	15,583	11,235			
	11	47.3	793	26,036	22,099	37,153	41,672	33,734	16,131	19,246	15,102	11,811			
	18	47.3	780	33,294	26,852	38,751	40,780	32,907	26,723	19,230	18,438	11,692			
	25	47.3	739	22,014	16,060	36,733	39,996	32,308	4,290	19,624	5,755	11,141			
	Mar 4	0	705	25,540	21,502	37,563	42,190	32,819	10,220	20,761	6,252	11,048			
	11	0	799	29,963	25,729	37,486	41,074	32,246	14,231	20,080	5,463	11,452			
	18	0	764	29,403	25,670	40,867	42,962	33,757	12,903	20,203	5,246	11,277			
	25	0	802	32,467	27,661	36,801	41,650	32,897	29,640	19,764	5,531	11,175			
	Apr 1	33	770	31,363	29,850	39,508	42,572	32,764	25,485	19,767	5,068	11,266			
	8	33													
	15	33	763	31,824	30,215	38,013	42,369	34,053	29,266	20,272	5,366	11,747			
	22	33	701	33,283	29,789	38,209	41,430	34,011	32,939	20,410	5,354	11,752			
	29	33	692	17,858	16,733	38,364	42,589	34,327	9,474	20,514	3,883	11,869			
	May 6	0		29,540	25,975	38,633	41,830	33,778	14,963			11,873			
	13	0													
	20	0	757	33,010	28,844	38,716	42,511	34,636	25,656	19,833	3,804	11,859			
	28	0	769	32,872	30,037	38,632	40,966	34,208	31,141	18,433	3,612	11,753			
	Jun 3	0		32,604	30,571	39,662	40,632	34,861	32,082			11,416			
	10	0	777	31,802	28,676	38,518	40,284	39,856	35,864	19,781	3,701	11,503			
	17	0	703	32,758	29,495	37,943	40,228	34,885	33,016	18,562	3,501	11,200			
	26	0	1,111	30,318	27,625	36,509	40,086	34,567	35,884	18,348	3,559	11,136			
	Jul 1	0	629	29,603	27,276	35,900	39,714	33,714	36,003	17,071	3,392	11,047			
	8	0	763	31,269	27,647	35,959	39,232	33,246	35,249	17,948	3,589	11,423			
	15	0	727	30,927	28,436	36,799	40,948	34,377	36,393	18,041	3,629	11,776			
	22	0	728	30,955	28,145	36,576	40,481	34,965	35,920	17,559	3,621	11,156			
	29	0													
	Aug 5	0	678	31,698	30,014	38,223	41,411	35,245	37,499	18,053	4,109	12,010			
	12	0	624	29,729	29,553	38,702	41,302	35,543	38,459	17,333	4,127	12,405			
	19	0	705	31,283	27,942	37,151	39,725	34,592	37,297	17,531	15,630	11,746			
	26	0	702	31,841	29,598	38,046	41,564	36,157	37,876	18,192	5,632	12,280			
	Sep 2	0	629	30,908	28,791	36,676	40,377	34,857	37,847	17,682	6,038	11,730			
	9	0	731	32,339	29,911	37,107	42,020	35,979	38,144	18,228	5,736	12,068			
	16	0	698	30,755	28,404	35,961	39,884	34,201	38,219	18,288	5,805	11,866			
	23	0	677	30,271	28,255	37,030	40,312	35,848	38,278	16,701	13,141	11,408			
	30	0													
	Oct 7	0	704	31,109	28,204	36,110	40,717	37,012	38,842	16,704	16,386	12,131			
	14	0	730	30,360	27,926	36,837	41,379	37,773	39,153	17,779	17,177	11,755			
	21	0	722	31,377	30,172	38,742	40,620	36,373	38,747	16,626	16,570	12,091			
	29	0	726	32,107	30,806	38,013	40,613	37,320	40,061	17,633	16,973	11,898			
	Nov 2	0	722	30,009	29,793	36,901	41,340	36,956	40,764	17,661	16,804	11,977			
	11	0	789	29,817	29,421	36,211	39,341	36,127	40,779	17,642	16,918	11,856			
	18	0	751	29,733	29,221	36,201	39,377	35,291	40,553	17,539	16,829	11,901			
	25	0	787	35,982	32,707	37,298	40,432	35,400	41,029	17,294	17,475	12,511			
	Dec 2	5	738	34,503	30,048	37,117	42,348	35,398	41,690	17,956	17,716	12,380			
	12	5	852	35,721	30,744	36,957	41,560	37,066	41,395	16,951	17,069	12,165			
	17	5	848	32,432	29,758	37,718	42,364	36,553	40,479	17,148	17,620	11,827			
	23	5	870	31,741	32,391	37,422	40,181	36,606	40,355	17,456	17,073	11,984			
	30	5													4,392

TDS,EC,Na&Cl Analytical Data of Yndergound Water at Sohar Area

Location	Sampling Date	pH	TDS(mg/l)	EC(μS/cm)	EC/TDS	Na(mg/l)	Cl(mg/l)
Trench 1	30/01/1999		32772	45000	1.3731	6064	
	02/12/1998		34503	48000	1.3912	5834	
	12/12/1998		35721	50000	1.3997	6470	
	17/12/1998		32432	46000	1.4184	5314	
	23/12/1998		31741	46000	1.4492	4878	
Trench 2	30/01/1999		29589	42000	1.4194	5328	
	02/12/1998		30048	44000	1.4643	4956	
	12/12/1998		30744	44000	1.4312	4976	
	17/12/1998		29758	42000	1.4114	4894	
	23/12/1998		32391	48000	1.4819	5284	
PS 1	30/01/1999		792			188	105
MW 1	30/01/1999		37049			7876	
MW 2	30/01/1999		39681			8266	
MW 3	30/01/1999		34836			6474	
MW 4	30/01/1999		38679	55000	1.4220	8272	
MW 5	30/01/1999		3717	5500	1.4797	810	
MW 6	30/01/1999		3572	5100	1.4278	1066	
MW 7	30/01/1999		723	1000	1.3831	196	
MW8	30/01/1999		13734	20000	1.4562	2915	
MW9	30/01/1999		9242	14000	1.5148	1459	
MW 11	30/01/1999		16712	24000	1.4361	2644	
MW 12	30/01/1999		17971	25000	1.3911	2364	
MW 13	30/01/1999		11771			2564	
MW 14	30/01/1999		4308			545	
WS 1	02/02/1999		3327	4800	1.4427	581	1200
WS 2	02/02/1999		399	580	1.4536	61	97
WS 3	02/02/1999		4498	6400	1.4229	1066	1980
WS 4	02/02/1999		5910	8600	1.4552	910	4220
WS 5	02/02/1999		2181	3100	1.4214	565	444
WS 6	02/02/1999		854	1200	1.4052	223	201
WS 7	02/02/1999		2760	4000	1.4493	724	1090
WS 8	02/02/1999		2748	3800	1.3828	644	602
WS 9	02/02/1999		10477	15000	1.4317	1782	6200
WS 11	02/02/1999		900	1400	1.5556	212	188
WS 12	02/02/1999		2703	3700	1.3688	973	695
TS-6	30/07/1983	8.18		1506	#DIV/0!	360	182.2
	11/06/1986	8.40		3171	#DIV/0!	630	711
J&P 4/2	16/07/1987	7.71	1982	3171	1.5999	706	556
	01/12/1987	7.95	2390	3570	1.4937	719	556
J&P 4/5	23/04/1984	7.91	2958	4630	1.5652	1020	770
	31/07/1984	7.46	3044	4305	1.4143	1030	748
	11/06/1986	7.50		4095	#DIV/0!		647
	16/07/1987	7.43	2575	4221	1.6392	990	800
	01/12/1987	7.41	3100	4778	1.5413	1007	826
	30/07/1988	7.71	2220	3465	1.5608	687	533
	11/11/1989	7.15	2690	4200	1.5613	340	712
	04/09/1993	8.48		4520		947	723
	08/06/1995	8.30		4720		921	798
	02/02/1999		4392	6200	1.4117	1355	1600
Falaj	02/02/1999		591	820	1.3875	104	132
HS-10A	30/09/1985	8.12	344	546	1.5872	65	70.7
	11/06/1986	7.50		504		50	65
	16/07/1987	6.77	340	525	1.5441	58	75
HS-10B	01/10/1985	7.46	328	525	1.6006	50	67.5
	16/07/1987	8.27	382	588	1.5393	55	78
HS-10C	02/10/1985	8.74	372	577	1.5511	54	73.7
	16/07/1987	7.33	323	514	1.5913	49	72
HS-11	16/07/1987	7.80	734	1165	1.5872	177	184
	30/07/1988	7.92	690	1102	1.5971	152	187
	11/11/1989	7.15	2690	4200	1.5613	840	712
	04/09/1993	8.30		1390		188	225
	13/06/1994	8.27		1360		168	213
HS-13	10/02/1986	8.55	1740	2810	1.6149	490	500
	04/05/1986	8.40	1890	3120	1.6508	690	550
(d=11m)	11/06/1986	9.00		3412		657	546
(d=8.6m)	11/06/1986	8.20		3174		730	600
	01/12/1987	7.83	3880	6090	1.5696	1272	991
	30/07/1988	7.90	3300	5460	1.6545	1137	914
	22/01/1989	7.79	3400	5271	1.5503	1049	890
	11/11/1989	7.63	3800	5922	1.5584	1250	966
	09/08/1992	8.42		4420		905	604
	05/12/1992	7.83		4070		835	614
	30/03/1993	8.51		4250		888	639
	04/09/1993	9.26		4280		888	657
	08/06/1994	8.72		4410		951	841
Lasail Well No.1	13/12/1998		674		0		215
Lasail Well No.1B	13/12/1998		812		0		338
Lasail Well No.2	13/12/1998		678		0		170
Lasail Well No.3	13/12/1998		476		0		155
Lasail Well No.3A	13/12/1998		598		0		123
Lasail Well No.3B	13/12/1998		491		0		103
Lasail Well No.3C	13/12/1998		378		0		93
Bayda Well No.1	13/12/1998		2226		0		205
Bayda Well No.1A	13/12/1998		2394		0		230
Bayda Well No.2	13/12/1998		2485		0		215
Aarja Well A4	13/12/1998		2139		0		288

旧ソハール鉱山銅鉱石採掘跡周辺地下水の水質データ(1998年)

Area	Date	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)	Well No.	Cl^- (mg/l)	SO_4^{2-} (mg/l)
Lasail	Jan.12nd	No.1	78	190	No.1B	71	338	No.2	87	190	No.3	72	140	No.3A	85	125	No.3B	59	95	No.3C	54	98
	Jan.26th		67	180		64	338		78	180		70	135		93	115		54	95		51	100
	Feb.14th		69	165		66	300		76	175		72	135		158	123		54	93		55	103
	Feb.24th		73	165		68	300		79	160		72	125		177	118		54	85		65	113
	Mar.15th		67	155		70	338		77	145		74	130		86	110		60	93		75	120
	Mar.26th		72	160		71	300		73	140		71	125		85	110		67	83		63	115
	Apl. Th		68	155		72	275		77	140		76	135		81	110		67	85		56	110
	Apl. th		75	155		69.18	300		77	130		71	145		75	113		62	95		53	105
	May th		88	150		87	288		83	130		81	150		79	118		64	100		63	110
	May th		79	165		88	325		81	155		85	140		73	123		69	103		64	98
	Jun.13th		82	155		86	325		85	160		82	135		120	128		67	100		70	103
	Jun.23rd		84	180		89	338		87	180		82	150		89	130		75	100		79	105
	Jul.15th		86	160		95	300		99	165		82	120		94	113		78	88		75	90
	Jul.29th		70	190		79	350		84	180		81	155		75	140		62	108		59	108
	Aug.11st		68	185		77	388		80	185		74	170		64	128		63	103		71	130
	Aug.27th		81	195		94	363		93	175		77	130		73	148		64	105		62	95
	Sept.14th		86	190		97	350		98	195		80	130		78	155		72	113		70	90
	Sept.26th		80	180		87	325		90	175		80	135		66	125		61	108		62	95
	Oct.14th		90	185		80	375		98	180		81	145		63	115		61	100		59	98
	Oct.26th		89	190		90	400		102	180		83	145		77	120		73	110		64	103
	Nov.14th		88	190		91	425		106	185		79	135		77	120		72	113		61	108
	Nov.22nd		92	185		89	400		112	190		84	140		77	118		71	113		59	110
Bayda	Jan.12nd	No.1	1076	195	No.1A	940	200	No.2	876	175												
	Jan.26th		1088	190		872	185		916	180												
	Feb.14th		1052	195		848	180		784	170												
	Feb.24th		1088	185		828	170		812	155												
	Mar.15th		1112	185		857	175		832	160												
	Mar.26th		1132	180		816	180		892	145												
	Apl. Th		1052	155		792	170		952	160												
	Apl. th		1168	165		756	170		1032	170												
	May th		1188	160		840	170		1044	175												
	May th		1192	175		872	185		1108	180												
	Jun.13th		988	170		756	195		1116	185												
	Jun.23rd		1012	175		872	210		980	185												
	Jul.15th		1112	160		1052	210		1100	150												
	Jul.29th		1124	210		1052	235		1096	190												
	Aug.11st		1076	195		1044	235		1096	190												
	Aug.27th		1088	210		1100	215		1108	170												
	Sept.14th		1104	200		1124	215		1132	170												
	Sept.26th		1076	205		1112	225		1100	180												
	Oct.14th		1092	195		1152	225		1104	190												
	Oct.26th		1148	220		1156	225		1084	195												
	Nov.14th		1092	225		1164	220		1068	200												
	Nov.22nd		1036	210		1124	220		1052	195												
Aarja	Jan.12nd	A1	1295	338	A4	1040	375															
	Jan.26th		1235	338		1105	375															
	Feb.14th		1205	313		1145	388															
	Feb.24th		1260	313		1165	413															
	Mar.15th		1310	338		1165	400															
	Mar.26th		1260	288		1090	363															
	Apl. Th		1295	288		1025	305															
	Apl. th		1220	288		1000	338															
	May th		1180	313		985	338															
	May th		1235	363		1040	363															
	Jun.13th		1240	375		1015	338															
	Jun.23rd		1295	388		1040	338															
	Jul.15th		1255	375		970	300															
	Jul.29th					940	325															
	Aug.11st					845	350															
	Aug.27th					860	350															
	Sept.14th					850	350															
	Sept.26th					840	338															
	Oct.14th					810	350															
	Oct.26th					860	350															
	Nov.14th					865	338															
	Nov.22nd					845	313															