S1.2 指導者研修(TOT)資料

<u>第1回指導者研修(2011年10月)</u>



Final Report

TRAINING OF TRAINERS

FOR

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area

Table of Content

S	Торіс	Page
1	Introduction	3
2	Activity Schedule	4
3	Training Time Table	5
4	Summary sheet of lectures	6
5	Self Evaluation on the series of	8
	lectures	
6	Evaluation of the skills	10
	development of participants	
7	Appendices	
	Appendix -1:	
	Participants' Evaluation Form	
	Appendix -2:	
	Program Evaluation Form	
	(Participant)	

(October 2011)

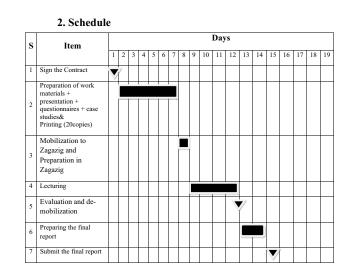
1

1- INTRODUCTION

The purpose of this report is to shed a light on the activities of the training program Training of the Trainer (TOT) that have been conducted by ISCT during the period of 2-5/09/2011 at the premises of Sharkiya Potable Water and Sanitation Company (SHAPWASCO).

The report has beside this introduction, six sections, namely, Activity Schedule (from signing the contract until completing the training), Training Time Table, Summary sheet of lectures, Self Evaluation on the series of lectures, and Evaluation of the skills development of participants. In additions, there are five (5) appendices to present data in details.

3



4

3. Time Table

Serial	Schedule Day			Days	iys	
Serial	Session	Day #1	Day #2	Day #3	Day #4	Remarks
1	Session #1	 Intro Introduction to Training Adult Learning 	-Learning Objectives	Training Delivery: -Communi- cation & Presentation Skills	Workshop & participants' presentation	
2		I.	Break	5km3	1	
3	Session #2	 Training Process Training Needs Assessment 	 Training Strategies Case Studies 	Training Delivery: –Arrangements –Dealing w/ participants	wrap up	
4			Break			
5	Session #3	- Case Studies - Hands-on Group Syndicate: SOP/ NRW/ WDM	 Training Aids Case Studies Hands – on Group Syndicate SOP / NRW/ WDM 	Hands-on Group Syndicate: SOP / NRW/ WDM	Closing & 1 st level Evaluation	

4. Summary sheet of lectures

Training of Trainers

1. Training and Trainers

In this lesson, the training profession has been introduced, along with the importance and the role of the trainer. The differences between training, education, and development were discussed. The classical Instructional System Design approach for developing a training program was discussed. The role of the trainer and the general characteristics required for trainers was demonstrated, and the possibility of using mangers as trainers to win the management support for the training was presented. This allows the opportunity to develop professionally for the participants in the training process.

This allows the opportunity to develop professionally for the participants in the training process.

2. Adult Learning Principles

In this lesson, learning concepts and the behavioral changes accompanying this process, influencing factors, and central methods to achieve better results in training were discussed. Training methods and styles of adult learning were demonstrated. The characteristics of adult learners and guidelines for teaching adults were stated. Special directions for new trainers were given. The characteristics of successful trainers and instructors were defined.

3. Training Strategies

Types of instructional strategies and guidelines to be followed for selection in training were presented. The selection of an adequate method for training geared to achieve a learning objective was discussed.

4. Training Aids

The development and appropriate use of training aids was presented. Advantages and disadvantages of each were discussed. The guidelines for using training aids, equipment checklists, and production guidelines were demonstrated. Due to the importance of slides and transparencies as visual aids, we discussed guidelines separately for production and use of these media.

6

At this point, an opportunity is given to the learner to use and apply the knowledge and skills presented through the preparation of training aids to present training ideas briefly and that will be used later in detail.

5

5. Training Delivery

Guidelines for managing the physical environment, techniques for managing class and maintaining attention, guidelines for effective oral presentations, and effective techniques for eliciting questions and answers were discussed with the objective of delivering an effective oral presentation. Different types of techniques to deal with problem-learners were discussed to ensure the effective participation of the group.

6. Learning Objectives

The basis for writing a learning objective from task and needs analyses were demonstrated. The components of a learning objective and the way to differentiate between specific and vague objectives were discussed

5. Self Evaluation on the series of lectures (Question Survey)

The question survey is designed to test the elements of the first evaluation level, namely, program content, Instructor's ability to transfer information, learning activities, training environment, and overall reaction.

The responses of the participants are analyzed (Appendix-1) and presented in the following section

From the analysis of the 1st level evaluation, we can conclude that:

- All the participants are satisfied with the *training program* (one third Strongly agree and two thirds Agree)
- All the participants are pleased with the *program content* (Strongly agree (55.5%) and Agree (45.5%))
- All the participants are pleased with the *instructor performance* (89% strongly agree and 11% Agree)
- Majority of the participants (80%: 44% strongly agree and 36% Agree) are contented with the *learning activities*. The rest (20%) they need more learning activities
- Majority of the participants (92%) are not satisfied with the *training* environment, namely, classroom setup, refreshment and resting room
- What were the most helpful parts of the training program?
 - Instructor's performance, presentation skills
 - Hands-on training, Group syndicates and how to deal with different types of participants

Ice Breakers What were the least helpful parts of the training program?

- Theoretical Part
- Outside interruptions (intruders from outside) during training sessions

- Recommendation for Improvement:

- Longer duration of the training course
- $\circ~$ Improving the training environment, especially the training room

- o Increase the practical part of the training course
- \circ More interaction
- o Continuation of the training courses

6. Evaluation of the skills development of participants (Achievement of the participants)

The evaluation of the skills development of participants is, in essence a hands-on evaluation. The instructor observed the participants through the four-day program while they are 1) working their assignments in groups, 2) participating in discussions, and 3) presenting their assignments.

The instructor designed a "Participants' Evaluation Form" – Appendix-2 – with the criteria required to measure the objectives of the TOT course, namely, Timeliness, Team Member, Participating in Discussion, Taking initiatives & Problem solver, Communicating with Participants, and Presentation Skills.

The instructor concluded that:

- Four Seniors participants (more than 15 years of service) score excellent in most of the evaluation criteria and in the overall evaluation
- The rest of the participants score excellent (1) very good (11)and good (2) as an overall evaluation
- It is recommended for the following participants to have more courses in career of trainers:
 - 1. Marwa Khater (Excellent)
 - 2. Heba Mahmoud Mohamed El Sayed
 - 3. Ahmed Said Abdel Halim
 - 4. Said Mohamed Mohamed Attia
 - 5. Mohamed Attef Moh. Abdel Halim
 - 6. Abdel Rahman Moh. Abdel Rehim Ahmed
 - 7. Mostafa Ibrahim Attia
 - 8. Ahmed Maher El Sayed bahnasawy

Appendix – 1 Participants' Evaluation Form

10



Trainee Evaluation Form

I famee Evaluation Form								
اسىم ال	لبرنامج: لمتدرب:		التاريخ:					
اسم ال	لمتدرب:		التاريخ: المكان:					
	المعيار / مؤشر الأداء	1	2	3	4	5		
٢	Criterion	ضعيف	مرضى	جيد	جيد جدا	متميز		
1	الالتزام بالوقت							
1	Timeliness							
2	التعاون مع الأخرين							
-	Team Member							
	المشاركة في النقاش							
3	Participating in							
	Discussion							
	أخذ المبادأة و حل المشكلات							
4	Taking initiatives &							
	Problem solver							
	التواصل مع المشاركين							
5	Communicating with							
	Participants							
6	مهارة العرض و التقديم							
0	Presentation Skills					1		

لتقييم الكلى

تعليق:

المحاضر

Appendices

11

Appendix – 2	
- ippendia -	🕮 Learning activities
	8. The course exercises were relevant to the course . قارى المرز ماسية للسادة التنبيية . 8
	material. 9. The course exercises were 9. تارین شورة کانت کانید. 9. مارین شورة کانت کانید. 9.
Integrated Solutions For Consultations & Training	السينة التدريبية. []
السلندول المكت علمة الأنسب المراغير واللنديرير	10. The classroom setup was من التاريب برغة. 10. الامة التاريب برغة. 10.
استمارة تقييم للبرنامج (يعبأ من قبل المشاركين) PROGRAM EVALUATION FORM (PARTICIPANT)	11. The refreshments (tea, coffee, etc.) was good.
عنوان الدورة:	12. الاستراحة في مبنى التلازيب مرعة.
أسم المحاضر:	Overall Reaction
Name: المکان:	appropriate to cover the
الفترة:Period:	14. Overall, 1am satisfied جان راض عن ليرنامج with the training التعديمي. التعديمي. التعديمي.
Dear عزيزي المشارك :	
آمل تقییم الدورة التي حضرتها وذلك باختیار المسندون المناسب . An marking the appropriate box. Your ترام المسندون المناسب .	What were the most helpful parts of the training program?
عاماً بأن نقدك البناء سوف يؤخذ بعين الاعتبار لتطوير البرامج الفنية	
Programs. Thanks for your cooperation.	∠ ما هي أقل المواضيع إفادة في هذه الدورة؟ What were the least helpful parts of the
الواقى بشدة لا تواقى بشدة	الله المواضيع إعداد في عدد المورد: المورد: المورد: المواضيع المواضيع المواضيع المواضيع المواضيع المواضيع المورد
Strongly Disagree Agree Agree	
Program Content تسخیریات الدورة	🕮 Recommendations for Improvement 🔅 توصيات لتطوير البرنامج
presented were relevant	Please make any comment for improving the المحمول البرنامج
2. The information in the material was easy to	LB
understand.	
material was easy to use.	🖉 هل هنك افتراحات لتطوير البرنامج؟ 🖉 🖉 🖉
4. الله (الطبة الإضافة مع سوميج) was relevant to the Course (if any).	
🕮 Instructor	
5. The Instructor was well prepared. 5. تحضير الحاضر للسادة كان ممازا	
6. The Instructor encouraged active class participation.	
7. The instructor's presentation skills were مهارات العرض لدى الفاضر ممتازة.	
outstanding.	
13	14
تدريب المدربين اکتوبر 2011	مقدمة عن التدريب
	مقدمة عن التدريب مقدمة عن التدريب مارت علي التدريب معرفة عن المتدرب مهارات خاصة، ومعرفة، ومواقف ضرورية لأداء وظيفة ما في الواقع المؤشر الأكثر قيمة في نجاح التدريب: كيف يكون المتدرب قادراً على تطبيق المهارة



- المؤسـسـة/الشـركة ككل
- هل من الممكن تصحيح فجوات الأداء من خلال التدريب ؟

■ من الممكن تصنيف فجوات الأداء إلى

تصنيف فجوات الأداء

ثلاثة أصناف مختلفة:

 فجوات الأداء هى الاختلافات بين الطريقة التى تكون عليها الأشياء، والطريقة التى ينبغى أن تكون عليها الأشياء

من الممكن أن توجد في الأفراد، ووحدات العمل

والمؤسسات ككل

- 1. بيئيــــة
- 2. إدراكية
- 3. موقفية

فجوات الأداء البيئية

- فجوات الأداء البيئية هى تلك التى تسببت بواسطة الظروف التى يجب أن يعمل الموظف فيها ولكن لا توجد رقابة عليه
- علّى سبيل المثال، دعناً ننظر إلى موضوع العاملين الذين لا يتبعون اجراءات السلامة و الصحة المهنية. هنالك أسباب عديدة لتجنب العاملين اتباع اجراءات السلامة و الصحة المهنية . فما سبب ذلك؟
 • هل المشكلة هي أن الأموال غير متوافرة لشراء ادوات الامان

فجوات الأداء الادراكية (تابع)

- ماذا لو أن عندهم محاضرة لمدة يوم واحد بواسطة خبير في الموضوع ولازالوا لا يستخدمونها؟
- إذا كان التدريب قاصراً على المحاضرات فأنه من الممكن أن يكتسبوا معرفة ممتازة عن أهمية ذلك ، إلا أنهم لم يكتسبوا المهارة الضرورية لاستخدامها في العمل
 - إن لديهم الآن مشكلة مهارة، ومن الممكن أن يكون تصحيح هذه المشكلة من خلال التصميم الجديد للتدريب الذى يجمع بين المفاهيم الضرورية ولقاءات التدريب اليدوى

فجوات الأداء الادراكية

▪ فجوات الأداء الادراكية هى تلك التى تسـببت عن نقص فى مهارات ومعرفة العاملين لأداء الوظيفة بشـكل صحيح.

▪ على سبيل المثال، قد لايعرف العاملون كيفية استخدام ادوات السلامة و الصحة المهنية. هذا النقص فى المعرفة هو المشكلة الإدراكية، ومن الممكن تصحيحها من خلال التدريب

حالة دراسية تصنيف فجوات الأداء

■ ضع- في الجدول أسفل- قائمة بفجوات الأداء التي من الممكن أن تحدث بمؤسستك . لكل فجوة تضعها في القائمة، اكتب نوعها في العمود التالي

نوع فجوة الأداء	فجوة الأداء

فحوات الأداء الموقفية

- هی التی تسببت عن عدم رغبة العاملین فی أداء وظائفهم بشكل صحيح
- ربما تكون لديهم الأدوات والتجهيزات اللازمة ويعرفونٍ كيف يؤدون عملهم، ولكن يرفضون أداءها. وُحَيِّثُ أنها مشـكَلة صعبة جداً، ولكن من الممكن حلها من خلال الجمع بين استراتيجيات تدريبية مناسبة، ومتابعة من المشرفين

التدريب القائم على الأداء

- الهدف من التدريب القائم على الأداء هو:
- التأكد من أن العاملين والمُديرين لديهم المُوارات، و المعارف، والمواقف لمواجهة الأهداف الإستراتيجية وتصحيح فجوات الأداء بالأُسلوب الأكثر تأثيراً بالنسبة للتكافة
 - الهدف من التدريب القائم على الأداء هو : التقلص السريع لفجوة الأداء بين المبتدئين والمؤدين المقتدرين
 - إذا تحددت وصححت فجوات الأداء الفردية، فإن اداء المؤسسة سوف يستفيد

التدريب القائم على الأداء

- التدريب القائم على الأداء هو:
 - تدریب متداخل
 - مؤثر من حيث التكلفة
- تأسس على أهداف استراتيجية وفجوات الأداء.
 - تجارب تدريبية متنوعة
 - تحسن في الأداء الوظيفي.
 - مواجهة للاحتياجات التنظيمية

حالة دراسية التدريب القائم على الأداء

- فى تمرين لمجموعة صغيرة، أجب عن الأسئلة الاتىة :
 - أذكر حالات خاصة استخدم فيها التدريب القائم على الأداء بالمؤسسة/الشركة ؟
- ما التغيرات الخاصة التي لابد أن تتم في المؤسسة· / الشركة لتنفيذ ودعم التدريب القائم على الأداء لكل الإدارات؟

التدريب القائم على الأداء (تابع)

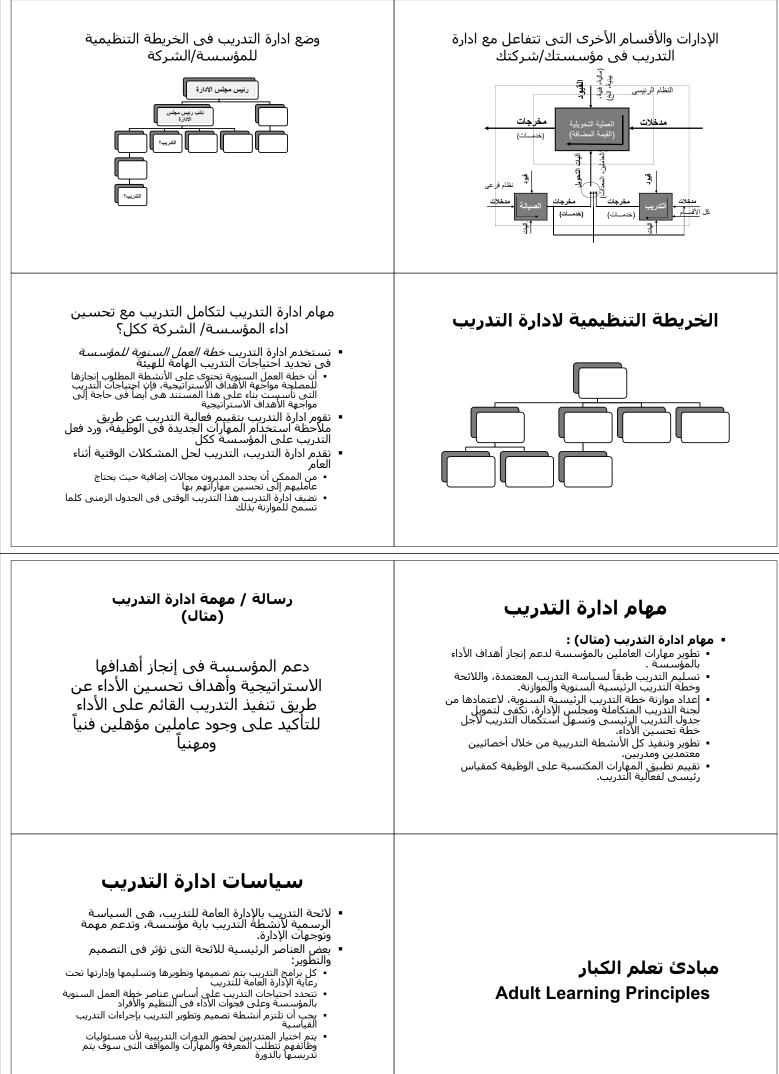
- المعالم الرئيسية للتدريب القائم على الأداء: مدخلاً نظامياً
- الاحتياجات التدريبية مبنية على الأهداف الاستراتيجية وفجوات الأداء
- تحديد المساعدات الوظيفية والتدخلات غير التدريبية الأخرى التي تؤثر على الأداء تحديد المُهارات والمعارف والمواقف لكل حاجة تدريبية
 - منهجية تصميم التدريبُ تأسّيسًاً على نوع ومستوّى ً المهارات والمعارف والمواقف المحتاجين إليها

 - التحول الوظيفي شأن له خطورته تقييم التدريب على المستوى الفردى والتنظيمي جزءاً مكملاً للتطوير والتحول التنظيمي

ادارة التدريب

- ما وضع ادارة التدريب في الخريطة التنظيمية للمؤسسة/الشركة؟
- ما الإدارات والأقسام الأخرى التى تتفاعل مع ادارة التدريب في مؤسستك/شركتك؟
- ما المهام التي يتم استكمالها بواسطة الإدارات الأخرى لدعم مجهودات التدريب؟
 - ما المهام التى يتم استكمالها بواسطة ادارة التدريب لتكامل التدريب مع تحسين اداء المؤسسة/ الشركة ككل؟

ادراة التدريب: التدريب كوحدة تنظيمية



S1.2-7



فكرة التدريب التشاركي The Interactive-Training Credo

- ما أسمعه أنساه
- ما أسمعه و اشاهده اتذكره قليلا
- ما اسمعه، و اشاهده، و أُسال أُسئلة عنه، و اناقشه مع الآخرين، أبدا في
- ما أسمعه، و اشاهده، و أسال أسئلة عنه، و اناقشه مع الآخرين،و انفذه بنفسي يسمح لي باكتساب المعرفة و المهارات
 - ما اقوم بتدريسه للآخرين أتقنه



34

Dale's Cone of Experience الناس تتذكر بصفة عامة: الناس قادر 10 % مما يقرأون • عرف • عدد •أوصف •أشرح لفظى يقرأ 20% مما يسمعون يسمع يشاهد صور

قمع دال للخبرة

30% مما يشاهدون • أعرض • طبق مرئى يشاهد فيديو ەمارس 50% مما يسمعون و يشاهدون سر معرض Exhibit بشاهد استعراض خبری / تجریبی •حلل بشارك في ورشة عمز 70% مما يقولون و يكتبون وحدة تدرسية بالمشاركة • صد •طور 90% مما بقولون، و ۔ فیم يناقَشون و ينفذون

33

مستويات التعلم (تابع)

- *عند مستوى المهارة* ، يستطيع الدارس أن يؤدي السلوك الجديد ،
 - عند مستوى الاتجاه فإن الدارس تحدوه الرغبة في أداء هذا السلوك الجديد

مستويات التعلم Levels of Learning

- إن الهدف النهائي من التدريب هو تغيير السلوك ، ويمر الدارس البالغ عموماً بأربعة مستويات من التعليم لبلوغ مستوى التغير السلوكي :
- الإدراك Reareness : يتعرض الدارس أو يتم تقديمه إلى موقف أو ظرف التعلم.
- إلى موقعا أو طرف التعلم. 2. التفهم والمعرفة Understanding or Knowledge : يضع الدارس حدث التعلم في اطاره العملي حيث يربط بين الأسباب والمكونات والنتائج المرتبطة بالموقف أو بتعبير آخر يتلقى المتعلم المعرفة الجديدة بشكل عام. 3. المهارة Skills : يقوم الدارس بتطبيق ما اكتسبه من فه معويف
 - م ومعرفة
 - 4. الأُتْجَاهاتُ والميول أو القيم Attitude or Value : يتعرض الدارس لتغير في السلوك والقيم كنتيجة للحدث ألتدريبي.

ظروف التعلم Learning Conditions

التغذية المرتدة (التلقيم الراجع) Feedback

- يحب الدارس أن يحصل على المعلومات المتعلقة بتقدمه وبشكل مستمر قدر الإمكان خلال عملية التعليم
- التغذية المرتدة توفر المعلومات التي يحتاجها الدارس لتقرير مدّى حسـنَ أدائه ، ومجالات تّفوقه والمجالات التي تستلزم منه المزيد من العمل وعن طَرِيقَها يمكن تَصحيح ٱلسُلوك غيَرَ المرغوب فيه أو الأسلوب الخاطئ في الأداء

ظروف التعلم Learning Conditions

3. القدرات Capabilities

- هِناكِ اختلافات هائلة في القوة العقلية والقدرات بين الافراد.
- لابد من أن يكون تخطيط البرنامج التدريبية للكبار موضوعة على أساس افتراض أن دارسينا يتوافر لديهم القدرة على التعلم كما تتوافر لدينا القدرة على التعليم
- وأن انطباعاتنا تجاه قدرات الدارسين سوف تؤثر على ما نَقوم به كمعلمون: • إذا ما ترقبنا من الدارسين النجاح فإننا نتصرف بشكل يختلف عما إذا كنا نترقب منهم الفشل.
- "عليك أن تؤمن -كمدرب- تماماً بأن أي دارس يمكنه أن يتعلم ما تقوم بتدريسه ".

ظروف التعلم Learning Conditions

- ليست هناك عصا سحرية ولإ مجموعة من التوجيهات الواجب إتباعها للتأكد من بلوغ تجربة تعليمية ناجحة في برنامج تعليم الكبار
 - النجاح يتضمن ما هو أكبر من إتباع وصفة ما عملية التعلم ليس بكاملها علمية بحتة
 - دائماً ما يتولد تفاعلاً بين الدارسين والمعلم يوفر المساعدة أو يعترض الطّريق
- هناك بعض الظروف والتي لها أثر على عملية التعلم وهي ظروف يمكن للمعلم أن يضعها ويحافظ عليها طول فترة التعليم.

ظروف التعلم Learning Conditions

المناخ Atmosphere .2

- المناخ مثل الجو دائماً ما يتواجد في بعض الصور والأشكال ، فهو يتراوح من الجمود والتباعد والرسمية إلى الطلاقة والتقارب والزمالة ، والمناخ (النفسي والمادي) غير الرسمي يساعد في عملية تعليم الكبار.
- ر التفسي والمادي على الراسمي يساعد في عملية فليم الديار. يعضهم ببعض وبينهم وبين المعلم ، يسهل من عملية التعليم ، ومن الضروري بلوغ مستوى كبير من الثقة في البرنامج التدريبي والمعلم والدارسي الأخرين وذلك لتشعيع الدارس على تصور وتجربة سلوك جديد دون التخوف من نتائج الفشل.
- جديد دون التخوف من نتائج الفشل. سوف يرتكب الدارسون أخطاء أثباء عملية التعلم, ومن الضروري أن يمنح الدارس حرية ارتكاب مثل هذه الأخطاء (شريطة الا يؤدي هذا الخطا بالطبع إلى إصابة شخصية أو تلف المعدات)، فإذا ما أدى خطا الدارس إلى معاقبته على أية صورة من الصور ، فإن جميع الدارسين يتقاعسون عن تحربة السلوك الجديد مستقبلاً. فإلعقاب سوف يقلل من مستوى الثقة ويضيح المناخ التعليمي أكثر تؤترا. "كن أميناً وعادلاً ومستقيماً ومخلصاً في معاملاتك مع الدارسين ".

ظروف التعلم Learning Conditions

- من سقطات التعليم أن المدربين يميلون إلى إعداد برامج تدريبية تتوافق والأسلوب الذي يجيده المدرب بشكل أفضل وليس بالأسلوب الذي يجيد المشاركون إتباعه، فعلى سبيل المثال:
- إذا كان المدرب يجيد التعلم من خلال القراءة ، فإنه يميل إلى إعطاء الموظفين الجدد د*ليل* ويترقب منهم أن يستوعبوا تطبيق الإجراءات بقراءة الدليل.
 - إذا كان المدرب يجيد التعلم من خلال الاحتكاك أو التجربة فإنه يميل إلى دفع الموظفون إلى مواقف جديدة بقليل من التوجيه

اساليت التدريت **Training Styles**

• أسالب التدرب:

- 1. الأسلوب التوجيهي / Instructive) Didactic)
- 2. اسلوب التعليم الميسر/ او المشارك (Facilitative/Participatory)

ظروف التعلم Learning Conditions

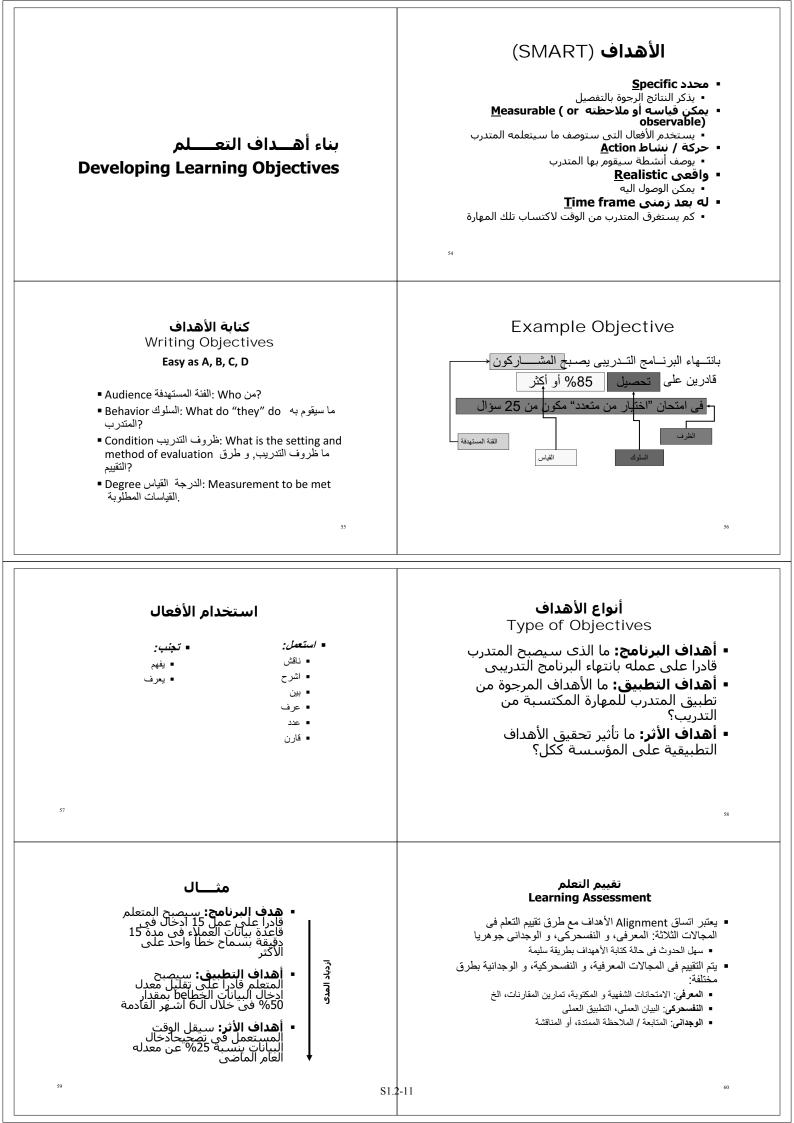
3. الدافع Motivation

- إن فرصة النجاح لأي تجربة تعليمية تتحقق حينما يتفق الدارس على فائدة التغيير وأنه مطلوب بناء علي رغبته عُندما يشعر الدارس بحاجَتُهُ إلى التعلمُ ويرى مدى الفائدة التي ستعود عليه فإنه سيتجه إلى التعليم.
- الدافع على التعليم بوله سلمية الذي يمكن إكسابه الدارس، دافع (أو رغبة) الفرد على التعلم لابد وأن تكون نابعة منه ذاته (فكرة Coaching
- لا يعني ذلك أنه ليس بإمكاننا أن نؤثر على دوافع
 الدارس ، ولكن يمكننا أن نقلل من درجة عزوفه عن
 التغيير والتعليم. وبإمكاننا أن نخلق مناخاً يسهل على
 الدارسين فيه التعلم أي يستجيبوا فيه بدوافع ذاتية.

ظروف التعلم Learning Conditions

- من المهم التأكيد على أن للأفراد أنماط تعليمية مختلفة يميلون إليها أكثر من غيرها. فكل متدرب يختلف عن الآخر ولأبد أن يتعامل معه على أنه حالة منفردة
- يفُضُلُ بعض الدارسين الاعتماد على أنفسـهم في التعليم ، بينما يفضل البعض العمل في مجموعات
- هُناك بعض الأفراد الذين يحتاجون إلى كثير من التنظيم ويتعلمون خطوات صغيرة بالتسلسل المتتابع والبعض الآخر يستوعب كل المفاهيم بإشارة عابرة أو بداهة.
- يستوعب عن المقاهيم بإشارة عابرة او بداهة. هناك بعض الأفراد الذين يميلون إلى الوسائل المرئية ويتعلمون بشكل أفضل من خلال الرسومات والصور الشفافة والشرائح المصورة، ووسائل العرض بينما يتعلم أخرون بشكل أفضل من خلال الكلمات ويستمتعون بالقراءة وبالصورة الشفافة والشرائح المصورة والحاوية على معلومات مكتوبة والمحاضرات.





الاستراتحيات التعليمية **Instructional Strategies** نماذج الاستراتيجيات التعليمية: المحاضرة Lecture : نقل شفوي للمعلومات من المعلم إلى .1 الدارسين. *البيان العملي Demonstration*. -نقل شفوي للمعلومات وعرض مرئي للمهارات من المعلم إلى الدارس عادة ما يتبعه قيام الدارس بالممارسة. .2 الاستراتحيات التعليمية المناقشة الموجهة Guided Discussion- تبادل شفوي للمعلومات بين المعلم والدارسين **Instructional Strategies** .3 للمعلومات بين المعلم والدارسين 4. التعليم الفردي Individualized Instruction - استقبال فردي للمعلومات من الموارد المطبوعة أو الكمبيوتر أو الأجهزة 1 السمعية المرئية أو من معلم. 5. أسلوب الاستكشاف بالدارس Learner Discovery Method يقدم الدارسون بعض المعلومات ويستنبطون النتائج - بهذا الأسلوب فإن العبء على الدارس المحاضرة المحاضرة " المحاضرة " هي حديث غير متقطع يقدم المدرب خلاله المعلومات إلى الدارسين. وعموماً لا يجب أن تستغرق المحاضرة ما يزيد عما بين 15 – 20 دقيقة ويجب أن تكون دوماً منظماً تنظيماً جيداً. 2- الإطار النموذجي أولاً: المقدمة. • أ- إقامة اتصال مع الدارسين بما في ذلك " لفت الانتباه " Attention-getter. • 1- خصائص المحاضرة : حصائص المحاضرة : إن إلفاء المحاضرة ميلي كون من خلال قراءة نص مكتوب أو الإستفاضة في عرض النقاط أو توجيوات لعمل تم اكتماله خلال مراحل التخطيط الأولى والتحضير. المحاضرة يمكن أن يكون مصاحب لها وسائل إيضاحية مرئية كالسيديهات وألواح العرض الدوارة وأنشرطة الفيديو. • ب- بيان الغرض بما في ذلك الأهداف التعليمية. ج- تحديد النُقاط الرئيسية. ثانياً: الموضوع: العرض الدوارة واسرطة الفيديو. يمكن نقل المحاضرة عبر أجهزة خاصة من مكان لآخر في نفس البلد عن طريق دوائر التليفزيون المعلقة واجهزة التليفون. - غالبية المحاضرات هي عرض وتقديم للمعلومات والمعرفة وغالباً ما تصف عِرض النَّقاطُ من البسيط إلى المعقد أو بترتيب الأهمية. - عابية المتحاصرت عني جر ن علم مرمور موضوع: وبيما أن محاضرة المعلومات تختص يقصصية عن موضوع معين فإن التحضير والإلقاء ليس بمشكلة أو بالصعوبة. المحاضرة تقدم معلومات في شكل نقاط متتابعة تؤدي إلى الاستنتاج النهائي. ثالثاً: الخلاصة: أ- مراجعة / ملخص النقاط الرئيسية. • ب- فرصة إلقاء الأسئلة / التعليقات. • ج- توجيهات النشاط التالي.

البيان العملي / الممارسة

- يشمل الاستعراض والبيان العملي توضيح إلى جانب تفسير الخٍطوات الخاصة بإجراء أو عملية. ويجب على المدرب أن يتأكد من:
 - جميع المعدات والأدوات والوسائل التعليمية متوافرة ، .1
 - إن موقع الاسـتعراض مناسب وقد تم إعداده من قبل ، .2
- أن مكان العرض يسمح لتحميع الدارسين بمشاهدة الاستعراض والمشاركة في عملية المحاكاة أو الممارسة ، .3 .4
- أنه قد تم اتخاذ كافة احتياطات السلامة بما في ذلك توفير معدات السلامة الشخصية متى دعت الحاجة إلى ذلك.
- **ملاحظة :** تأكد من حسن تخطيط الوقت الكاف. وافترض أن وقت التدريب اللازم لتطوير إحدى المهارات سوف يكون تقريباً عشرة أمثال الوقت الذي يحتاجه العامل الماهر لأداء العمل.

المحاضرة

- 3- المميزات :
- تقدم كمية كبيرة من المعلومات في وقت وحيز. تقدم كمية كبيرة من المعلومات في وقت وحيز. تمدح المعلم فنرة السيرم وتلخيمي خبرة تعليمية. يمكن أن تكون شيقة إذا ما توافر للمعلم معارات عرض طيبة. تعد أكثر الطرق كفاءة لتدريس أهداف على مستوى المعرفة. "
 - 4- العيوب :
- العيوب : تشد على اكتساب الحقائق بدلاً من التركيز على مهارات التفكير أو التطبيق. يمكن أن تحول الدارسين إلى مستقبلين سلبيين ومتواكلين للمعلومات. تعتمد على تحكم المعلم في خطوات العرض بغض النظر عن توافقها مع الدارسين. فالباً ما تجاوز فترة انتباه الدارس واهتمامه. يمكن أن بيالغ في استخدامها أو أن تستخدم في غير الموضع الصحيح. تحت في نسام على في ذقاب المان في البياني من الموضع الصحيح.
 - ▪تعتمد في نجاحها على قدرة العرض الشفهي للمعلم. 5- الاستخدامات :
- ∙إن أفضل استخدام للمحاضرة يكون لتحقيق الأهداف ذات المستوى المعرفي أو الإدراكي أو مع أحد الاستراتيجيات الأخرى.

البيان العملي / الممارسة

أنها يمكن أن تستخدم لعرض كيفية عمل الماكينات

أنها تعرض المهارات والأساليب بطريقة عملية.

 أنها توجد المعلومات والحكم والتوافق العضلي. أنها مناسبة جيداً للحواس الخمي وتزيد من قوة

أنها تعطي فرصة للمدرب لاختبار المعرفة والمهارة

1- خصائص البيان العملي :

الجديدة تحت ظروف محددة.

والمعدات.

التدرس.

البيان العملي / الممارسة

- 2- النموذج : النموذج الأمثل للاستعراض هو على النحو التالي : أولاً: مرحلة الإعداد:
 - تمرحله الإعداد : أرتب المعدات والأدوات والوسائل التعليمية. قم بمراجعة إجراءات السلامة. راجع مادة الاستعراض / البيان العملي. قم بإعداد التعليمات / الكتيبات للدارسين. .1
 - .3
- 4. فم بإعداد التعليمات / الكتيبات للدارسين.
 ثانياً : مرحلة الاستعراض :
 1. يشرح المعلم ويستعرض الإجراء بما في ذلك احتياطات السلامة.
 2. يقوم الدارسون بشرح الإجراء بينما يقوم المعلم باستعراض وبيان عملي للإجراءات.

 - للإجراءات. يرتدي الدارسون معدات السلامة الشخصية على النحو المناسب. يشرح الدارسون الإجراء ويستعرضونه تحت إشراف صارم. 3
 - - ثالثاً: مرحلة التقييم:
 - .1
- كمل الدارسيون تقييم مكتوب. يكمل الدارسون الإجراء تحت إشراف محدود. يمارس الدارسون الإجراء بينما يقوم المعلم باستيفاء قائمة مراجعة الأداء. .2 .3

البيان العملي / الممارسة

- 6- أفكار مفيدة للبيان العملي :
 ١. الدأ التخطيط للبيان العملي بالتنظيم، قسم المهارات إلى خطوات أو إجراءات وضعهم في تسلسل منظفي ، تدرب عليهم جيدا حتى تعتاد ليهم.
 جدول فوت كبير جرا لمرحلة التمرين بعد البيان العمل الفعلي ، وهذه الخطوة تمثل المناط الذهم في عملية التعليم حيث يحتاج المتدرب إلى ملاحظة جادة وتلقيم راجع من السرا
- المدرب. عند بيان المهارة ، توقف عند النقاط المهمة في الأداء وأكد على كيفية الترابط بين هذه المرحلة وما سيقها وما يليها على التوالي ، وأنه لمن المهم جداً أن تستعرض تصور كامل للمهارة ولبس على صورة منقطعة لمراحلها المختلفة. إذا كان موضوعك معقد وضح المهلية ومارس المهارة بيام حتى يمكن أن يلاحظ المتدربين تر مراسيا بعد ذلك على سرعة متوسطة مقبولة.
- ---- ـــى سرعة سوست معبونة. يان العملي دعم المعرفة والمعارة الجديدة للدارس بإعادة ذكرا لأفكار والنقاط ــية التي ذكرت في البيان العملي.
- العمليات والآجراءات. راقب المتدربين وكيفية ممارستهم أو أدانهم للمهارة الجديدة وإذكر لهم أخطائهم وطريقة تفاديها ، وإذا كان هناك بعض المهارات تحتاج إلى سرعة ودقة أكد على هذه النقطة عند بداية البيان العملي. إذا كان من اللازم العمل مع مجموعة أكثر من 25 فرداً قسم المجموعة إلى أقسام (مجموعات صغيرة) في فصل التمرين واختار قائداً أو رئيس لكل مجموعة.

البيان العملي / الممارسة

- 3- المميزات :
- يتسيريات . 1- يوفر خبرة عملية. -- يسمح للدارسين يتطوير وممارسة المهارة نحت الإشراف. ج- يسمح للدارسين استخدام حاستي النظر واللمس إلى جانب حاسة السمع. -- يحيد الوسيلة الوحيدة الفعالة في تدريس السلوك الحركي.
 - 4- العيوب

- 1- دور رائد المناقشـة :

المناقشة الموجهة

- - مراقبة المناقشة وذلك بمنع أي فرد من تسييد (Dominating) المجموعة. .3
 - .4
- ،مجموعه. التوفيق (Harmonizing) بين المجموعة وذلك بمعالجة المواجهات والتيايتات الشخصية ، وبالفصل فيها متى دعت الحاجة إلى ذلك. المحافظة على سير المناقشة وفقاً للمهمة المحددة وذلك بتذكير المجموعة بالهدف إذا ما انجرفت المناقشة إلى موضوعات غير مرتبطة بالهدف.
- يق (Coordination) المناقشة بتلخيص الأفكار وإيجاد الروابط بينها. .6

المناقشة الموجهة

 تتضمن المناقشة الموجهة تبادل مجموعة صغيرة من الآراء والأفكار من أجل الوصول إلى نتيجة او قرار وبحيث تسمح بحل خلاق للمشـاكل المختلفة ، وهي أسـلوب ممتاز للتثبت من فهم الدارس

المناقشة الموجهة

- 3- المميزات
- ، سسير، ب . توفر لجميع أفراد المجموعة فرصة تبادل الآراء وتوسع نطاق المشاركة وتثير الأهتمام بالموضوع. الاهتمام بالموضوع. تسمح للمعلم بالتثبت من فهم الدارسين وبالتالي تحديد خطوات تطور المناقشة.
 - - انمنافسة. عادة ما تكون أكثر تشويقاً للدارسين من المحاضرة. يمكن استخدامها في تدريس مهارات إبداعية في حل المشاكل. يمكن استخدامها تمارين التنشيط " التحمية " (تكسير الثلوج).
 - - 4- العيوٻ :
 - أِن يتسيدها فرد أو فئة. يمكن

 - يمكن أن يتسيحون الارة وكنه يمكن أن تتحول إلى مناقشة غير موضوعية. يمكن أن تتحول إلى محاضرة يتسيدها المعلم أو دارس ذو صوت عال. يمكن أن تتحول إلى محاضرة الكاملة على كم ونوعية المعلومات المعروضة. .
 - 5-الاستخدامات :
- حسب المحصف ، فائدة في تدريس العديد من الأهداف المختلفة ، وعلى وجه الخصوص لها فائدة كبيرة في تدريس السلوكيات الإدراكية في مرحلتي الفهم والإدراك وحل المشاكل ، كما تستخدم في محموعات صغيرة ، ويتعلم المتدريون منها كثيراً نظراً لأنهم يستمتعون بفرصة المشاركة.

المناقشة الموجهة

- 2- خصائص المناقشة الموجهة :
- خصائص المناقشة الموجهة : المناقشة طريقة قيمة لحل المشاكل واتخاذ القرارات وقضابا تعصيف الدماغ تساعد المتدربين على تغيير اتخذت في اجتماعات اللجان والموظفين. المدرب تشير إلى النيقاط غير المحيثة أو المشاكل المرتبطة بوجهة نظر المشارك أو وضع للافعال والاحداث، وعلى سبيل المثال فإن المجموعة بمكن أن تعطي توجيهات ليعض الأسخاص الذين يواجهون عمالا غير متعاونين بدلاً من أن تعطي توجيهات ليعض الأسخاص الذين يواجهون عمالا غير متعاونين بدلاً من المثانية، في محموعات تربيت صغيرة لما قيمة بالنسبة للمدرب والمتدرب ويستمع ويدون نقاط الصفو الموكلة للمجموعة فإن المدرب يمكن له أن يراقب ويستمع ويدون نقاط الصفو والقوة لتفاعلاتهم بعضها البعض. المناقشات الرسمية للجماعات هي محاولات تميز بقواعد صامة من حيث وقت المناقشة في محموعات الذي توجيعها عن طريق ميسر المجموعة. المناقشة في المجموعات الذي لا تسمر، الرسميات لا محكن وهت وفول الرد والاستجابة وقالبا ما يتم توجيعها عن طريق ميسر المجموعة. المناقشة في محموعات الذي لا تسمر، الرسميات لا محكن وقت أو تخطيع القواعد أو بالمدرب ويمكن لها أن تنساب في أتجا علام معين مسبقا و تحرمن المناقشات وهم السيميا.

- او تحطيط. نوع آخرين من المناقشات وهو السيمنار (Şeminar) أو تعليم المجموعة وهذا تنميز بالمناقشة المبنية ويمكن أن تظهر بعض الأسئلة عن الطريقة والإحراءات الذي تم اقتراحها حديثاً أو مستخدمة حالية. هذه الطريقة مناسبة كخطوة نالية لمحاضرة أو شرط فدينو أو لمعهمة مكتوبة وتساعد الدارسين على تحليل ونقد مواقفهم وغيرهم في قضية معينة.

التعليم الفردي

- إن طريق التعليم الفردي ليست بطريقة واحدة محددة بقدر ما هي تكييف للطرق بهدف تعليم الدارسين فرادى ،
- تشمل نماذج التدريس مجموعة مواد تعليمية معدة لتعلم الفرد بذاته وقراءات وتعليم بمساعدة الكمبيوتر أو تدريس خصوصي عن طريق الزملاء أو المعلم والمراقبة.
- مفتاح أية إستراتيجية تعلٍيمية فردية هو أنه يجب أن تكون مخططة تخطيطاً رسمياً وأن يتم تدريسها وتقييمها كأي إستراتيجية أخرى.

- المناقشة الموجهة
 - ٥- أفكار مفيدة للمناقشة الموجهة :
- اخكار المدينة للسابطات الشوجهة . خطط وحضر بكفاية للمناقشة ، ركز على تغطية نقط معينة وحاول ألا تخرج عنها ونفوم أن دورك هو ميسر وليس متسيد للمناقشة. ضع الأهداف بوضوح خلال المناقشة وهذه هي الطريقة المثلى للتأكد أن المناقشات والاستكشافات ستكون واضحة.
- أن يكون جلوس المجموعة بحيث أن يرى ويسمع بعضهم البعض. كميسّر للمجموعة اسمع إلى ملحوظاًتهم وتعليقاتهم وتفاعلهم بعضاً

- بيعض. نظم بناء المناقشة ليحتوي مقدمة ووسط واستنتاج ، وأن يكون وسط المناقشة ممتع وغير معدد ومنظم ومبني. إذا تأخرت المناقشة عند نقطة معينة فإسأل أسئلة (مثيرة لشيء من الغضب "استغزازية ") مثيرة للتفكير أو مستفزة للتفكير وفيها نوع من التحدي وخذ موفف التحدي حتى وإن كان غير محبوبا. والق بعض الضوء السلوع على المحادثة ليبذل كل المتدربون طاقتهم وتنساب افكارهم. من السلوع حلي المحادثة ليبذل كل المتدربون طاقتهم وتنساب افكارهم.
 - مارس دورك كعامل مساعد أو كمدير للمناقشة ، أرشد لمناقشة بوصفك لأسئلة جيدة وإعادة صياغة التعليقات والإجابات. لا تدع المناقشة تخبوا ، اقفل المناقشة بتلخيصات أو بملحوظات.

التعليم الفردي

- P- المميزات :
 نسمج هذه الإستراتيجية باستجابة المعلم لاحتياجات الفرد. ويحدد المدرب والدارس أهداف وغايات محددة للتعلم.
- معددة للتعلم . تسمح هذه الإستراتيجيه التكارز تبقاً للرغبة. يمكن استخدام المجموعات التعليمية الفردية عندما يكون من الصعب تنظيم فصل دراسي لعدد محدود من الدارسين أو عدمت لا يتوافر وجود معامر. يمين التعليم مساعة الكسوزي لقلبل من التوجيم من فري المعالم ، وهو مفيد على وجه الخصوص يستخدم التعليم بمساعدة الكسوزي لقلبل من التوجيم من في المعلم ، وهو مفيد على وجه الخصوص الم من سن مهام الإدراك عن طهر قلب التي يحتاج إلى تدريب ومراجعة مكتفتين.
 - - 3- العيوب :
 - - - - - 4-الاستخدامات : يمكن استخدامها لتحقيق أغراض إدراكية.

التعليم الفردي

- 1- صفات التعليم الفرديٍ :
- تقدم هذه الطَّرِيُّة تدريباً لمجموعة كبيرة من المتدربين ربما يكونوا مفصولين جغرافي وفي هذا خفض لتكاليف التدريب وأيضاً تقدم التدريب للمتدريبي في حالة عدم وجود مدرب.
- الْبَرنامج هو نفسَّه الذي يراة كل المتدربين ولَكُن طُبقاً َ لمستوى الدارس يستطيع أن يقرر أي جزء يقوم بالتدريب عليه وأي جزء يمكن أن يتخطاه السيابق معرفته به.
- تأكد أنَّ الدارسُ سوف يتلقى تلقيماً راجعاً (Feedback)
 مباشراً على تقدمه وانجازه. تعد الدارس إلى تلقي معلومات أكثر تعقيداً وتقدماً.
- تدرس مُواضَّعٍ كَمية وحقائقَ والتي يُفضَلْ عرَّضها على مستوى فردي وليس على مستوى المجموعة.
- تعرض وتراجع سياسات وإجراءات معقدة " معلومات ".

التعليم الفردي

- ذلك مناسبا. مراجعة دراسات البرنامج الأخرى لتفهم ماهية دور الدارس في هذا المجال. فالتعليم المبرمج يستلزم من الدارسين أن يكونوا أكثر أيجابية في المشاركة التعليمية بينما تجد أن المحاضرات تتطلب من الدارسين أن يكونوا سلبيين. تناقش مع الدارسين والمدراء حول التعليم ، ليعلم المشاركون ورؤسائهم ضرورة التدريب وأهداف ومدى الاستفادة المرجوة منه.

التعليم الفردي

- 5- أفكار مفيدة للتعليم الفردي المبرمج :
- اختبر وراجع البرنامج دائماً للمساعدة في تحديد كم المواد الضروري وذلك لأنه بعد إتمام البرنامج ركون من الصعب الإجراء الزائدة دون التأثير على آداء الدارس ، ابدأ بإعطاء برنامج التدريب لمجموعة ترجيبية من الدارسين وبموارد اقل من احتباجاتهم المقدرة ثم قرر من واقع أداؤهم وتعليقاتهم حجم ونوعية التعليم المطلوب منك إضافته إلى البرنامج ، وسوف يساعدك ذلك على تجنب سوء تقييم مستويات المعرفة والمهارات الجالية للدارسين.
- تقييم مُستوياتُ المعرفُة وَالمَهَارَاتُ الْجَالَيَةُ للذَارَسَينَ. خفض الذكاليف باستخدام البرنامج الجاهزة إذ يجب تجنب التكلية العالية في إعداد ومراجعة البرامج ، وذلك في الحالات التي ينحقو فيها هدف الترريبي باستخدام الدروس المعددة وحل موضوعات عامة ، قم بتفصيل هذه البرامج بما 1. أضف إلى الدرس تدريبات تطبيقية محددة 2. إذا تمارض ينعين العلومات مع مقهوم أو السياسة العامة لشركتك ، قم بوضع توجيهات للدارسين لحدف يعني الموضوعات. 3. منهم معدي الريامج العام من أجل وضع برنامج منابعة يتناول مزيد من المعلومات على الموضوع. 3. وقارم في المه التالية في التعليم المبرمج. 3. وقارت الأداء في نهاة التدريب في أسا بالأداء ما قبل التدريب. 6. راقب الأداء على العمل ذاته. 7. لاحظ مستوى المعوية أو السهولة في تنفيذ البرنامج.

جدول اختيار الأساليب التعليمية

	الأساليب التعليمية					
السلوك	المحاضرة	البيان العملي / المعارسة	المناقشة الموجهة	التعليم القردي		
لإدراعي: المعرفة	1	3	2	I		
الإدراكي: القهم	2	2	1	2		
الإقراكي: التطبيقي	2	4	3	2		
الإدراكي: حل المشاكل	3	2	Ţ.	2		
الحركي:	-ă	ī	3	2		
الوجداني:	2	ĩ	2	1		

المفتاح: 1= ممتاز ، 2 = مناسب ، 3 = ليس فعالاً بشكل عام

الاحتفاظ المعلومات Retention

القوة الرئيسية للوسائط:

- تَكمن في فعاليتها في مساعدة المتدربين على الاحتفاظ بالمِعلومات ، تتوافر الظّروف المثلى للتعلم عندما يكون المتدرب قادر على أن يسمع
- يويرك ويقولو انمثلني للتعلم عندما يدون المتدرب فادر على أن يسمع ويرك ويقول ويفعل. بينما أن التدريب غالباً ما يعتمد على المعلومات المسموعة ، فإن معظم عمليات التعلم من خلال النظر أكثر من أية حاسة أخرك ، ويوضح جدول قدرة الاحتفاظ التالية فائدة استخدام المساعدات المرئية و / أو المسموعة في الإطار التعليمي : .

معدلات الاحتفاظ بالمعلومات :

- 10% قراءة
 - 20% سمع
 - 30% رؤية ً
- 50% رؤية وسـمع • 70% - قَبُوْل
- ∎ 90% رؤية وعمل

S1 2-14

أسلوب الاكتشاف بالدارس

- على الرغم من أن المعلم عادة ما يوضح أهداف الحلقة الدراسية وذلك بتحديد الأهداف والمعلومات الجديدة والاستنتاجات ، فإنه يتم في بعض الأحيان تحديد تمرين أو تجربة يتم خلالها تشجيع الدارسين على تقديم بعض المعلومات والوصول إلى استنتاجات أثناء أداء النشاط التعلومات والوصول إلى استنتاجات أثناء أداء النشاط التعليمي.
- هذا يتم بناء على توجيهات وإرشادات المعلم وليس بناء على سيطرته ، ويطلق على هذه الإستراتيجية المتقدمة في حل المشاكل " أسلوب الاكتشاف بالدارس ".
- يؤدّي أسلوب الاكتشاف بالدارس إلى بلوغ مستويات عالية
- يودي استوياح الاختشاق باندارش إلى بلوع مستويات عانية من مشاركة واستجابة الدارسين يجب على الدارسين أن يتحملوا المسئولية المباشرة عن تعلمهم وتعني مسئولية الدارس قبوله وتحمله المسئولية الرئيسية في تحقيق أهداف التدريب.

الوسائط التعليمية **Training Aids**

نصف الكرة المنصفة Split Hemisphere Learning

إن اندماج تأثيرات كلا من الجانبين هو الذي يسمح لنا بالتفكير والتفاعل مع المعلومات ، ويتزايد معدل الاحتفاظ بتزايد الحواس النشطة ، والتصور Visualization هو عرض لنظرية مبهمة Abstract بشكل مرئي بهدف المساعدة في الاحتفاظ ، وعندما يتم تخزين المعلومات في كلا جانبي المخ يكون من السهل استرجاعها.

الاحتفاظ المعلومات Retention

- اختبار سهل لترى عما إذا كان مساعد التدريب "سؤال للتصور" أي جانب من المخ سوف يشغل هذه المعلومات؟
 - "إذا كان الإجابة للجانب الأيسر، فمن المحتمل أنَّها لا تكون تصوراً. على أي حال
- إذا كانت الإجابة للجانب الأيمن، فإن الرسم من المحتمل أن يصور هدفاً أو فكرة للاستقبال السهل بواسطة المتدربين الذين يستخدمون الجانب الأيمن من المخ.

نصف الكرة المنصفة Split Hemisphere Learning

- يرجع سبب هذا الاحتفاظ المتزايد بالمعلومات إلى ما نطلق عليه بتعليم نصف الكرة المنصفة Split Hemisphere Learning ، وهي أن كلا من جانبي المخ يسيطر على الجانب المعاكس له من الجسم وأن المخ يمتص ويسجل نماذج مختلفة من المعُلُومات : َ
- *1. الجانبُ الأيسر* : العمل الدقيق ، المنطق ، الزمن ، التفكير وبخاصة الاستنتاج من الوقائع ، اللغة ، الكتابة ، استخدام شديد للوظائف العقلية.
- *2. الجانب الأيُمن* : الفُراغ ، الحركة ، العاطفة ، تمييز الوجوب ، الموسيقى ، الإدراك العميق، استخدام شديد للحواس.

الاحتفاظ المعلومات Retention

- احفظ فى عقلك على أى حال أن "الفعل يرى" یشیر إلی تصور مفهوم،َولیس رسـوم الکلمات
- يسير إلى تصور معهوم،ونيس تسوم الكلمات. عندما تخبر شخص ما بشك ما، مثلما في المحاضرة، أنك تعطى كلمات إلى الجزء الأيسر من المخ. الجانب الأيمن من المخ الذي لم يقبل الكلمات لذلك فإن "الرؤية" يجب أن تشتمل على نوع ما من التصور المرسوم لتشجيع "التعلم عن طريق المخ بالكامل". يشكل التصور خيال مرئي لفكرة ما أو مفهوم معين:
- - 1)الرسم التخطيطي للمُصنّع،
 - 2)الرسم البياني لجهاز ما،
 - 3)شرح إجراء،
 - 4)لعب الأدوار جميعها أمثلة للتصور.

الوسائط التعليمية **Educational Aids**

الوسائط التعليمية:

1.الوسائط تدعم (Reinforces) التعلم. 2.الوسائط التعليمية يمكن أن تخدم كإطار (Outline) لعمل المعلم. 3.الوسائط التعليمية ليست بموضوع منفصل وإنما هي جزء ًمتمم للعملية التدريبية. 4.الوسائط التعليمية ليست بديلاً عن التدريس السليم. 5.الوسائط التعليمية ليست مواد تسلية.

6.اسُتخدام وإنتاج المساعدات التعليمية يجب ألا يكون صعباً أو معقداً بشكل غير ضروري.

∎قواعد رئيسية:

الاحتفاظ المعلومات Retention

- القاعدة رقم 1 : يجب أن يمر استخدام الوسائط التعليمية في الاختبار التالي :
 - 1. يجب أن تكون مناسبة.
 - 2. يجب أن تكون مفهومة ومعدة إعداداً جيداً.
 - يجب أن تكون ملائمة.
 - *القاعدة رقم 2*: على المتدربين أن يقوموا بتطبيق المعلومات من الوسائط التعليمية بعد عرضها عليهم.

مساعدات التدريب المحسوسة

مساعدات التدريب المحسوسة:

- هي أدوات نموذجية تستخسوسه: هي أدوات نموذجية تستخدم في البيانات العملية وتمثيل الأدوار، فعلى سبيل المثال : توفير اجزاء من المعدات في مكان التدريب بمكن أن يزيد وشكل ملحوظ من قدرة المتدرب على فهم كيفية استخدامها ، الأدوات في مواقف مرتبطة بهدف معين.
 - المميزات :
 - تسمح للمتدرب برؤية الأشياء الحقيقية. التحول بالتعليم من الجانب النظري إلى العملي. تستهدف توفير الأنشطة العملية وتمثيل الأدوار.
 - - العيوب :
 - التخطيط المسبق. الاقتناء.

 - التخزين. ▪ النقل.

أنواع الوسائط التعليمية **Categories of Media**

- Categories of Media أنواع الوسائط التعليمية: Categories of Media
 - 1. مساعدات محسوسة Tangible Aids
 - 2. الصور الثابتة .Still Pictures
 - 3. الصور المتحركة Moving Pictures
 - 4. الوسائط التعليمية المسموعة Audio Media
 - 5. المواد المكتوبة Written Materials

الألعاب والحيل الخداعية Games and Gimmicks

- تستخدم الألعاب والحيل الخداعية وما يماثلها من أجهزة كوسائل لكسر الجود (كما في بداية المحاضرة) أو كوسائل لحل المشكلات أو كوسائل لتبسيط الموضوعات المعقدة.
 - المميزات :
 - تقدم تجربة تعليمية ممتعة.
 - تهدئ الأفراد.
- تساعد على ارتباط الدارسين بعضهم ببعض وبالمعلم.
 - العيوب :
 - يمكن أن تكون مضيعة للوقت
 - يمكن أن تحجب الهدف

التعليم الذاتي والتعليم السابق برمجته Self-paced, Pre-programmed Instruction

- التعليم الذاتي والسابق البرمجة:
- التعليم بمساعدة الكمبيوتر يعد نموذجاً حديثاً لهذا الأسلوب
 - المميزات :
 - خطوة التعلم تعتمد على المدرب. ممتاز للتكرار. •
 - سحر مصرر. يمثل أنجاه مستقبلي. يمكن أن يساعد عدداً من الطلاب على مستويات مختلفة. يمكن تكييفه مع أي فترة زمنية مطلوبة.
 - - العيوب :

 - لعيوب : لا يوفر أي نوع من التفاعل بين الأشخاص. مكلف ما لم تستخدم المعدات لأكثر من غرض. لا تتوافر برامج حاضرة في موضوعات بيئية. تحتاج إلى قدرات محددة في استخدام الكمبيوتر. قد يصبح مبعثاً لملل المتدرب.

الأفراد / الضبوف People / Guests

- إن الاستعانة بمزيد من الأفراد أو " الخبراء " يمكن أن يفعم التدريب بالحياة والبعجة ويعطي كل من المدرب والمتدرب اتجاهات ومجالات مناسبة. كما أن الأفراد الآخرين من ذوي الدراية والعلم يمكن أن يقدموا معلومات أو آراء جديدة.
 - المميزات :
 - يُمكن أن توفر معلومات قد لا تكون متوافرة للمعلم. تقوي التعليم النظري مع بيان الأستخدامات العملية.
 - العيوب :
 - ∎ التكلفة.
 - تنسيق الوقت. ▪ الاختيار.

المحاكاة وتمثيل الأدوار Simulation and role Playing

- ان التمثيل الفعلى لنشاط من الأنشطة هو وسيلة بارعة لكل من الدارس والمعلم لتقرير ما إذا كانت المعلومات قد بلغت الدارس وهل يمكن تطبيقها. فعلى سيبل المثال ، إذا ما تم تعريف أحد الدارسين بكيفية ارتداء جهاز تنفس إلا أنه لم يتمكن من ارتدائه بالشكل الصحيح عندما طلب منه تمثيل الموقف ، وهو يعنى حاجة الدارس إلى مزيد من التدريب ، ويمكن للمحاكاة الترقدي نفس الغرض على الرغم من أن المشاركة الفعلية لن تكون ظاهرة.
 - المميزات :
 - تعطي فرصة فورية لتقوية المعلومات.
- تعطي فرصة فورية انقوبة المعلومات.
 تساعد على إيجاد مواقف اختبارية بدون أن يكون هناك ملابسات سلبية.
 توفر فرصة راحة لكسر الروتين كما أنها ممتعة.
 يمكن أن تستخدم في استعراض الأساليب المحتملة للتعامل مع المشاكل.
 يمكنها أن تسير وسط عملية التغيير في الميول.
 مناسبة لتحقيق أهداف تدريس المحتوى وخطوات معالجته.
 - العيوب:
 - . قد يتقاعس بعض المتدربين عن المشاركة.
 - يمكن أن تكون مضيعة للوقت.

الشرائح المصورة (سلايدز) 35مم 35mm Slides

- للشرائح المصورة نفس مميزات الصور الفوتوغرافية
 - إمكانية عرضها على المجموعة ،
- بمكن للأفراد من استخدام ناظرة بدوية
- يمكن للمدرب أن يتحكم في سرعة عرض الشرائح المصورة حتى يتسنى له فتح باب الحوار والمناقشة
 - استعمال مزيج من الصور والطباعة ،

الصور الفوتوغرافية Photographs

- ما يزال للصور الفوتوغرافية قيمتها في تعليم المهارات الإدراكية وذلك عندما لا يكون للحركة أهمية لتفهم فكرة أو مفهوم. وهي غير مكلفة خاصة إذا ما التقطها مصور هاو وماهر.
 - المميزات
 - تيسر الدراسة الشخصية.
 - ليس من الصعب الحصول على نوعية جيدة.
 - من السول إنتاجها محلياً.
 - العيوب :
- غير مفيدة في المناقشات التي تدور بين مجموعة كبيرة.

الشرائح المصورة (سلايدز) 35مم

35mm Slides

تعمل الشرائح المصورة جيداً مع الأشرطة المسموعة وبتزامن آلي بين الصوت والصورة.
 المميزات :

- مشاكل التخزين.
- ليست مناسبة لتوضيح الحركة.

الأشرطة السينمائية Film Strips

- Film Strips الأشرطة السينمائية
- تمثر الأشرطة السينمائية سلسلة من الشرائح المصورة في تسلسل ثابت ، وبعد استخدامها حالياً محدوداً فياساً بالشرائح المصورة والفيديو الذين أصبحا أكثر انتشاراً ومع ذلك ، فقد يجد المدرب شريطاً سينمائياً يرغب في عرضه وعلى هذا يجب أن يكون على علم بهذه الوسائط.
 - المميزات : يتم اقتنائها جاهزة.
 - عادة ما تكون بصورة نهائية مقبولة في مظهرها
 - العيوب :
 - قد تكون مكلفة
 - تحتاج إلى معدات خاصة
 - مزعجة
 - قد لا تتوافر
 - تتلف بسَهولة

 يَمكن تحديثها بسبولة.
 الشرائح المصورة والسابقة التجهيز دائماً ما تكون معروضة للبيع. · يمكن تحويلها بسـهولة إلى فيديو. ▪ العبوبّ:

يمكن إنتاجها محلياً.

غير قابلة للتلف.

تكلفة مثل الصور الفوتوغرافية ذات النوعية الجيدة.

مفيدة لأي مجموعة بتغيير أساليب العرض.

يمكن استخدامها في عمليات التعليم الذاتي.

يستن إنتاجه سمبيا. • يمكن بستهولة تغيير ترتيب الشرائح. • يمكن تخزينها بستهولة.

السبورة ولوحة العرض الدوارة Chalkboard and Flipchart

- تقدم أدوات العرض الثابتة هذه سبل أكثر مرونة وأقل تكلفة لعرض المواد المكتوبة والصور الإيضاحية البسيطة.

 - المميزات :
 - الاستخدام التلقائي يمكن أن يكون ذو نفع. لا تحتاج إلى مساعدة في الإعداد.
 يمكن للدارسين استخدامها أيضاً.
 يمكن الإبقاء على الأضواء في الحجرة.
 - - العيوب :
 - لا تسجيلات ولا نسخ.
 - ليس من السُهل تكرارها.
 - محددة لمجموعات مغيرة. محددة لمجموعات مغيرة. يمكن أن تكون موسخة للملابس ما لم يستخدم معها سبورة لا تستخدم الطباشير.
 - التخزين.

الصور المتحركة **Moving Pictures**

- يعتبر الفيلم 16مم الذي يتم إنتاجه تجارياً من الوسائط البالغة الجاذبة والمثيرة للانتباه ، وقد يستخدم في عرض حركة وتوضيح أحداث واقعية وتقدم قصص أو أحداث مؤثرة.
 - المميزات :
 - · غالباً ما تكون النوعية عالية.
 - يظهر الحركة.
 - يضيف واقعية. .
 - يمكن نسخه.
 - العيوب : التكلفة.
 - توافرها.
 - الإضاءة.
 - المعدات.
 - يصعب إيقافه لمناقشة النشـاط الهامة.

الشفافــــة **Overhead Transparencies**

- تعتبر الألواح الشفافة التي يتم عرضها على جهاز الإسقاط شائعة الاستخدام حتى وقت قريب

 - وحق درب من الوسائل المفيدة في عرض النقاط الرئيسية للموضوع يمكن للمعلم أن يعرض الموضوع بخط اليد والرسم (مما قد يطرأ على فكره أثناء محاضرة التدريب).

 - المميزات : " المميزات بي المعرفي أن يساعد في أحياء العرض. مكن الإنقاء على الإضاءة بالغرفة. يسهل إعدادها. ك المراجعا بس. عق

 - لمكن إعدادها تسرعة.
 - يمكن اعدادها بسرعت. يمكن أن تساعد على تركيز الانتباه. الشفاف أي ملحوظات خلال العرض.
 - غير مكلفة في إنتاجها . غير مكلفة في إنتاجها . يمكن أن يستخدم معها جهاز إسقاط خفيف الوزن ومتنقل. ب حتاج من المدرب أن يتحول بوجهه عن الدارس.

 - العيوب : يمكن أن يعتمد المعلم عليها تماماً ويستخدمها بكنافة. يشاع استخدام الألواح الشفافة الردينة.

الفانوس السحري **Opaque Projectors**

- إن الفوانيس المعتمة هذه تسقط صوراً من أشياء معتمة (كالكتب والمقالات) على شاشة
 - المميزات :

كلفة عالية

▪ غير مكلفة.

متوافرة بسهولة.

تسمح باستعراض المعلومات.

▪ المميزات :

▪ العيوب :

- يسمح باستخدام صور مباشرة من الكتب والمجلات. تسقط الألوان.
 - يحتاج إلى تجهيزات محدودة.
 - العيوب :
- يجب استخدامه في غرفة مظلمة ■ عادة ما يعرض صور عَير واضحة ، وعادة ما تكون المواد المطبوعة من الصغر بحيث يصعبِ عرضها
- ــى ــــر بــيب يصعب عرضها يميل الجهاز إلى السخونة وغالباً ما تحترق فيه ورقة الصحيفة

الوسائط السمعية

Audio Media

■ إن استخدام الوسائط السمعية يتوافق مع الأهداف الإدراكية ■ يمكن إعداد هذه الوسائط السمعية أو شرائها بسرعة ودون

تضيف المذكرات الموزعة إلى عرض الوسائط السمعية وتساعد في استرجاع المعلومات.

حيوب . ▪ قد تثير ملل الدارسـين على نحو ما. ▪ قد لا تعطي مجالاً للتبادل بين الدارسـين والمدرب.

المواد المكتوبة Written Material

 تعد المواد المكتوبة مفيدة للغابة في تدريس المهارات الإدراكية إلا أن لها فانّدة محدودة في تدريس السلوك الوجداني والمهارات الحركية

كتب التدريب Workbook

- تسمح بممارسة الإجراءات وغيرها من الأحداث التعليمية والتي يمكن أن يستجيب الدارسيٍن كتابة من خلالها للمسائل المطروحة وغَّالباً ما يتلقون ردود فورية على استجاباتَهم.
 - المميزات :
 - لها نفس مميزات الكتب
 - توفر الممارسة
 - ∎ العنوب :
 - لها نفس عيوب الكتب

الكتب المقررة والمراجع **Text and Reference Books**

- تقدم معلومات مفصلة يمكن الحصول عليها بسهولة
- یمکن دراستها علی انفراد وطبقاً لخطوة تعلم الفرد.
 - المميزات :
 - توفر سجل دائم
 - متوافرة بسهولة غير مكلفة نسبياً
 - يمكن الإشارة إليها والاستعانة بها بعد انتهاء الدرس
 - العيوب :
 - تحتاج إلى توافر قدرة أساسية في القراءة والفهم
 - ممكن أن تكون مضيعة للوقت
 - مدة الاحتفاظ بالمعلومات قصيرة

الدوريات Periodicals الما فائدة خاصة في تقديم المعلومات الجارية المميزات : الما نفس مميزات الكتب - العيوب : العيوب الكتب	النشــرات Handouts • شائعة ومفيدة في توفير توجيهات محددة حول أنشطة وكذا توفير • المعلومات المكملة. • الاحتفاط بالمعلومات • يجب على المعلم أن يحسن اختيار وقت تقديم المواد المكتوبة • يجب على المعلم أن يحسن اختيار وقت تقديم المواد المكتوبة • المميزات : • لها نفس مميزات الكتب. • الها نفس ميوب الكتب. • لها نفس ميوب الكتب. • يمكن أن توض عفي غير موضعها. • يمكن أن توض عموقة للعرض عندما يقوم المتدربون بالقراءة والكتابة في وقت ينوجب عليهم الإنمات.
مراك منهم بل مرك منها من مسلم منهم الرائم منه منه منه منه منها منه منها منه منها منه منها منه منها منها	التطبيق/التنفيذ Delivery of Instruction
إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment • تأكد من أن الغرفة والأثاث مريحين. • انتقاء تنظيم الجلوس الذي يتناسب مع مواد وأساليب البيان والعرض. • رتب الأثاث ليتناسب مع احتياجاتك وقبل وصول المتدربين • يفضل أن يمكن الترتيب جميع الدارسين من الرؤية والسمع والتفاعل مع بعضهم البعض إضافة إلى تفاعلهم مع المدرب • تأكد من نظافة الغرفة والأثاث وخلوهم من أي	إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment تأكد من أن الغرفة يتوافر فيها الهدوء الكاف تأكد من أن درجة حرارة الغرفة مناسبة تأكد من أن الدارسين قادرين على رؤية تأكد من أن الدارسين قادرين على رؤية المساعدات البصرية وسماع المعلم خع ترتيبات تقديم مرطبات إن أمكن
إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment • تأكد من توافر جميع المعدات والمواد الكافية ومعدات السلامة الشخصية -لدواعي الاستعراض والمحاكاة- قم بتجربتها مقدماً. • قم بتنفيذ مراجعة قواعد السلامة بما في ذلك المخارج والمعدات والاستخدام المناسب للكابلات الكهربائية الخ • جهز كل المواد المطلوبة خلال المحاضرة. • الدرس	إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment قم بالرسم أو التخطيط المسبق على السبورة إذا كان ذلك مناسباً. ارفع كل ما هو ملفت للانتباه. استخدم بطاقة الاسم الهرمية التي توضع على المكتب وبطاقة الاسم التي تعلق على الصدر. قم بتوزيع الخرائط والتوجيهات على الدارسين ، وتأكد من وجود العلامات التي توجه الدارسين ، إلى غرفة التدريب

اساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين

- ناقش الطلبة ذوي المشاكل والممزقين لوحدة المجموعة خارج الفصل ، وتجنب إن أمكن المناقشـة أمام الآخرين.
- كن عادلاً وحسن التقدير لجميع أفراد مجموعة الدارسين.
 - اسمح بفترات راحة متكررة.
- خفف من حدة توتر المتدربين بتسيير مقابلتهم لك في خلال اللقاء وفي فترات الراحة.

إرشادات للعرض الشفهي الفعال **Guidelines for Effective Presentation**

- حافظ على الاتصال بالنظر بينك وبين الدارس.
- استخدم درجات ونغمات مختلفة من الصوت.
 - وجه أسئلة باستمرار.
- اخلق جواً من الألفة بالظهور دون تكلف. ▪ استخدم اللغة المناسبة للدارس ، فالتباين في مستوى اللغة المستخدمة في التعليم والمهارات اللغوية للدارسين عادة ما يؤدي إلى فقدان الدافع لدى الدارسين إضافة إلى مقاومتهم وغير ذلك من مؤثرات سلبية.
 - تأكد دائماً من درجة اهتمام وفهم الدارس.
 - اسمح ببعض الوقت لأسئلة وتعليقات الدارس.
 - ابدي حماسك بالموضوع

أساليب طرح الأسئلة Questioning Techniques

الأسئلة وسيلة مساعدة للدارس:

- تنبه الدارس للنقاط الأساسية.
- تحتاج إلى مشاركة من الدارس.
 - تدعم العملية التعليمية
 - تخدم كأسلوب للمشاركة.
- تعمل كوسيلة لاسترجاع المعلومات.
- لها فائدتها كوسيلة للمحافظة على الاهتمام والانتياه.

أساليب طرح الأسئلة **Questioning** Techniques

- الأساليب الفعالة لاستنباط الأسئلة/ الأجوبة:
- سبيب الععاية لاستنباط الاسئلة/ الأجوبة : البعض الأسئلة عدة إجابات مقبولة أو " صحيحة " أكد أو دعم كل الإجابات الصحيحة بتعليق ايجابي. إذا أجاب أحد الدارسين إجابة خاطئة ، فحاول أن تشجعه على لوغ الإجابة ، قدم له كل مساعدة ممكنة تمكنه من بلوغ إلاجابة الصحيحة ، لا توبخ الدارس أو تضايقه أمام الأخرين ، ومن الأفضل دائما آلا تطلب من دارس اخر أن يجيب ويصحح إجابة الدارس الأول.
- على المعلم أن يتجنب الدخول في مجادلات مع الدارسين إذا ما ناقش أحدهم تفسيرات ونتائج المعلم ، شجع الدارسين على المناقشة المفتوحة.
 - على المعلم ألا يتجاهل أسئلة الدارسين.
 - على المعلم أن يعود إلى الدارس إذا ما وعد بذلك.

اساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين

- كن مبكراً ومستعداً وقم بتحية الدارسين أثناء توافدهم.
 - عرف الفصل بإيضاح ما سـيتم تدريسـه وحدد الإطار التعليمي واشـرح كيف أن ذلك سـيلبي احتياجات / اهتمامات / خلفَيات الدارسين.
- أحفظ أسماء الدارسين في أسرع وقت ممكن ، أحط
 الدارسين علماً بتطور التعليم (بمعني : " أما النقطة الثانية والتي يتحتم تفسيرها .. " " وأخر تدريب لنا اليوم هو ... ").
- حافظ على انتباه الدارسين مركزاً على النقاط الرئيسية (بمعنى : " المهم هنا هو ... ") واستخدم الوسائل التعليمية أو الرسومات الإيضاحية لإبراز هذه النقاط.

أساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين

- جافظ على أعلى معدلات لمشاركة الدارس في العملية. التعليمية
- لتعييميـ. اتبع نظام الأسئلة والتدريبات. استخدم أساليب تعليم أخرى غير المحاضرة (مثل : حلقات المناقشة ، الألعاب والمحاكاة ، المناقشة الجماعية ، الخبرات الميدانية وأشرطة الفيديو والسينما .. الخ).
 - قم بالتدريس بمستوى يتناسب ومجموعة الدارسين المجددة أمامك. استخدم مختلف الوسائل والأساليب التعليمية.
 - أثناء المحاضرات:
- ُ تحرك قريباً من الفصل و / أو حول الغرفة إذا ما لاحظت أن درجة الانتباه بِدأت تِنخفض ،
- : حجب جدات محصل : قف قريباً من أو وجه تعليقاتك مباشرة لهؤلاء الذين يبدو عليهم النعاس أو قم بتغير سرعة أو أسلوب التدريس.

إرشادات للعرض الشفهي الفعال **Guidelines for Effective Presentation**

- استعن بالدعابة المناسِبة لإقامة واستمرارية المٍودة مع الدارس. حركة المتحدث لابد وأن تكون ذات غرض ويجب ألآ تصرف النظر بعيداً عن مضمون العرض:
- سى سيسون العرض. كن متزناً ولا تتحرك بعصبية أو تجر قدميك متثاقلاً أو تلوح بالأوراق أو بيديك بشكل يصرف الانتباه. تجنب مخاطبة الدارس وأنت تواجه السبورة أو عندما تستخدم. الوسائل التعليمية الأخرى
- قلل من حركات اليد والجسم غير الضرورية والتي تشتت الانتباه. تحرك مقدرياً من السامعين لتشجيعهم على المشاركة وتحرك بعيداً تتحرك مقترباً من السامعين لتشجيعهم على المشاركة وتحرك بعيداً لتثبيط العزم عن المشاركة.
 - قف قريباً مَنُ وحَافظ على اتصال النظر بأي فرد غير منتبه ، جازي المنتبه بالابتعاد عنه.

أساليب طرح الأسئلة Questioning Techniques

- الأساليب الفعالة لاستنباط الأسئلة/ الأجوبة: عادة ما توجه الأسئلة إلى الدارسين ككل ويجب أن تكون هناك وقفة حتى يتسنى للجميع فرصة التفكير في الإجابة ثم يتم دعوة أحد الأفراد بالاسم للإجابة.
- بالاسم للإجابة. عندها يسأل أحد الدارسين سؤالاً في الفصل ، فإن على المعلم التأكد من أن جميع الحاضرين قد سمعا السؤال ، وإذا دعت الضرورة فليكرر المعلم السؤال ، وللمعلم عدداً من الخيارات في هذا الصدد : أن يجبب على السؤال.
- ان يجيب على السؤال.
 أن يجول السؤال إلى دارس آخر بالفصل.
 أن يوجه السؤال إلى دارس آخر بالفصل.
 أن يوجه السؤال إلى دارس آخر بالفصل.
 إذا أجاب أحد الدارسين على السؤال ، فإن على المعلم أن يتأكد من أن الجميع قد سمعوا الإجابة وإن الإجابة صحيحة وإلا فلتستمر المناقشة حتى يتم التوصل إلى الإجابة الصحيحة وتحدد بانها الإجابة الصحيحة

أساليب طرح الأسئلة **Questioning Techniques**

- سمات الأسئلة الحيدة :
 - لها غرض واحد محدد.
 - لا تشجع على التخمين
 - يفهمها المشاركين.
- ليست متعددة الإجابات حيث تشدد على نقطة واحدة.
 - لا تقترح الإجابة.
 - تحتاج إلى إجابة محددة.
 - تشجع الدارس على التحليل والتركيب.

أساليب طرح الأسئلة **Questioning Techniques**

- استخدامات الأسئلة:
 استخدم الأسئلة أثناء المقدمة لأجل : ً الانتياه. • کسا حث الدارس على التفكير.
- تعريف الدارسين بالموضوع.
 استخدم الأسئلة أثناء العرض لأجل :
 - التشديد على النقاط. كسب المشاركة.
- الحصول على تلقيم راجع أو معلومات.
- استخدم الأسئلة في نهاية العرض لأجل : الحصول على تلقيم راجع أو المعلومات.
 - توضيحُ النقاطَ غير المُفهوَمة.
- لوتيين المحصطير المصورة ال التأكد من أن الدارس قد بلغ مستوى الأداء المطلوب. تدعيم الدارسين.

أنماط المتدريين وكيفية التعامل معها

- إن أهداف التعليم يمكن أن تتحقق حينما تتم مشاركة المتدرب بطريفة فعالة وشيطة في عملية التدرب ، وعلى هذا فإن مهارات البسير المجتلفة وهن قدرة حذك الانتباء المتدرب ، والملاحظة والاستعوان طبقا معاري مهارات السير . المعامل معادي مستوى المشاركة المتدرب . وان اختلاف مستوى المشاركة المدرب . الذا كان أحد المتدرب بطائع حتيا أو الأرض المعاها. الذا كان أحد المتدرب بطائع حتيا أو الأرض السعاعات. الما إذا كان أحد المتدرب بطائع حتيا أو الأرض المعاها. الما إذا كان أحد المتدرب بطائع حتيا أو الأرض المعاها. وعن مكون تكفيل معامل المدرب . الما إذا كان أحد المتدرب بطائع حتيا أو الأرض كان المعاها. ما هي أراك حواف المتدرب بطائع المعامي الموى المعام. ما هي أراك حواف الما لما إلى الأرب ما هي أراك حواف الما لما المعامي على المعام الا المتدرب . ما هي أراك حواف المعام والمعام والم الأرب ما هي أراك ما هذا المدرب المعامي والي معامل والم وابعاد خاص الم من مراك المعام المواف الما معام المعام الذا والحاد خاص الما من مراك المعام والي الأرب ما هي أراك والي حواف الما أسعام الذيرب . ما هي أراك والي حواف الما أسعام الذيرب . ما هي أراك حواف الما لمعامي المواف المعام والي المعام المواف الم المعام المواف الى من ما المعام المواف الى والحاد خاص الم الم تقريره العالية المعام المواف المعام المواف الما معام المواف المعام المواف المعام المواف الما المواف المعام المواف المعام المواف المواف المعام المواف والمواف والي ما أوال المواف والمواف المواف والمواف والمواف والمواف المواف المواف المواف المواف المواف المواف المواف المواف المواف والي مواف المواف والي المواف والمواف والمواف المواف المواف المواف المواف والمواف المواف والمواف المواف المواف والي مواف المواف المواف والمواف المواف المواف المواف المواف المواف والي مواف المواف والي مواف المواف والي والمواف المواف والي مواف والمواف والمواف المواف ولمواف والي والمواف والمواف والي والمواف المواف والي والموا

أنماط المتدريين وكيفية التعامل معها

أنماط المتدربين وكيفية التعامل معها

- إن أهداف التعليم يمكن أن تتحقق حيدما تم مشاركة المندرب بطريقة فعالة ونشطة في عملية الندريب ، وعلى استياقال لمنتبية الاحوة ، سوى نعدم لندين الانتباه المندرب ، والملاحظة والاستعواب " استياقال لمنتبلة الولاحية ، سوى نعدم لندين الانتباه المندرب ولكى من حين لاحر فار بعض الطروف المعبة قد تنشأ ونحد مشكلة حيما بشارك المندرب أو الأر مكن المعتاد . ونحد مشكلة حيما بشارك المندرب أو الأر مكن المعتاد . اذا كان أحد الحديريي بنكلم العربي وإن الأرض للمعتاد . لمكن أن تكتمل عرض كل أنشطاة الدرين من يستطيعوا الاشتراك في التدريب كما أن يكون مضيعة للوقت ولن المكن المحتلية الحديثين المناطق الدريس من يستطيعوا الاشتراك في التدريب كما أن يكون مضيعة للوقت ولن المكل كان محتلي محتلي المعالي المحتليب الحديث المعتاد .

- سيس عرص دن استعقه اندريب. أحد المتدريين طامناً فإنبا سنغقد مشاركتهم ومداخلاتهم إلى العملية التدريبية بالإضافة إلى مشكلة. راؤك حوك هذا السؤال ؟
- ما هي أراؤلًا. حول هذا السؤال ؟ "با عريزي أنت جريب المهد بالمجموعة ، لذلك فإنني اعتقد أن وجهة نظرك يمكن أن تكون لها قيمنها على وجه التحويد ، فاه ورايلة؟ إن هذك السي الجودي في اسين قيرين العالم وإنما هذا تحديد المشاكل المرتقب تمخصها عن هذه القرارات وأجدد خلول لها، وبالان ما هو السبيل الذي تراه لحل مشكلة فلان؟ وأجدد خلول لها، وبالان ما هو السبيل الذي تراه لحل مشكلة فلان؟ اذكر المصادر التي نستخدمها كمراجع واعترف بأن هناك مسكلة فلان؟ اذكر المصادر التي نستخدمها كمراجع واعترف بأن هناك مسكلة فلان؟ اذكر المصادر التي نستخدمها كمراجع واعترف بأن هناك مسكلة فلان؟ اذكر المصادر التي نستخدمها كمراجع واعترف بأن هناك مسحاح إلى النعمي في الأثر الذي ترضيحا على رأيك الخاص. استان المجموعة يعتقدونه بشان رأي / كركي المعرفي المحارج أي المعن في الأزار الذي ترميم والذي مرابط الخاص. استان العلم في معلين أنها في تعد على المعلمان النابالة هذه الأنماط بالإضافة إلى عمرها والذي برما مستماد فإن في معلى من المعلون وستنائي بفيه التعامل معها خلال الدس والطبي يمرها والذي برما حلال الما المتي من في قامع وسليان في تعد على المعلمان الذي هذه الأنما بالإضافة إلى غيرها والذي مرابط الحاص.

أنماط المتدربين وكيفية التعامل معها

- إن أهداف التعليم يمكن أن تتحقق حيدما تم مشاركة المندرب بطريقة فعالة ونشطة في عملية الندريب ، وعلى استياقال لينسير المحتلفة وهن قدرة جذب الانتباه المندرب ، والملاحظة والاستماع والاستجواب " استياقال لينشئة والاحوة ، سوى نعدم لدنشجيع المندرب ولكى من حين لاخر فار بعض الطروف المعبة قد نتشا طبقاً لمدى مستوى المشاركة المندرب أو للأحيلانات في شخصيات الأفراد وافطايتهم في الندريب ودائماً ما وتحد مشكلة حيما بشارك المندرب أو الأر مكن المعتاد. إذا كان احتراب المدير بي يكلم أو الأر مكن المعتاد. لمكن ان تكتمل عوض كل أنشطاة الدريد بين ان يستطيعوا الاشتراك في التدريب كما أن يكون مضعة للوقت ولن الـذليل كان احتراب الحيم القائلة المدين التي يستطيعوا الاشتراك في التدريب كما أن يكون مضعة للوقت ولن الـذليل كان احتراب الإسلامي القائل المدين الاحتيان الاستراك في الحريب العام الحيوات والاحيان

<u>第2回指導者研修(2014年8月)</u>



Final Report

TRAINING OF TRAINERS

FOR

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area

Table of Content

S	Торіс	Page
1	Introduction	3
2	Activity Schedule	4
3	Training Time Table	5
4	Summary sheet of lectures	6
5	Self Evaluation on the series of	8
	lectures	
6	Evaluation of the skills	11
	development of participants	
7	Appendices	
	Appendix -1:	
	Participants' Evaluation Form	
	Appendix -2:	
	Program Evaluation Form	
	(Participant)	

2

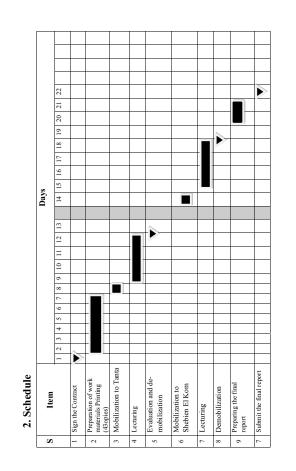
(August 2014)

1

1- INTRODUCTION

The purpose of this report is to shed a light on the activities of the training program Training of the Trainer (TOT) that have been conducted by ISCT during the periods of 11-14/08/2014 and 24-27/08/2014 at the premises of the Companies for Potable Water and Sanitation of El-Gharbia, Tanta and El Minufia, Shebeen El Kom consecutively.

The report has - beside this introduction - six sections, namely, Activity Schedule (from signing the contract until completing the training), Training Time Table, Summary sheet of lectures, Self Evaluation on the series of lectures, and Evaluation of the skills development of participants. In additions, there are five (5) appendices to present data in details.



3. Time Table

Serial	Schedule Days			Remarks		
Serial	Session	Day #1	Day #2	Day #3	Day #4	Remarks
1	Session #1	 Intro Introduction to Training Adult Learning 	-Learning Objectives	Training Delivery: -Communi- cation & Presentation Skills	Workshop & participants' presentation	
2			Break			
3	Session #2	 Training Process Training Needs Assessment 	 Training Strategies Case Studies 	Training Delivery: -Arrangements -Dealing w/ participants	wrap up	
4			Break			
5	Session #3	 Case Studies Hands-on Group Syndicate: SOP/ NRW/ WDM 	 Training Aids Case Studies Hands – on Group Syndicate SOP / NRW/ WDM 	Hands-on Group Syndicate: SOP / NRW/ WDM	Closing & 1 st level Evaluation	

4. Summary sheet of lectures

Training of Trainers

1. Training and Trainers

In this lesson, the training profession has been introduced, along with the importance and the role of the trainer. The differences between training, education, and development were discussed. The classical Instructional System Design approach for developing a training program was discussed. The role of the trainer and the general characteristics required for trainers was demonstrated, and the possibility of using mangers as trainers to win the management support for the training was presented. This allows the opportunity to develop professionally for the participants in the training process.

2. Adult Learning Principles

In this lesson, learning concepts and the behavioral changes accompanying this process, influencing factors, and central methods to achieve better results in training were discussed. Training methods and styles of adult learning were demonstrated. The characteristics of adult learners and guidelines for teaching adults were stated. Special directions for new trainers were given. The characteristics of successful trainers and instructors were defined.

3. Training Strategies

Types of instructional strategies and guidelines to be followed for selection in training were presented. The selection of an adequate method for training geared to achieve a learning objective was discussed.

4. Training Aids

The development and appropriate use of training aids was presented. Advantages and disadvantages of each was discussed. The guidelines for using training aids, equipment checklists, and production guidelines were demonstrated. Due to the importance of slides and transparencies as visual aids, we discussed guidelines separately for production and use of these media.

At this point, an opportunity is given to the learner to use and apply the knowledge and skills presented through the preparation of training aids to present training ideas briefly and that will be used later in detail.

6

5. Training Delivery

Guidelines for managing the physical environment, techniques for managing class and maintaining attention, guidelines for effective oral presentations, and effective techniques for eliciting questions and answers were discussed with the objective of delivering an effective oral presentation. Different types of techniques to deal with problem-learners were discussed to ensure the effective participation of the group.

5

6. Learning Objectives

The basis for writing a learning objective from task and needs analyses were demonstrated. The components of a learning objective and the way to differentiate between specific and vague objectives were discussed

5. Self Evaluation on the series of lectures (Question Survey)

The question survey is designed to test the elements of the first evaluation level, namely, program content, Instructor's ability to transfer information, learning activities, training environment, and overall reaction.

The responses of the participants are analyzed (Appendix-2) and presented in the following section

a) El Gharbia's Training Course (11-14/08/2014)

From the analysis of the 1st level evaluation, we can conclude that:

- All the participants are satisfied with the training program (73%

- Strongly agree and 27% Agree) All the participants are pleased with the *program content* (Strongly agree (57.2%) and Agree (42.8%))
- All the participants are pleased with the instructor performance (73% strongly agree and 27% Agree)
- Majority of the participants (94.4%: 62% strongly agree and 38% Agree) are contented with the *learning activities*. Only one participant (5.6%) needs more learning activities
- Majority of the participants (64%) are not satisfied with the training environment, namely, classroom setup, refreshment and resting room
- What were the most helpful parts of the training program?
 - o Role play (presentation as a trainer of your training unit) at the end of the training sessions
 - All training subjects and events
 - o Part relevant to the traits of the trainer, and how to respect trainees point of views
 - o How to determine the performance gap
 - What were the least helpful parts of the training program?

8

- o Theoretical Part (27%)
- o "None" is the dominant answer (73%)

- Recommendation for Improvement:

- o Longer duration of the training course
- Increase number of the case studies and the practical part of the training course
- o More interaction

b) El Minufia's Training Course (24-27/08/2014)

From the analysis of the 1st level evaluation, we can conclude that:

- All the participants are satisfied with the *training program* (46% Strongly agree and 54% Agree)
- All the participants are pleased with the *program content* (Strongly agree (56%) and Agree (44%))
- All the participants are pleased with the *instructor performance* (95% strongly agree and 05% Agree)
- All the participants are content are content with the *learning activities* (56% strongly agree and 44% Agree)
- All the participants are content are content (34% strongly agree and 65% Agree) with the *training environment*, namely, classroom setup, refreshment and resting room
- What were the most helpful parts of the training program?
 - Group Participation
 - \circ Presentation
 - o Know how to set training objective, training strategies and aids
 - o Know how to deal with trainees
 - o Tips to conduct an effective presentation
 - Role play (presentation as a trainer of your training unit) at the end of the training sessions
 - o How to determine the performance gap
- What were the least helpful parts of the training program?

9

- o Theoretical Part learning strategies (05%)
- o "None" is the dominant answer (95%)
- Recommendation for Improvement:

6. Evaluation of the skills development of participants (Achievement of the participants)

The evaluation of the skills development of participants is, in essence a hands-on evaluation. The instructor observed the participants through the four-day program while they are 1) working their assignments in groups, 2) participating in discussions, and 3) presenting their assignments.

The instructor designed a "Participants' Evaluation Form" – Appendix – 2with the criteria required to measure the objectives of the TOT course, namely, Timeliness, Team Member, Participating in Discussion, Taking initiatives & Problem solver, Communicating with Participants, and Presentation Skills.

The instructor concluded that:

a) El Gharbia's Training Course (11-14/08/2014)

- a. The participants score excellent (5) very good (10)and good (2) as an overall evaluation
- b. The following participants presented successfully their group assignment. It is recommended for them to have more courses in career of trainers:
 - 1. Omar Mohammed Salah El Din
 - 2. Mohamed Masoud Abdel Monem
 - 3. Ahmed Mahmoud Fouad El Gumazy
 - 4. Mahmoud Nasef El Kordy
 - 5. Tamer Mohamed Samir
 - 6. Alaa Abdel El Mohaimen El Shal

- Participants should experience real training after completing the course
- o Introduce a topic that show how to solve trainers' problems
- o "TOT advanced"
- Nominate more employees to participate in the "TOT" course
- o Longer duration of the training course
- Increase number of the case studies and the practical part of the training course

10

- a. The participants score excellent (10) very good (7)and good (4) as an overall evaluation
- b. The following participants presented successfully their group assignment. It is recommended for them to have more courses in career of trainers:
 - i. Basem Gomaa
 - ii. Ahmed Mohammed Sha'ban
 - iii. Mohamed Mostafa Shafei
 - iv. Ranya Ibraheem
 - v. Mohamed Gaber
 - vi. Ala'a Hosny Elshabkah
 - vii. Mohamed Fawzy Awad

12

viji. Saeed Abdelfatah

d) El Minufia's Training Course (24-27/08/2014)

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Appendix – 2 Experience Relations for formations to frame Convertions for Convertions to frame Appendix James Teams Appendix James Teams Procession for Convertions to frame Appendix James Teams Procession for Convertions to frame Procession for Convertion for Convertinon for Convertion for Convertion for Convertion for C	الترك العربات الماء العربي ورجاعات الماء العربي 8. The course exercises were relevant to the course material 9. The course exercises were relevant to the course material 9. The course exercises were relevant to the course relevant to the relevant to the course relevant to the relevant to the relevant to the relevant to the course relevant to the rel

مقدمة عن التدريب

تدريب المدربين

2014أغسطس

عملية التدريب

- التدريب يقدم للمتدرب مهارات خاصة، ومعرفة، ومواقف ضرورية لأداء وظيفة ما في الواقع
 - المؤشر الأكثر قيمة فى نجاح التدريب: كيف يكون المتدرب قادراً على تطبيق المهارة الجديدة بشـكل جيد فى وظيفته

عملية التعلم

- الأساس فى عملية التعلم هو *أنه تغيير دائم للسلوك*
- يمد المتدرب بكم كبير من المعلومات العامة يصبح المتدرب ليس فقط قادراً على النجاح فى اختبار مكتوب أو اختبار يدوى فى اليوم الأخير من الدورة التدريبية، ولكنهم سيتذكرون أيضاً المعلومات ويكونوا قادرين على تطبيقها فى عملهم فى الشهور والسنوات التالية
- قياس النتائج: التقدير الذى يتحقق فى الاختبار المكتوب يكون دائماً وغالباً المؤشر لدرجة الجودة التى تمت بها العملية التعليمية

السلوكيات

السلوك الإدراكي السلوك الحركي السلوك الوجداني	
التعبير المتريب وعادة ما يتأثر المترس بعوامل سليبة وعادة ما يتأثر مط عن ظهر قلب والتعرف على رف ، أعرض ، كرر ، تعرف راف: (Comprehension) والمكافة.	المتدربين ال اللازمة لأد المراد تحقيق 1. المعرفة : ويتسمل الحف الأشياء (ع ويتسمل استا د التغلياف (ع ويتسمل استا التغليف (الا محل المحل محل المحل ا

السلوكيات

- ويتم تصنيف السلوكيات ضمن أحد إطارات التعليم التالية:
 - 1. الإدراكي (Cognitive)
 - 2. الحركي (Psychomotor) أو
 - 3. الوجدان Affective)

فجوة الأداء

- کیف نتعرف علی فجوات الأداء؟
 - في الأفراد
 - ∎ الادارات
 - المؤسسة/الشركة ككل
- هل من الممكن تصحيح فجوات الأداء من خلال التدريب ؟





- فجوات الأداء هى الاختلافات بين الطريقة التى تكون عليها الأشياء، والطريقة التى ينبغى أن تكون عليها الأشياء
 - من الممكن أن توجد فى الأفراد، ووحدات العمل والمؤسسات ككل

فجوات الأداء البيئية

- فجوات الأداء البيئية هى تلك التى تسـببت بواسـطة الظروف التى يجب أن يعمل الموظف فيها ولكن لا توجد رقابة عليه
- على سبيل المثال، دعنا ننظر إلى موضوع العاملين الذين لا يتبعون اجراءات السلامة و الصحة المهنية. هنالك أسباب عديدة لتجنب العاملين اتباع اجراءات السلامة و الصحة المهنية . فما سبب ذلك؟
 • هل المشكلة هي أن الأموال غير متوافرة لشراء ادوات الامان

فجوات الأداء الادراكية (تابع)

- ماذا لو أن عندهم محاضرة لمدة يوم واحد بواسطة خبير في الموضوع ولازالوا لا يستخدمونها؟
- إذا كان التدريب قاصراً على المحاضرات فأنه من الممكن
 أن يكتسبوا معرفة ممتازة عن أهمية ذلك ، إلا أنهم لم
 يكتسبوا المهارة الضرورية لاستخدامها في العمل
 - إن لديهم الآن مشكلة مهارة، ومن الممكن أن يكون تصحيح هذه المشكلة من خلال التصميم الجديد للتدريب الذى يجمع بين المفاهيم الضرورية ولقاءات التدريب اليدوى

تصنيف فجوات الأداء

- من الممكن تصنيف فجوات الأداء إلى ثلاثة أصناف مختلفة:
 - 1. بيئيــــة
 - 2. إدراكيـة
 - 3. موقفية

فجوات الأداء الادراكية

 فجوات الأداء الادراكية هى تلك التى تسببت عن نقص فى مهارات ومعرفة العاملين لأداء الوظيفة بشكل صحيح.

▪ على سبيل المثال، قد لايعرف العاملون كيفية استخدام ادوات السلامة و الصحة المهنية. هذا النقص فى المعرفة هو المشكلة الإدراكية، ومن الممكن تصحيحها من خلال التدريب

حالة دراسية تصنيف فجوات الأداء

▪ ضع- فی الجدول أسفل- قائمة بفجوات الأداء التی من الممکن أن تحدث بمؤسـسـتك . لکل فجوة تضعها فی القائمة، اکتب نوعها فی العمود التالی

نوع فجوة الأداء	فـجوة الأداء

فجوات الأداء الموقفية

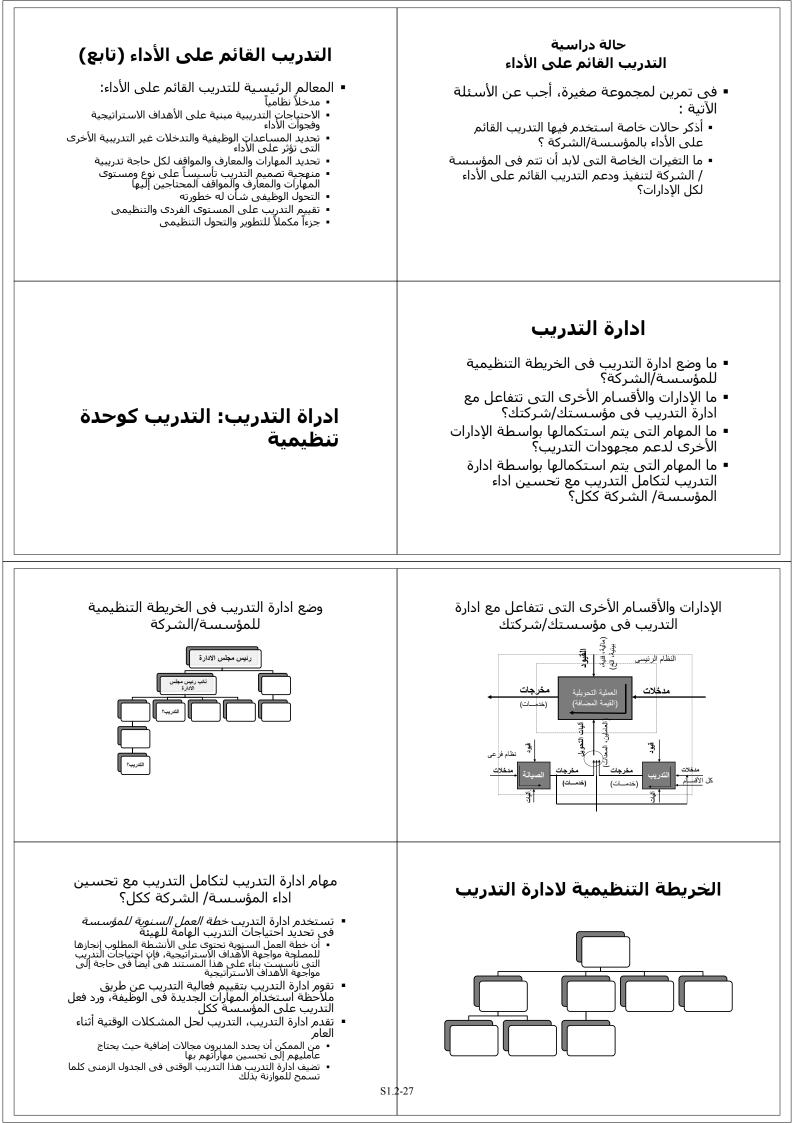
- هی التی تسببت عن عدم رغبة العاملین فی أداء وظائفهم بشـکل صحیح
- ربما تكون لديهم الأدوات والتجهيزات اللازمة ويعرفون كيف يؤدون عملهم، ولكن يرفضون أداءها. وحيث أنها مشكلة صعبة جداً، ولكن من الممكن حلها من خلال الجمع بين استراتيجيات تدريبية مناسبة، ومتابعة من المشرفين

التدريب القائم على الأداء

- الهدف من التدريب القائم على الأداء هو:
- التأكد من أن العاملين والمديرين لديهم الموارات، و المعارف، والمواقف لمواجهة الأهداف الإستراتيجية وتصحيح فجوات الأداء بالأسلوب الأكثر تأثيراً بالنسبة للتكلفة
- الهدف من التدريب القائم على الأداء هو : التقلص السريع لفجوة الأداء بين المبتدئين والمؤدين المقتدرين
- إذا تحددت وصححت فجوات الأداء الفردية، فإن أداء المؤسـسـة سـوف يسـتفيد

التدريب القائم على الأداء

- التدريب القائم على الأداء هو:
 - تدریب متداخل
 - مؤثر من حيث التكلفة
- تأسس على أهداف استراتيجية وفجوات الأداء.
 - تجارب تدريبية متنوعة
 - تحسـن في الأداء الوظيفي.
 - مواجهة للاحتياجات التنظيمية



مهام ادارة التدريب

- مهام ادارة التدريب (مثال) :
 مهام إيان العاملين بالمؤسسة لدعم إنجاز أهداف الأداء بالمَؤْسَسُ
- تسليم التدريب طبقاً لسياسة التدريب المعتمدة، واللائحة وخطة التدريب الرئيسية السنوية والموازنة.
- ر ـــــ ،بیدریب ،برییسیه ،بسینویه والموازنه. إعداد موازنة خطة التدریب الرئیسیة السنویة، لاعتمادها من لجنة التدریب المتكاملة ومجلس الإدارة، تكفی لتمویل جدول التدریب الرئیسی وتسهل استكمال التدریب لاجل خطة تحسین الاداء.
 - تطوير وتنفيذ كل الأنشطة التدريبية من خلال أخصائيين
 - معتَّمُدُيَن ومدربين. تقييم تطبيق المعارات المكتسبة على الوظيفة كمقياس رئيسي لفعالية التدريب.

رسالة / مهمة ادارة التدريب (مثال)

دعم المؤسسة في إنجاز أهدافها الاستراتيجية وأهداف تحسين الأداء عن طريق تنفيذ التدريب القائم على الأداء للتأكيد على وجود عامِلين مؤهلين فنياً ومهنيا

سياسات ادارة التدريب

- وتوجهات الإدارة.
- بِعَضُ العناصُرِ الرئيسية للائحة التي تؤثر في التصميم. والتطوير:
- سترير. كل برامج التدريب يتم تصميمها وتطويرها وتسليمها وإدارتها تحت رعاية الإدارة العامة للتدريب تتحدد احتياجات التدريب على أساس عناصر خطة العمل السنوية بالمؤسسة وعلى فجوات الأداف مل السطيم والأفراد السنوية أسعالية المناسبة المسلمية السنوية المسلمية المسلمية المسلمية المسلمية المسلمية المسلمية المسلمية المسلم
- باسوليسب وعلى حبوات الادار على المسيير والالزاد يجب أن تلتزم أنشطة تصميم وتطوير التدريب بإجراءات التدريب القياسية
 - يتم احتيار المتدربين لحضور الدورات التدربيية لأن مسئوليات وظائفهم تتطلب المعرفة والمهارات والمواقف التى سوف يتم تدريسها بالدورة

مبادئ تعلم الكبار Adult Learning Principles

أنماط تعلم الكبار **Adults Learning Styles**

- یتلقی الکبار المعلومات :
- بشكل ايجابِي (Actively)– من خلال المشاركة المباشرة، أو
- بشـكل سـلبي (Passively)– من خلال اسـتيعاب المعلومات
 - ثم يستقرءون المعلومات.
- إما استنباطها Deductively– من العام إلى الخاص
 - أو اسـتدلالياً Inductively– من الخاص إلى العام

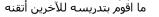
أنماط تعلم الكبار **Adults Learning Styles**

▪ على الرغم من أن التصميم الجيد لبرنامج تدريبي سوف يشمل تمرينات وأساليب تدريبية متنوعة ، فإنه من المهم للمدرب أن يتفهم الكيفية التي يتعلم بها الكبار وكذا أسباب نجاح بعض الأساليب عن غيرها



فكرة التدريب التشاركي The Interactive-Training Credo

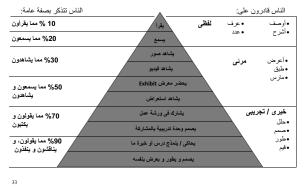
- ما أسمعه أنساه
- ما أسمعه و اشاهده اتذكره قليلا
- ما اسمعه، و اشاهده، و أُسال أُسئلة عنه، و اناقشه مع الأخرين، أبدا في تفهمه
- ما أسـمعه، و اشـاهده، و أسـال أسـئلة عنه، و اناقشه مع الآخرين،و انفذه بنفسـى يسـمح لى باكتسـاب المعرفة و المهارات





34

قمع دال للخبرة Dale's Cone of Experience



مستويات التعلم (تابع)

- *عند مستوى المهارة* ، يستطيع الدارس أن يؤدي السلوك الجديد ،
 - *عند مستوى الاتجاه* فإن الدارس تحدوه الرغبة في أداء هذا السلوك الحديد

مستويات التعلم Levels of Learning

- إن الهدف النهائي من التدريب هو تغيير السلوك ، ويمر الدارس البالغ عموماً بأربعة مستويات من التعليم لبلوغ مستوى التغير السلوكي :
- الإدراك Awareness : يتعرض الدارس أو يتم تقديمه إلى موقف أو ظرف التعلم.
- المى موقف أو طرح المعلم. 2. التفهم والمعرفة Understanding or Knowledge : يضع الدارس حدث التعلم في اطاره العملي حيث يربط بين الأسباب والمكونات والنتائج المرتبطة بالموقف أو بتعبير آخر يتلقى المتعلم المعرفة الجديدة بشكل عام.
 - 3. المهارة Skills : يقوم الدارس بتطبيق ما اكتسبه من فهم ومعرفة.
 - 4. الأنجاهات والميول أو القيم Attitude or Value : يتعرض الدارس لتغير في السلوك والقيم كنتيجة للحدث التدريبي.

ظروف التعلم Learning Conditions

- التغذية المرتدة (التلقيم الراجع) Feedback
- يحب الدارس أن يحصل على المعلومات المتعلقة بتقدمه وبشكل مستمر قدر الإمكان خلال عملية التعليم
- التغذية المرتدة توفر المعلومات التي يحتاجها الدارس لتقرير مدَّى حسن أدائه ، ومجالات تُفوقه والمجالًات الّتي تستلزم منه المزيد من العمل وعن طٍريقها يمكن تصحيح السلوك غير المرغوب فيه أو الأسلوب الخاطئ في الأداء

ظروف التعلم Learning Conditions

- ليست هناك عصا سحرية ولإ مجموعة من التوجيهات الواجب إتباعُها للُتأكد منَّ بلوغ تجربة تعليمية ناجحة في برنامج تعليم الكبار
 - النجاح يتضمن ما هو أكبر من إتباع وصفة ما عملية التعلم ليس بكاملها علمية بحتة
 - دائماً ما يتولد تفاعلاً بين الدارسين والمعلم يوفر المساعدة أو يعترض الطريق
- هناك بعض الْظروف والتي لُها أثر على عملية التعلم ، وهي ظروف يمكن للمعلم أن يضعها ويحافظ عليها طول فترة التعليم.

ظروف التعلم Learning Conditions

- 3. القدرات Capabilities
- هناك اختلافات هائلة في القوة العقلية والقدرات بين الافراد.
- لابد ًمن أن يكون تخطيط البرنامج التدريبية للكبار موضوعة على أساس افتراض أن دارسينا يتوافر لديهم القدرة على التعلم كما تتوافر لدينا القدرة على التعليم
- وأن أنطباعاتنا تجاه قدرات الدارسين سوف تؤثر على ما نَقوم به كمعلمون:
- اًذاً ما ترقبنا من الدارسين النجاح فإننا نتصرف بشكل يختلف عما إذا كنا نترقب منهم الفشل. "عليك أن تؤمن -كمدرب- تماماً بأن أي دارس يمكنه أن يتعلم ما تقوم بتدريسه ".

ظروف التعلم Learning Conditions

.2 المناخ Atmosphere

- المناخ مثل الجو دائماً ما يتواجد في بعض الصور والأشكال ، فهو يتراوح من الجمود والتباعد والرسمية إلى الطلاقة والتقارب والزمالة ، والمناح (النفسي والمادي) غير الرسمي يساعد في عملية تعليم الكبار.
- (النفسي والمادي) غير الرسمي يساعد في عملية تعليم الكبار.
 وجود مناخ يتولد فيه لدى الدارسين شعور بالراحة والقبول فيما بينهم يعضهم ببعض وبينهم وبين المعلم ، يسعل من عملية التعليم ، ومن المزوري بلوغ مستوى كبير من الثقة في البرنامج التدريبي والمعلم عروري وذلك تشيعيع الدارس على تصور وتجربة سلوك محديد دون التخوين وذلك لتشيعيع الدارس على تصور وتجربة سلوك محديد دون التخوين وذلك تشيعيع الدارس على تصور وتجربة سلوك محديد دون التقديم في المرامج التدريبي والمعلم والمعلم والدارسين الأخرين وذلك لتشيعيع الدارس على تصور وتجربة سلوك حديد دون التخوف من نتائج الفشل.
 جديد دون التخوف من نتائج الفشل.
 محديد دون التخوين الخطء اثناء عملية التعلم. ومن الضروري أن يمنح الدارس حرية إدركاب مثل هذه الأخطاء (أن عملية الا الحظ الحلول معني المور، في أولما أدى خط الدارس إلى معافيته على أية صورة من الصور، فإن جميع الدارسين يتقاعسون إلى معافيته على أماح الحيديا. فإلعفاب سوى يترية الغطا عن تريئو الدارسين يتقاعسون أنظاء أثناء معرية النعو ، همي المرابي الخطاء الحيل مع عملي المور، في الماح الخور، ولي المعلم ، عملية التعلم. ومن الضروري أن يمنح على إلى معافيته على أية صورة من ألمور، في العظاء (أن يمنج الدارس حرية أدرتكاب مثل هدة الأخطاء (أن يملية الار في حيلة أدرتكاب مثل هذه الأخطاء أن عملية الا يؤدي هذا الخطا و إلى معافيته على أية صورة من الصور، فإن جمع الدارسين يتقاعسون أن إلى معافيته على أية صورة من الصور، في أدمية الحيليمي أكثر أمنا أدى مناخ التعليمي أكثر نونرا.

ظروف التعلم Learning Conditions

- من سقطات التعليم أن المدربين يميلون إلى إعداد برامج تدريبية تتوافق والأسلوب الذي يجيده المدرب بشكل أفضل وليس بالأسلوب الذي يجيد المشاركون إتباعه، فعلى سبيل المثال:
- إذا كان المدرب يجيد التعلم من خلال القراءة ، فإنه يميل إلى إعطاء الموظفين الجدد د*ليل* ويترقب منهم أن يستوعبوا تطبيق الإجراءات بقراءة الدليل.
 - إذا كان المدرب يجيد *التعلم من خلال الاحتكاك أو التجربة* فإنه يميل إلى دفع الموظفون إلى *مواقف* ج*ديدة بقليل من التوجيه*

ظروف التعلم Learning Conditions

3. الدافع Motivation

- إن فرصة النجاح لأي تجربة تعليمية تتحقق حينما يتفق الدارس على فأئدة التغيير وأنه مطلوب بناء على رغبته
 عندما يشعر الدارس بحاجته إلى التعلم ويرى مدى الفائدة التي ستعود عليه فإنه سينجه إلى التعليم.
- الدافع على التعلّم ليس بالشيء الذيّ يمكن إكسابه الدارس، دافع (أو رغبة) الفرد على التعلم لابد وأن تكون نابعة منه ذاته (فكرة Coaching
- علوى وبعد للله لرام (مراور) واستفادة الدارس ، ولكن يمكننا أن نقلل من درجة عزوفه عن التغيير والتعليم. وبإمكاننا أن نخلق مناخاً يسهل على الدارسين فيه التعلم أي يستجيبوا فيه بدوافع ذاتية.

أساليب التدريب Training Styles

▪ أساليب التدريب:

- 1. الأسـلوب التوجيهي / Instructive). Didactic)
- 2. أسـلوب التعليم الميسـر/ أو المشـارك. (Facilitative/Participatory)

ظروف التعلم Learning Conditions

- من المهم التأكيد على أن للأفراد أنماط تعليمية مختلفة يميلون أليها أكثر من غيرها. فكل متدرب يختلف عن الآخر ولأبد أن يتعامل معه على أنه حالة منفردة
- يفُضُل بعض الدارسين الاعتماد على أنفسهم في التعليم ، بينما يفضل البعض العمل في مجموعات
- هُناك بعض الأفراد الذين يحتاجون إلى كثير من التنظيم ويتعلمون خطوات صغيرة بالتسلسل المتتابع والبعض الآخر يستوعب كل المفاهيم بإشارة عابرة أو بداهة.
- هناك بعض الأفراد الذين يميلون إلى الوسائل المرئية
 هناك بعض الأفراد الذين يميلون إلى الوسائل المرئية ويتعلمون بشكل أفضل من خلال الرسومات والصور الشفافة والشرائح المصورة، ووسائل العرض بينما يتعلم أخرون بشكل أفضل من خلال الكلمات ويستمتعون بالقراءة وبالصورة الشفافة والشرائح المصورة والحاوية على معلومات مكتوبة والمحاضرات.

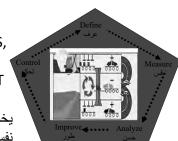
أساليب التدريب Training Styles

 أسلوب التعليم الميسر/ أو المشارك هو الأنسب لتعليم الكبار " وقد اثبت صلاحيته في معظم حالات تعليم الكبار

أساليب التدريب Training Styles

(Instructive / Didactic) الأسلوب التوجيهي.1

- يعتمد الأسـلوب " التقليدي " (الكلاسـيكي) في التدريب على الأسـلوب التوجيهي (الإرشـادي) وهو يعتمد على قيادة المعلم والتركيز على موضوع الدرس وهو ما يناسب أسـلوب تعليم الصغار.
 - 2. أسلوب التعليم الميسر/ أو المشارك. (Facilitative/Participatory)
- حيث يوجه المدرب الدارس إلى " اكتشـاف ما يجب تعلمه-مفهوم Coaching



OUR THINKING CREATES PROBLEMS, THE SAME KIND OF THINKING WILL NOT SOLVE." يخلق تفكيرنا المشكلات،

يحلق تفكيرنا المسكلات، نفس نمط التفكير لا يستطيع حلها

Albert Einstein

دورة التدريب Training Cycle





البيان العملي / الممارسة

- يشمل الاستعراض والبيان العملي توضيح إلى جانب تفسير الخطوات الخاصة بإجراء أو عملية. ويجب على المدرب أن يتأكد من:
 - جميع المعدات والأدوات والوسائل التعليمية متوافرة ، .1
- إن موقع الاستعراض مناسَبَ وقد تم إعداده من قبُل ، .2 إن مركان العضر بسمح لجميع الدارسين بمشاهدة الاستعراض والمشاركة في عملية المحاكاة أو الممارسة ، .3
 - أُنَّه قد تم اتخاذً كافة احتياطات السِّلامة بِما في ذلك توفير معدات السِلامة الشخصية متى دعت الحاجة إلى ذلك. .4
- **ملاحظة :** تأكد من حسـنُ تخطيط الوقت الكاف. وافترض أن وقت التدريب اللازم لتطوير إحدى المهارات سوف يكون تقريباً عشرة أمثال الوقت الذي يحتاجه العامل الماهر لأداء العمل.

المحاضرة

- ۲- الممیزات :
- انمصيرات ، المصيرات ، المعلومات في وقت وجيز. تقدم كمية كبيرة من المعلومات في وقت وجيز. توفر أكثر الطرق كفاءة لتقديم وتلخيص خبرة تعليمية. يمكن أن نكون شيقة إذا ما توافر للمعلم مهارات عرض طيبة. تعد أكثر الطرق كفاءة لتدريس أهداف على مستوى المعرفة. الاءمر .
 - 4- العيوب :
- تشديع ملى اكتساب الحقائق بلالاً من التركيز على مهارات التفكير أو التطبيق. تشديد على اكتساب الحقائق بلالاً من التركيز على مهارات التفكير أو التطبيق. يعتمد على تحكم المعام في خطوات العرض بغض النظر عن توافقها مع الدارسين. - تعليما خليل احكم استعمار في حليوات العرض بعض استر عن تواجعه سي - غالباً ما تجاوز فترة انتباه الدارس واهتمامه. - يمكن أن يبالغ في استخدامها أو أن تستخدم في غير الموضع الصحيح.
 - ■تُعتمد في نجاحهاً على قدرة العرض الشفهي للمعلمُ. ▪ 5- الاستخدامات : ً
- محسبية إن أفضل استخدام للمحاضرة يكون لتحقيق الأهداف ذات المستوى المعرفي أو الإدراكي أو مع أحد الاستراتيجيات الأخرى.

البيان العملي / الممارسة

- 1- خصائص البيان العملي :
- أنها تعرض المهارات والأساليب بطريقة عملية.
- أنها يمكن أن تستخدم لعرض كيفية عمل الماكينات والمعدات.
 - أنها توجد المعلومات والحكم والتوافق العضلي.
 - أنها مناسبة جيداً للحواس الخمي وتزيد من قوة التدريب.
- أنها تعطي فرصة للمدرب لاختبار المعرفة والمهارة الجديدة تحت ظروف محددة.
 - أنها تثير الاهتمام والانتباه.

البيان العملي / الممارسة

- 2- النموذج : النموذج الأمثل للاستعراض هو على النحو التالي : أولاً : مرحلة الإعداد :
 أولاً : مرحلة الإعداد :
 أرب المعدان والأدوان والوسائل التعليمية.
 فر ممارجة إجراءان السلامة.
 د. مرح عامة الاستعراض / اليان العملي.
 ٩. مر بإعداد التعليمات / الكتيبات للدارسين.
- ثانياً : مرحلة الاستعراض :
 . يشرح المعلم ويستعرض الإجراء بما في ذلك احتياطات السلامة.
 . يقوم الدارسون بشرح الإجراء بينما يقوم المعلم باستعراض وبيان عملي للإجراءات.
 - للإجراءات. يرتدي الدارسون معدات السلامة الشخصية على النحو المناسب. يشرح الدارسون الإجراء ويستعرضونه تحت إشراف صارم.
 - - ثالثاً : مرحلة التقييم :
 - .1 .2 .3
- كمل الدارسيون تقييم مكتوب. يكمل الدارسون الإجراء تحت إشراف محدود. يمارس الدارسون الإجراء بينما يقوم المعلم باستيفاء قائمة مراجعة الأداء.

البيان العملي / الممارسة

- 6- أفكار مفيدة للبيان العملي :
 16- أفكار مفيدة للبيان العملي :
 ابدأ التخطيط للبيان العملي بالتنظيم ، قسم المهارات إلى خطوات أو إجراءات وضعهم في تسلسل منطقي ، تدرب عليهم جيداً حتى تعتاد ليهم.
 حدول فوت كبير جرآ لمرحلة التمرين بعد البيان العمل الفعلي ، وهذه الخطوة تمثل المشاط الأهم في عملية التعليم حيث يحتاج المتدرب إلى ملاحظة جادة وتلقيم راجع من المدر .
- النشراط الأهم في عملية التعليم حيث يحتاج المبدرب إلى سر سر المدرب. عند بنان المهارة ، توقف عند النقاط المهمة في الأداء وأكد على كيفية الترابط بين هذه المرحلة وماس علق وعن ليناع على التوالي ، وأنه لمن المهم جداً أن تستعرض تصور كامل المهارة وليس على صورة منقطعة لمراحلها المختلفة. إذا كان موضوعات معد رضح العملية ومارس المهارة سبط حتى يمكن أن يلاحظ المتدربين تم مارسها بعد ذلك على سرحة منوسطة مقبولة. بعد البيان العملي دعم المعرفة والمهارة الجديدة للدارس بإعادة ذكرا لأفكار والنقاط الرئيسية التي ذكرت في ألسان العملية.

- ...سيب والإجراءات. راقب المتدربين وكيفية ممارستهم أو أدائهم للمهارة الجديدة وإذكر لهم أخطائهم وطريقة تقاديها ، وإذا كان هناك بعض المهارات تحتاج إلى سرعة ودقة أكد على هذه النفطة عند بداية السان العمله.
 - بداية البيانُ العملي. إذا كان من اللازم العمل مع مجموعة أكثر من 25 فرداً قسم المجموعة إلى أقسام (مجموعات صغيرة) في فصل النمرين واختار قائداً أو رئيس لكل مجموعة.

البيان العملي / الممارسة

- 3- المميزات :
 أ- يوفر خبرة عملية.
 ب- يسمح للدارسين بتطوير وممارسة المهارة تحت الإشراف.
 ب- يسمح للدارسين بتطوير وممارسة المهارة تحت الإشراف.
 مسمح للدارسين استخدام حاستي النظر واللمس إلى جاند
 د- يعد الوسيلة الوحيدة الفعالة في تدريس السلوك الحركي.
- - - 4- العيوب :
- أ- اليورب :
 أ- يحتاج إلى الكثير من الإعداد.
 ب- يحتاج إلى الكثير من الإعداد.
 ب- يحتاج إلى معدات ووسائل تعليمية وعالباً الفيام بزيارات لمواقع العمل.
 ج- تحتاج مجموعات الدارسين الكبيرة الكثير من الوقت للممارسة حتى يكون الاستعراض فعالاً.
 د- عادة ما تكون محدودة بعدد مغير من الدارسين حتى يتمكوا جميعاً من رؤية العملية والإجراء.
 د- عادة ما تكون محدودة بعدد مغير من الدارسين حتى يتمكوا جميعاً من رؤية العملية والإجراء.
 د- عادة ما تكون محدودة بعدد مغير من الدارسين حتى يتمكوا جميعاً من رؤية العملية والإجراء.
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 د- عادة ما تكون محدودة بعدد مغيران الدارسين حتى يتمكوا جميعاً من رؤية العملية والإجراء.
 د- عادة ما تكون محدودة بعدد مغيران الدارسين حتى يتمكوا جميع من رؤية العملية.
 د- عادة ما تكون محدودة بعدد مغيران الدارسين حتى المكوا معام من رؤية العملية والإجراء.
- لاستخدامات : يعتبر الاستعاني أكبر الأساليب فعاليه *لتدريس معارات في مستوى التطبيق في السلوك الإدراكي والسلوكيات الحركية* ، والاستعراض المقون بالمحاكاة والسيناريوهات المعدة يمكن استخدامه بعالية في تدريس معارات حل المشاكل احد علامات برامج التدريب الوطبية الجيدة هو أنها تعلي الدارسين فرص النعلم بالممارسة ، فالدارسين في حاجة إلى التدريب الممارسة لحل مشاكل العمل الواقعية.

المناقشة الموجهة

- ۱- دور رائد المناقشة:
- جور (برية المناقشة الموجهة حتى لا تتشتت أو تنجرف عن الأهداف التعليمية ، ورائد المناقشة مسئول عما يلي : 1. ديد الماقشة بتحديد الموضوعات والأهداف والخطوط العامة (قواعد المشاركة وضوابط المناقشة).
-رت وصوبيم المنافسة). بالتثبت (Checking) من الفهم وتشجيع المشاركة وذلك من خلال أستعراض تحليل ودود غير انتقادي للإسهامات وبتطبيق أساليب توجيه الأسئلة. .2
 - مراقبة المناقشة وذلك بمنع أي فرد من تسييد (Dominating) المحموعة .3
 - التوفيق (Harmonizing) بين المجموعة وذلك بمعالجة المواجهات والتباينات الشخصية ، وبالفصل فيها متي دعت الحاجة إلى ذلك. .4
- ر سجيعت استعميه ، وبانفض نيها متى دعت الحاجة إلى ذلك. المحافظة على سير المناقشة وفقاً للمهمة المحددة وذلك بتذكير المجموعة بالهدف إذا ما انجرفت المناقشة إلى موضوعات غير مرتبطة بالهدف. .5
- ـيق (Coordination) المناقشة بتلخيص الأفكار وإيجاد الروابط بينها. .6

المناقشة الموجهة

 تتضمن المناقشة الموجهة تبادل مجموعة صغيرة من الآراء والأفكار من أجل الوصول إلى ا نتيجة أو قرار وبحيث تسمح بحل خلاق للمشاكل المختلفة ، وهي أسلوب ممتاز للتثبت من فهم الدارس

المناقشة الموجهة

• 3- المميزات

- . -سسيرات . توفر لجميع أفراد المجموعة فرصة تبادل الآراء وتوسع نطاق المشاركة وتثير الاهتمام بالموضوع. الأهتمام بالموضّوع. تسمح للمعلم بالتثبت من فهم الدارسين وبالتالي تحديد خطوات تطور المناقشة.

 - انمىانىت. عادة ما تكون أكثر تشويقاً للدارسين من المحاضرة. يمكن استخدامها في تدريس مهارات إبداعية في حل المشاكل. يمكن استخدامها تمارين التنشيط " التحمية " (تكسير الثلوج).
 - - 4- العيوب :
 - يمكنَ أِن يتسيدها فرد أو فئة.

 - يمكن أن يتسيدها فرد او فنه. يمكن أن تتحول إلى مناقشة غير موضوعية. يمكن أن تشكل صعوبة للدارسين في تركيزهم على الأهداف. يمكن أن تتحول إلى محاضرة يتسيدها المعلم أو دارس ذو صوت عال. . .
 - 5-الاستخدامات :
- حسيت المحيدة ، فائدة في تدريس العديد من الأهداف المختلفة ، وعلى وجه التحوص لها فائدة كبيرة في تدريس السلوكيات الإدراكية في مرحلتي الفهم والإدراك وحل المشاكل ، كما تستخدم في مجموعات صغيرة ، ويتعلم المتدربون منها كثيراً نظراً لأنهم يستمتعون بفرصة المشاركة.

التعليم الفردي

- إن طريق التعليم الفردي ليست بطريقة واحدة محددة بقدر ما هي تكييف للطرق بهدف تعليم الدارسين فرادى ،
- تشمل نماذج التدريس مجموعة مواد تعليمية معدة لتعلم ألفرد بذاته وقراءات وتعليم بمساعدة الكمبيوتر أوُ تدريَّس خصوَّصَّي عنَّ طريقُ الزملاء أو المعلم والمراقبة.
- مفتاح أية إستراتيجية تعلٍيمية فردية هو أنه يجب أن تكون مخططة تخطيطاً رسمياً وأن يتم تدريسها وتقييمها كأي إستراتيجية أخرى.

المناقشة الموجهة

- 2- خصائص المناقشة الموجهة :
- خصائص المناقشة الموجعة : المناقشة طريقة ويمة لحل المشاكل واتخاذ القرارات وقضابا تعصيف الدماغ تساعد المتعندين على تغيير اتجاهاتهم ووجهات نظرهم فالمجموعة بما فيمم المدرب تشير إلى النقاط عنير الصحيحة أو المشاكل المرتملة بوجعة نظر المشارك أو وصفه للأفعال والاحداث، وعلى سبيل المثالي فإن المجموعة بيم أن تعطى توجيهات ليعض الأشخاص الذين يواجهون عمالاً غير متعاونين بدلاً من ان تعلي من المشرفين التدخل بالعقاب. المانقلب في معرفات تدريبية صعرة لها قيمة بالنسبة للمدرب والمتدرب فمن خلال مومة العمل الموكلة للمجموعة فإن المدرب يمكن له أن يراقب ويستمع ويدون نقاط الصعف والقوة للمحموعة فإن المدرب محل المن المانقشة في معرفات تدريبية صعرة لها قيمة بالنسبة للمدرب والمتدرب المانقش ويستمع ويلدون نقاط الصعف والقوة منا معالم تعمل مق
- ويستميع ويوان فلط المتعلق والفلوة المتعاديم لمعطية البعض. وطول الرد والاستجابة وغالباً ما يتم توجيعها عن طريق ميسر المجموعة. المناقشة في المجموعات التي لا تتسم بالرسميات لا يمكن توجيعها والتحكم فيها بوضع القواعد أو بالمدرب ويمكن لها أن تنساب في أنجاه غير معين مسبقاً أو تحليط
- او تحطيط نوع آخر من المناقشات وهو السيمنار (Semina) أو تعليم المجموعة وهذا يتميز بالمنافشة المبنية وبمكن أن نظهر بعض الأسيلة عن الطريقة والإجراءات التي تم اقتراحها حديثا أو مستخدمة حالية. هذه الطريقة مناسبة كخطوة تالية لمحاضرة أو شريط فديو أو لمهمة مكتوبة وتساعد الدارسين على تحليل ونقد مواقفهم وغيرهم في قضية معينة.

المناقشة الموجهة

- 6- أفكار مفيدة للمناقشة الموجهة :
- أخار فتوليدا تساديك الموجهة .
 خطط وحض بكفاية للمناقشة ، رزع على تغطية نقط معينة وحاول ألا تخرج عنها وتفعم أن دورك هو ميسر وليس متسيد للمناقشة.
 ضع الأهداف بوضوح خلال المناقشة وهذه هي الطريقة المثلى للتأكد أن المناقشات والاستكشافات ستكون واضحة.
- أن يكون جلوس المجموعة بحيث أن يرى ويسمع بعضهم البعض. كميسر للمجموعة اسمع إلى ملحوظاتهم وتعليقاتهم وتفاعلهم بعضاً

- بيعض. نظم بناء المناقشة ليحتوي مقدمة ووسط واستنتاج ، وأن يكون وسط المناقشة ممتع وغير مهدد ومنظم ومبني. إذا تأخرت المناقشة عند نقطة معينة فاسأل أسئلة (مثيرة لشيء من الغضب " استفزازية ") مثيرة للتفكير أو مستفزة للتفكير وفيا نوع من التحدي وخذ موقف التحدي حتى وإن كان غير محيويا. والق بعض الضوء الساطع على المحادثة ليبذل كل المتدربون طاقتهم وتنساب افكارهم. حلب حديد أحماد مين أو مكون الماذيق في أن بالشقشة
 - مارس دورك كعامل مساعد أو كمدير للمناقشة ، إرشد المناقشة بوصفك لأسئلة جيدة وإعادة صياغة التعليقات والإجابات. لا تدع المناقشة تخبوا ، اقفل المناقشة بتلخيصات أو بملحوظات.

التعليم الفردي

- 2- المميزات : تسمح هذه الإسرائيجية باستجابة المعلم لاحتياجات الفرد. ويحدد المدرب والدارس أهداف وغايات محددة للنعلم.
- محددة للتعلم. تسمح هذه الإستراتيجية بالتكرار تبعاً للرغبة. يمكن استخدام المجموعات التعليمية الفردية عندما يكون من المعب تنظيم فصل دراسي لعدد محدود من الدارسين أو عندما لا يتوافر وجود معلم. يمكن الاستعابة بالمعلمين لمساعدة عدد من الدارسين من ذوي المشاكل المختلفة في فترة زمنية فصرة.
- مصره. يتم التعليم طبقاً للخطوة الذاتية (Self Space) للدارس. يستخدما التعليم بمساعدة الكمبيوتر بقليل من التوحيه من قبل المعلم ، وهو مفيد على وجه الخصوص في تدريس مهام الإدراك عن طور قلب التي يحتاج إلى تدريب ومراجعة مكتفتين. ا العيوبَ : بموعة مواد تعليم فردية من قبل المعلم بما في ذلك كثير من برامج الكمبيوتر ومجموعات ديو تعد مكلفة للغاية حيث أن برنامج التعليم الجاهزة والجيدة ليست متوافرة في أغلب
 - ان إعداد مجموعة أشرطة الفيديو تع الأحيان. الأحان. قد لا تكون مناسبة عبد تناول الموضوعات المعقدة والمركبة. ليست مفيدة في تدريس الإجراءات التي تستلزم التعامل مع كل المعدات أو المواد المعقدة. لا تسمح بتبادل الأفكار والأراء وهي تعتبر أساساً أساسلوا " موحشا " أو منعزلاً للتعلم. يجد بعض المعلون صعوبة في ترك التحكم في المناع التعليمي إلى الدارس. تصلح جداً مع الدارس الذي تحدوه دوافع فوية.

التعليم الفردي

- 1- صفات التعليم الفردي :
- تقدم هذه الطَّرِيُقة تدريباً لمجموعة كبيرة من المتدربين ربما يكونوا مفصولين جغرافي وفي هذا خفض لتكاليف التدريب وأيضاً تقدم التدريب للمتدربين في حالة عدم وجود مدرب.
- البينامج هو نفسه الذي يراه كل المتدربين ولكن طبقاً لمستوى الدارس يستطيع أن يقرر أي جزء يقوم بالتدريب عليه وأي جزء يمكن أن يتخطاه السابق معرفته به.
- تأكد أن الدارس سوف يتلقى تلقيماً راجعاً (Feedback) مباشرا على تقدمه وانجازه. ■ تعد الدارس إلى تلقي معلومات أكثر تعقيداً وتقدماً.
- تدرس مُواضَّعٍ كَمية وَحقائقَ والتي يُفضَّل عرَّضها على مستوى فردي وليس على مستوى المجموعة.
- تعرض وتراجع سياسات وإجراءات معقدة " معلومات ".

التعليم الفردي

- 5- أفكار مفيدة للتعليم الفردي المبرمج :
- 5- أفكار مفيدة للتعليم الفردي المبرمج :
 اختبر وراجع البرنامج دائماً للمساعدة في تحديد كم المواد الضروري وذلك لأنه ابذا باتعر ورابا مع الزمان من المعب الإجراء الزائدة دون التأثير على إذاء الدارس رابدا بإتمامح تكون من المعب الإجراء الزائدة دون التأثير على إذاء الدارس المدارك الذا بحريامج الدريب لمجموعة تحريبية من الدارسين وبموارد اقل من المعاب المعنرة ثم قرم من واقع الخالية مردي من والمع الدوبي وبموارد اقل من المعلى الزماج ، وسوف يساعدك ذلك على تحيي العيم المعارفي ويتبري المعترة من من واصوارد اقل من المعلى الداج ، وسوف يساعدك ذلك على تحيين المعنرة ثم قرم من واقع الحالية لدارسين.
 دغم التكليف باستخدام البرنامج ، وسوف يساعدك ذلك على تحييب سوء اعداد ومراجعة البرنامج ، وسوف يساعدك ذلك على تحيين المعرفة من العداد ولحالية للدارسين.
 دغم التكليف باستخدام البرنامج ، والحوالية للذارسين.
 دغم التكليف باستخدام البرنامج ، ولدي معافية الية لذارسين.
 دغم التكليف باستخدام البرنامج الحاهزة إذ يجب تيتين التكلفة العالية في العاد ومراجعة البرنامج ، وذلك في الحالات التي يتحقق فيها هدفك التدريبي ما باستخدام البرنامج ، ومع في العاد اليه المعرف معنا إعاد ومراجعة البرنامج ، وندى مع معومرة إلى السياسة العالية ، ينومجا لغاذ الغربي التابية.
 دغم من الحالي معن مع معومرة إلى السياسة العامة لشركتك ، قم بوضع نواجع العراض على الموضع العالي مادي معن المعومات على الموضعات .
 3. أنه إلى الدرسين لحذف عمن الموضوعات عمق ، وينوم منابعة يتناول مزد من توجبها للمارسين لحذف عمل الموضوع معنا الموضع .
 4. قم يقبرها الخاري التابلي في التعليم المبرمع.
 4. قم يتفيم الجواب الثالية في التعليم المبرم .
 4. قم يتفيم الجوابي الذابي على الموضع .
 5. قارة المان الحل في العليم المبرم.
 6. قربة الجراب في العليل في العليم المبرم .
 6. رفين الأداء في يابه الندري في البرابي .
 7. الحظ مستوى العمل ذاته.
 7. الحظ مستوى العمل ذاته .

- التعليم الفردي
 - أفكار مفيدة للتعليم الفردي المبرمج :
- اقحار مفيدة للتعليم الفردي المبرمج : إذا قرن وضع درس مبرمج فلنجعاه القرادي باختيار المحتوى المتزن الذي لا يحتاج إلى مراجعات مستمرة وأن مخططا يحيث تكون الاستفادة منه لمدة أكبر من الدارسين ، ولكن تذكر أنه لأبد وأن يكون كل برنامج موضوع وفي ذهنك نوعية من الدارسين، فعلى سبيل المثال نجد أن التركيز في برنامج حول منتجات جديدة تختلف في مندوبي المبيعات عن مديري الإنتاج. يمكن الدارسين من تقييم تقدمهم باستخدام مفاتح الإجابات ونماذج الأداء الصحيح، والمدروبي مسافلين عن فيرس المتال مقات الإلامات. المحيح، والمدروبي مسافلين عن نوبين السماني مقاتح الإجابات ونماذج الأداء الصحيح، والمدروبي مسافلين عن نوبين المعال التعليم الإذاتي الدارسين الذين من تقييم تقدمهم باستخدام مفاتح الإجابات ونماذج الأداء حدد ذكر مسيا.
- ذلك مناسبا. مراجعة دراسات البرنامج الأخرى لتفهم ماهية دور الدارس في هذا المجال. فالتعليم المبرمج يستلزم من الدارسين أن يكونوا أكثر الجابية في المشاركة التعليمية بينما نجد أن المحاضرات تتطلب من الدارسين أن يكونوا سلبيين. تناقش مع الدارسين والمدراء حول التعليم ، ليعلم المشاركون ورؤسائهم ضرورة التدريب وأهداف ومدى الاستفادة المرجوة منه.

- - - - 4-الاستخدامات : بمكن استخدامها لتحقيق أغراض إدراكية.

 على الرغم من أن المعلم عادة ما يوضح أهداف الحلقة 	الأساليب التعليمية				
الدرآسية وذلك بتحديد الأهداف والمعلومات الجديدة والاستنتاحات ، فانه بنم في بعض الأحيان تحديد تمرين أد	يم القردي	لمناقشة لموجهة	البيان العملى / المعار سنة	المحاضرة	السلوك
تُجربة يتم خلالها تُشجيعُ الدارسين على تقديم بعض المعلومات والوصول إلى استنتاجات أثناء أداء النشاط	I	2	3	1	لإدراكى: المعرفة
التعليمي.	2	ï	2	2	الإدراكي: القهم
■ هذا يتم بناء على توجيهات وإرشادات المع علم بسيطرته ، وبطلق علم بهذه الأسترا	2	3	, i	2	الإفراكي: التطبيقي
على سُيطرته ، ويطلق على هذ في حلٍ المشاكل " أسلوب الاك	2	r	2	3	الإدرائش:
 يؤدّي أسلوب الاكتشاف بالدارس إلى بلوغ مس من مشاركة واستحابة الدارسين 	- 2	3	ī	3	حل المشاكل
س مساحلت والمستجاب المراسيين يجب على الدارسين أن يتحملوا المسئولية الدر وتعني مسئولية الدارس قبوله وتحمله المسئول	-2	2	ĩ	2	الحركي: الوجدائي:
	Reter	ntion	لەمات	المع	حتفاظ
	ظ بالمعلومات ، على أن يسـمع	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا	لوسائط: ها في مس مثلى للتعل	الرئيسية ل بن في فعاليت فر الظروف الد ف ويقول ويفع
الوسائط التعليمية	ظ بالمعلومات ،	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا طر أكثر من أية استخدام المس	لوسائط: ها في مس بل. غالباً ما يع بلدة فائدة	الرئيسية ل بن في فعاليت فر الظروف الد ي ويقول ويفع ما أن التدريب ليات التعلم م ة الاحتفاظ الت
	ظ بالمعلومات ، على أن يسـمع	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا طر أكثر من أية استخدام المس يمي :	للوسائط: ها في مس بناى للتعل بل. غالباً ما يع الية فائدة الإطار التعل	الرئيسية ل نن في فعاليتر فر الظروف الر كي ويقول ويفع ما أن التدريب ليات التعلم م ت الاحتفاظ الت ت الاحتفاظ
الوسائط التعليمية Training Aids	ظ بالمعلومات ، على أن يسـمع	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا طر أكثر من أية استخدام المس يمي :	للوسائط: ها في مس بناى للتعل بل. غالباً ما يع الية فائدة الإطار التعل	الرئيسية ل بن في فعاليت فر الظروف الر ما أن التدريب أن التحفاظ أن مروعة في ا ت الاحتفاظ % - قراءة
	ظ بالمعلومات ، على أن يسـمع	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا طر أكثر من أية استخدام المس يمي :	للوسائط: ما في مس نل. غالباً ما يع ن خلال النا الإطار التعلو، ل بالمعلو ،	الرئيسية ل فر الظروف الد ع ويقول ويفع ما أن التدريب ما ما أن التعلم و سموعة في أ سموعة في أ 2 الاحتفاظ % - قراءة % - رؤية % - رؤية
	ظ بالمعلومات ، على أن يسـمع	على الاحتف متدرب قادر	اعدة المتدربين م عندما يكون ا طر أكثر من أية استخدام المس يمي :	للوسائط: ما في مس نل. غالباً ما يع ن خلال النا الإطار التعلو، ل بالمعلو ،	الرئيسية ل فر الظروف الد ك ويقول ويفع لما أن التدريب سموعة في الاحتفاظ الت 7 الاحتفاظ % - قراءة % - سمع

نصف الكرة المنصفة Split Hemisphere Learning

إن اندماج تأثيرات كلا من الجانبين هو الذي يسمح لنا بالتفكير والتفاعل مع المعلومات ، ويتزايد معدل الاحتفاظ بتزايد الحواس النشطة ، والتصور Visualization هو عرض لنظرية مبهمة Abstract بشكل مرئي بهدف المساعدة في الاحتفاظ ، وعندما يتم تخزين المعلومات في كلا جانبي المخ يكون من السهل استرجاعها.

Split Hemisphere Learning ■ يرجع سبب هذا الاحتفاظ المتزايد بالمعلومات إلى ما نطلق عليه بتعليم نصف الكرة المنصفة Split

نصف الكرة المنصفة

- ما تطبق عليه بمعيم شف الطن المطبعة عامرة Hemisphere Learning ، وهي أن كلا من جانبي المخ يسيطر على الجانب المعاكس له من الجسم وأن المخ يمتص ويسجل نماذج مختلفة منا المعلمات : من المعلّومات :
- *1. الجانبُ الأيسي*ر : العمل الدقيق ، المنطق ، الزمن ، التفكير وبخاصة الاستنتاج من الوقائع ، اللغة ، الكتابة ، استخدام شديد للوظائف العقلية.
- **2. الجانب الأيمن** : الفراغ ، الحركة ، العاطفة ، تمييز الوجوه ، الموسيقى ، الإدراك العميق، استخدام شديد للحواس.

الاحتفاظ المعلومات Retention

- اختبار سهل لترى عما إذا كان مساعد التدريب "سؤالُ للتُصور" أي جانبُ من المخ سوف يشغل هذه المعلومات؟
 - إذا كان الإجابة للجانب الأيسر، فمن المحتمل انها لا تكون تصوراً. على أي حاًل
- إذا كانت الإجابة للجانب الأيمن، فإن الرسم من المحتمل أن يصور هدفاً أو فكرة للأستقبال السهل بواسطة المتدربين الذين يستخدمون الجانب الأيمن من المخ.

الاحتفاظ المعلومات Retention

- احفظ في عقلك على أى حال أن "الفعل يرى" يشير إلى تصور مفهوم،وليس رسوم الكلمات: عَنْدُما تَحْبِر شَحْصٌ ما بُشْئ ما، مثلماً في المحاضرة، أنك تعطى كلمات إلى الجزء الأيسر من المخ.
- عندما عندي بكن الجراء يشر من أسن.
 عندما تعرض شيئاً ما، يدار هذا على إعطاء معلومات إلى
 الجانب الأيمن من المخ الذي لم يقبل الكلمات
 لذلك فإن "الرؤية" يجب أن تشتمل على نوع ما من التصور المرسوم لتشجيع "التعلم عن طريق المخ بالكامل".
- یشکل التصور خیال مرئی لفکرۃ ما أو مفهوم معین: 1)الرسّم التخطيطي للمصنع، 2)الرسم البياني لجهاز ما،

 - 3)شرح إحراء، 4)لعب الأدوار جميعها أمثلة للتصور.

الوسائط التعليمية **Educational Aids**

الوسائط التعليمية:

1.الوسائط تدعم (Reinforces) التعلم. 2.الوسائط التعليمية يمكن أن تخدم كإطار (Outline) لعملَ المعلم. 3.الوسائط التعليمية ليست بموضوع منفصل وإنما هي جزء ًمتمم للعملية التدريبية. 4.الوسائط التعليمية ليست بديلاً عن التدريس السليم. 5.الوسائط التعليمية ليست مواد تسلية. 6.اسِتِخدام وإنتاج المساعدات التعليمية يجب ألا يكون صعباً أو معقَداً بشَكل غير ضروري.

مساعدات التدريب المحسوسة

مساعدات التدريب المحسوسة:

محتمات استريب است سوست. هي أدوات نموذجية تستخدم في البيانات العملية وتمثيل الأدوار، ، فعلى سبيل المثال : توفير أجزاء من المعدات في مكان التدريب بمكن أن يزيد وشكل الملحط من قدرة المتدرب على فهم كيفية استخدامها ، الأدوات في مواقف مرتبطة بهدف معين.

▪ المميزات :

- تسمح للمتدرب برؤية الأشياء الحقيقية.
- التحول بالتعليم من الجانب النظري إلى العملي.
 تستهدف توفير الأنشطة العملية وتمثيل الأدوار. .

▪ العيوب:

- التخطيط المسيق.
 - الاقتناءً.
 - التخزين. ▪ النقل.

الألعاب والحيل الخداعية Games and Gimmicks

- تستخدم الألعاب والحيل الخداعية وما يماثلها من أجهزة كوسائل لكسر الجود (كما في بداية المحاضرة) أو كوسائل لحل المشكلات أو كوسائل لتبسيط الموضوعات المعقدة.
 - المميزات :
 - تقدم تجربة تعليمية ممتعة.
 - تهدئ الأفراد.
- تساعد على ارتباط الدارسين بعضهم ببعض وبالمعلم.
 - العيوب :
 - يمكن أن تكون مضيعة للوقت
 - يمكن أن تحجب الهدف

التعليم الذاتي والتعليم السابق برمجته Self-paced, Pre-programmed Instruction

- التعليم الذاتي والسابق البرمجة:
- یر ---- پ ور ح**ست بعی امبر طحیه:** یتضمن کتیب تدریبا ودلیل للدارس مصممة بحیث یتسع لاحتیاجات الدارسین کل علی انفراد. حسى العراد. ▪ التعليم بمساعدة الكمبيوتر يعد نموذجاً حديثاً لهذا الأسلوب
 - المميزات :

 - تمميرات . خطوة العلم تعتمد على المدرب. يمثل انجاه مستقبلي. يمكن أن يساعد عدداً من الطلاب على مستويات مختلفة. يمكن تكييفه مع أي فترة زمنية مطلوبة.
 - - العيوب :
 - بوب . لا يوفر أي نوع من التفاعل بين الأشخاص. مكلف ما لم تستخدم المعدات لأكثر من غرض.

 - لا تتوافر برامج حاضرة في موضوعات بينية. تحتاج إلى قدرات محددة في استخدام الكمبيوتر. قد يصبح مبعثاً لملل المتدرب.

الاحتفاظ المعلومات Retention

∎قواعد رئيسية:

- القاعدة رقم 1: يجب أن يمر استخدام الوسائط التعليمية في الاختبار التالي :
 - 1. يجب أن تكون مناسبة.
 - 2. يجب أن تكون مفهومة ومعدة إعداداً جيداً.
 - . يجب أن تكون ملائمة.
 - *القاعدة رقم 2*: على المتدربين أن يقوموا بتطبيق المعلومات من الوسائط التعليمية بعد عرضها عليهم.

أنواع الوسائط التعليمية **Categories of Media**

- أنواع الوسائط التعليمية: Categories of Media
 - 1. مساعدات محسوسة Tangible Aids
 - 2. الصور الثابتة .Still Pictures
 - 3. الصور المتحركة Moving Pictures
 - 4. الوسائط التعليمية المسموعة Audio Media
 - 5. المواد المكتوبة Written Materials

الأفراد / الضيوف People / Guests

- إن الاستعانة بمزيد من الأفراد أو " الخبراء " يمكن أن يفعم التدريب بالحياة والبعجة ويعطي كل من المدرب والمتدرب اتجاهات ومجالات مناسبة. كما أن الأفراد الآخرين من ذوي الدراية والعلم يمكن أن يقدموا معلومات أو آراء جديدة.
 - المميزات
 - يمكن أن توفر معلومات قد لا تكون متوافرة للمعلم. تقوي التعليم النظري مع بيان الاستخدامات العملية.
 - العيوب :
 - ∎ ًالتكلفة.
 - تنسيق الوقت. ..
 - الاختيار.

المحاكاة وتمثيل الأدوار Simulation and role Playing

- إن التمثيل الفعلى لنشاط من الأنشطة هو وسيلة بارعة لكل من الدارس والمعلم لتقرير ما إذا كانت المعلومات قد بلغت الدارس وهل يمكن تطبيقها. فعلى سيبل المثال ، إذا ما تم تعريف أحد الدارسين بكيفية ارتداء جهاز تنفس إلا أنه لم يتمكن من ارتدائه بالشكل الصحيح عندما طلب منه تمثيل الموقف ، وهو يعني حاجة الدارس إلى مزيد من التدريب ، ويمكن للمحاكاة ان تؤدي نفس الغرض على الرغم من أن المشاركة الفعلية لن تكون ظاهرة.
 - المميزات : تعطي فرصة فورية لتقوية المعلومات.
 - .
- ستي ترعب فورية سوية المعلومات. تساعد على إيجاد مواقف اختبارية بدون أن يكون هناك ملابسات سلبية. توفر فرصة راحة لكسر الروتين كما أنها ممتعة. يمكن أن تستخدم فب استعراض الأساليب المحتملة للتعامل مع المشاكل. .
 - يسل أن تستحدر في استعراض الاعتابية المحسب السعاد. يمكنها أن تسير وسط عملية التغيير في الميول. مناسبة لتحقيق أهداف تدريس المحتوى وخطوات معالجته.
 - العيوب:
 - قد يتقاعس بعض المتدربين عن المشاركة.
 مكن أن تكون مضعة للوقت.

الشرائح المصورة (سلايدز) 35مم 35mm Slides ▪ ما يزال للصور الفوتوغرافية قيمتها في تعليم المهارات الإدراكية وذلك عندما لا يكون للحركة أهمية لتفهم فكرة أو مفهوم. وهي غير مكلفة خاصة إذا ما التقطها مصور للشرائح المصورة نفس مميزات الصور الفوتوغرافية هاو وماهر. إمكانية عرضها على المجموعة ، ▪ المميزات يمكن للأفراد من استخدام ناظرة يدوية تيسر الدراسة الشخصية. ليس من الصعب الحصولٍ على نوعية جيدة. يمكن للمدرب أن يتحكم في سرعة عرض من السهل إنتاجها محلياً. ▪ العيوب : الشرائح المصورة حتى يتسنى له فتح باب عير مفيدة في المناقشات التي تدور بين مجموعة كبيرة. الحوار والمناقشة مشاكل التخزين. استعمال مزيج من الصور والطباعة ، ليست مناسبة لتوضيح الحركة.

الأشرطة السينمائية Film Strips

- Film Strips الأشرطة السينمائية
- تماتركة المسيناتية والمناطقة سلسلة من الشرائح المصورة في تسلسل ثابت ، وبعد استخدامها حالياً محدوداً فياساً بالشرائح المصورة والفيديو الذين أصبحا أكثر انتشاراً ومع ذلك ، فقد يجد المدرب شريطاً سينمائياً يرغب في عرضه وعلى هذا يجب أن يكون على علم بهذه الوسائط.
 - المميزات : يتم اقتنائها جاهزة.
 - عادة ما تكون بصورة نهائية مقبولة في مظهرها
 - العيوب :
 - قد تكون مكلفة
 - تحتاج إلى معدات خاصة
 - مزعحة
 - قد لا تتوافر
 - تتلف بسولة

السبورة ولوحة العرض الدوارة Chalkboard and Flipchart

- تقدم أدوات العرض الثابتة هذه ســل أكثر مرونة وأقل تكلفة لعرض المواد المكتوبة والصور الإيضاحية البسيطة.
 - المميزات :
 - الأُستخدام التلقائي يمكن أن يكون ذو نفع.
 - لا تحتاج إلى مساعدة في الإعداد.
 لا تحتاج إلى مساعدة في الإعداد.
 يمكن للدارسين استخدامها أيضاً.

 - يَمكنَ الإبقاء عَلَى الأضواء في الحجرة. .
 - العيوب :
 - لًا تسجيلات ولا نسخ. .
 - ليس من السَهل تكرارها.
 - مُحددة لمجموعات صغيرة.
 يمكن أن تكون موسخة للملابس ما لم يستخدم معها سبورة لا تستخدم الطباشير.
 - التخزين.

الصور المتحركة **Moving Pictures**

- يعتبر الفيلم 16مم الذي يتم إنتاجه تجارياً من الوسائط البالغة الجاذبة والمنيرة للانتباه ، وقد يستخدم في عرض حركة وتوضيح أحداث واقعية وتقدم قصص أو أحداث مؤثرة.
 - المميزات :
 - غالباً ما تكون النوعية عالية.
 - يظهر الحركة.
 - يضيف واقعية.
 - يمكن نسخه.
 - العيوب :
 التكلفة.
 - توافرها.
 - الإضاءة.
 - المعدات.
 - يصعب إيقافه لمناقشة النشاط الهامة.

الصور الفوتوغرافية Photographs

الشرائح المصورة (سلايدز) 35مم 35mm Slides

- تعمل الشرائح المصورة جيداً مع الأشرطة المسموعة وبتزامن آلي بين الصوت والصورة.
 - المميزات:
 - يمكن إنتاجها محلياً.
 - يمكن بسهولة تغيير ترتيب الشرائح.
 - يمكن تخزينها بسهولة.
 غير قابلة للتلف.
 - مفيَّدة لأي مجموعة بتغيير أساليب العرض. .
 - يمكّن استّخدامهاً في عمّلُيات التّعليم الذاّتي. .
 - يَمكن تحديثها بسُوولَة.
 الشرائح المصورة والسابقة التجهيز دائماً ما تكون معروضة للبيع.
 - يمكن تحويلها بسهولة إلى فيديو.
 - العيوبَ:
 - يكوب : تكلفة مثل الصور الفوتوغرافية ذات النوعية الجيدة. تحتاج إلى إضاءة خاصة.
 - ليست مناسبة لشرح الحركة.

الشفافــــة **Overhead Transparencies**

- تعتبر الألواح الشفافة التي يتم عرضها على جهاز الإسقاط شائعة الاستخدام حتى وقت فريب من الوسائل المفيدة في عرض النقاط الرئيسية للموضوع

 - يمكن للمعلّم أن يُعرض الموضوّع بخط اليدُ والرسم (مَما قد يطرأ على فكره أثناء محاضرة التدريب).
 - المميزات :

 - ميزات : استخدام الألوان يمكن أن يساعد في أحياء العرض. يمكن الإبقاء على الإضاءة بالغرفة. يسعل إعدادها. يمكن إعدادها بسرعة.
 - يمكن إعدادها بسرعه. يمكن انتساعد على تركير الانتباه. الشفاف أي ملحوظات خلال العرض. عيم مكلفة في إنتاحها. يمكن أن يستخدم معها جهاز إسقاط خفيف الوزن ومتنقل. لا تحتاج من المدرب أن يتحوله بوجهه عن الدارس.

 - - العيوب : يمكن أن يعتمد المعلم عليها تماماً ويستخدمها بكنافة. يشاع استخدام الألواح الشفافة الردينة.

الفانوس السحري **Opaque Projectors**

- إن الفوانيس المعتمة هذه تسقط صوراً من أشياء معتمة (كالكتب والمقالات) على شاشة
 - المميزات :
 - يسمح باستخدام صور مباشرة من الكتب والمجلات. تسقط الألوان.
 - يحتاج إلى تجهيزات محدودة.
 - العيوب :
 - يجب استخدامه في غرفة مظلمة
 - عادة ما للعرض عورك سنسك
 عادة ما يعرض صور غير واضحة ، وعادة ما تكون المواد
 المطبوعة من المغر بحيث يصعب عرضها
 يميل الجهاز إلى السخونة وغالباً ما تحترق فيه ورقة
 الصحيفة

الوسائط السمعية المواد المكتوبة Audio Media Written Material إن استخدام الوسائط السمعية يتوافق مع الأهداف الإدراكية يمكن إعداد هذه الوسائط السمعية أو شرائها بسرعة ودون كلفة عالية تعد المواد المكتوبة مفيدة للغابة في تضيف المذكرات الموزعة إلى عرض الوسائط السمعية وتساعد في استرجاع المعلومات. تدريس المهارات الإدراكية إلا أن لها فانّدة ▪ الْمميزات محدودة في تدريس السلوك الوجدانى تسمح باستعراض المعلومات. غير مكلفة. والمهارات الحركية متوافرة بسهولة. ▪ العيوب : قد تثير ملل الدارسين على نحو ما. قد لا تُعطي مجالاً للتبادل بين الدارسين والمدرب. الكتب المقررة والمراجع كتب التدريب Workbook **Text and Reference Books** تقدم معلومات مفصلة يمكن الحصول عليها بسهولة تسمح بممارسة الإجراءات وغيرها من الأحداث يمكن دراستها على انفراد وطبقاً لخطوة تعلم الفرد. التعليمية والتي يمكن أن يستجيب الدارسيٍن ▪ المميزات : كتابة من خُلالها للمسائل المطروحة وغالباً ما توفر سجل دائم يتلقون ردود فورية على استجاباتهم. متوافرة بسهولة • غير مكلفة نسّيباً ■ المميزات : يمكن الإشارة إليها والاستعانة بها بعد انتهاء الدرس لها نفس مميزات الكتب ▪ العيوب توفر الممارسة ▪ تحتاج إلى توافر قدرة أسـاسـية في القراءة والفهم ▪ ممكن أن تكون مضيعة للوقت ■ العيوب : مدة الاحتفاظ بالمعلومات قصيرة لها نفس عيوب الكتب النشـــرات الدوريات Periodicals Handouts شائعة ومفيدة في توفير توجيهات محددة حول أنشطة وكذا توفير المعلومات المكملة. لها فائدة خاصة في تقديم المعلومات الجارية تستخدم كمفرز جيد للوسائط المختلفة كما أنها تساعد في عملية الاحتفاظ بالمعلومات ▪ المميزات :

- يجب على المعلِّم أن يحسـن اختيار وقت تقديم المواد المكتوبة
 - المميزات :
 - لها نفس مميزات الكتب. يمكن أِن تكمل وتدعم الوسائط الأخرى.
 - يمكن أن توفر معلومات محددة.
 - العيوب :
 - لها نفسٍ عيوب الكتب.
- يمكن أن توضع في غير موضعها.
 يمكن أن تكون معوقة للعرض عندما يقوم المتدربون بالقراءة والكتابة في وقت يتوجب عليهم الإنصات.

- لها نفس مميزات الكتب
- تصدر في حينها وليس قبل مثل الكتب
 - ∎ العيوب :
 - لها نفس عيوب الكتب

التطبيق/التنفيذ **Delivery of Instruction**



مقبول مقبول مقبول

S1.2-38

إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment • تأكد من أن الغرفة والأثاث مريحين. • انتقاء تنظيم الجلوس الذي يتناسب مع مواد وأساليب البيان والعرض. • رتب الأثاث ليتناسب مع احتياجاتك وقبل وصول المتدربين • يفضل أن يمكن الترتيب جميع الدارسين من الرؤية والسمع والتفاعل مع بعضهم البعض إضافة إلى تفاعلهم مع المدرب • تأكد من نظافة الغرفة والأثاث وخلوهم من أي	إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment • تأكد من أن الغرفة يتوافر فيها الهدوء الكاف • تأكد من أن درجة حرارة الغرفة مناسبة • تأكد من أن الدارسين قادرين على رؤية المساعدات البصرية وسماع المعلم • ضع ترتيبات تقديم مرطبات إن أمكن
إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment = تأكد من توافر جميع المعدات والمواد الكافية ومعدات السلامة الشخصية -لدواعي الاستعراض والمحاكاة- قم بتجربتها مقدماً. قم بتنفيذ مراجعة قواعد السلامة بما في ذلك المخارج والمعدات والاستخدام المناسب للكابلات الكهربائية الخ = جهز كل المواد المطلوبة خلال المحاضرة. الدرس	إرشادات لإدارة البيئة المادية للتدريب : Guideline for Managing the Physical Environment قم بالرسم أو التخطيط المسبق على السبورة إذا كان ذلك مناسباً. ارفع كل ما هو ملفت للانتباه. استخدم بطاقة الاسم الهرمية التي توضع على المكتب وبطاقة الاسم التي تعلق على الصدر. قم بتوزيع الخرائط والتوجيهات على الدارسين ، وتأكد من وجود العلامات التي توجه الدارسين إلى غرفة التدريب
أساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين • كن مبكراً ومستعداً وقم بتحية الدارسين أثناء توافدهم. • عرف الفصل بإيضاح ما سيتم تدريسه وحدد الإطار التعليمي واشرح كيف أن ذلك سيلبي احتياجات / العتمامات / خلفيات الدارسين. • أحفظ أسماء الدارسين في أسرع وقت ممكن ، أحط الدارسين علماً بتطور التعليم (بمعني : " أما النقطة الثانية والتي يتحتم تفسيرها "" وآخر تدريب لنا اليوم و ").	أساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين المجموعة خارج الفصل ، وتجنب إن أمكن المناقشة أمام الآخرين. كن عادلاً وحسن التقدير لجميع أفراد مجموعة الدارسين. • اسمح بفترات راحة متكررة. • خفف من حدة توتر المتدربين بتسيير مقابلتهم

حافظ على انتباه الدارسين مركزا على النفاط الربيس. (بمعنى : " المهم هنا هو ... ") واستخدم الوسائل التعليمية أو الرسومات الإيضاحية لإبراز هذه النقاط.

إرشادات للعرض الشفهي الفعال **Guidelines for Effective Presentation**

لك في خلال اللقاء وفي فترات الراحة.

- حافظ على الاتصال بالنظر بينك وبين الدارس.
- استخدم درجات ونغمات مختلفة من الصوت.
 - وجه أسئلة باستمرار.
- أخلق جواً من الألفة بالظهور دون تكلف. احلق جوا من الألفة بالطهور دون لحلف.
 استخدم اللغة المناسبة للدارس ، فالتباين في مستوى
 اللغة المستخدمة في التعليم والمهارات اللغوية للدارسين عادة ما يؤدي إلى فقدان الدافع لدى الدارسين إضافة إلى مقاومتهم وغير ذلك من مؤثرات سلبية.
 تأكد دائماً من درجة اهتمام وفهم الدارس.

 - اسمح ببعض الوقت لأسئلة وتعليقات الدارس.
 - ابدي حماسك بالموضوع

اساليب إدارة الفصل الدراسي والمحافظة على انتباه الدارسين

- جافظ على أعلى معدلات لمشاركة الدارس في العملية التعليمية.
- التعييميي. اتبع نظام الأسئلة والتدريبات. استخدم أساليب تعليم أخرى غير المحاضرة (مثل : حلقات المناقشة ، الألعاب والمحاكاة ، المناقشة الجماعية ، الخبرات الميدانية وأشرطة الفيديو والسينما .. الخ).
 - قم بالتدريس بمستوى يتناسب ومجموعة الدارسين المحددة أمامك. استخدم مختلف الوسائل والأساليب إلتعليمية.
- أثناء المُحاضرات: تحرك قريباً من الفصل و / أو حول الغرفة إذا ما لاحظت أن درجة الانتباه بِدات تِنخفض ،
- ا فيهاد المحصص ، قف قريباً من أو وجه تعليقاتك مباشرة لمؤلاء الذين يبدو عليهم النعاس أو قم بتغير سرعة أو أسلوب التدريس.

أساليب طرح الأسئلة Questioning Techniques

الأسئلة وسيلة مساعدة للدارس:

- تنبه الدارس للنقاط الأساسية.
- تحتاج إلى مشاركة من الدارس.
 - تدعم العملية التعليمية
 - تخدم كأسلوب للمشاركة.
- تعمل كوسيلة لاسترجاع المعلومات.
- لها فائدتها كوسيلة للمحافظة على الاهتمام والانتياه.

أساليب طرح الأسئلة Questioning Techniques

- الأساليب الفعالة لاستنباط الأسئلة/ الأجوبة :
 ليعض الأسئلة عدة إجابات مقبولة أو "صحيحة " أكد أو دعم كل الإجابات الصحيحة بتعليق ايجابي.
 إذا أجاب أحد الدارسين إجابة خاطئة ، فحاول أن تشجعه على بلوغ الإجابة ، قدم له كل مساعدة ممكنة تمكنه من بلوغ الإجابة الصحيحة ، لا توبخ الدارس أو تضايقه أمام الأخرين ، ومن الأفضل دائما ألا تطلب من دارس أخر أن يجيب ويصح إجابة الدارس
- على المعلم أن يتجنب الدخول في مجادلات مع الدارسين إذا ما ناقش أحدهم تفسيرات ونتائج المعلم ، شجع الدارسين على المناقشة المفتوحة.
 - على المعلم ألا يتجاهل أسئلة الدارسين.
 - على المعلم أن يعود إلى الدارس إذا ما وعد بذلك.

إرشادات للعرض الشفهي الفعال **Guidelines for Effective Presentation**

- استعن بالدعابة المناسبة لإقامة واستمرارية المودة مع الدارس. حركة المتحدث لابد وأن تكون ذات غرض ويجب ألا تصرف النظر بعيداً عنّ مضمون العرض:
- كنّ مترناً ولا تتحرُكٌ بعصبية أو تجر قدميك متثاقلاً أو تلوح بالأوراق أو بيديك بشكل يصرف الانتباه.
 - يتجديب مخاطبة الدارس وأثنت تواجه السبورة أو عندما تستخدم الوسائل التعليمية الأخرى
- قلل من حركات آليد والجسم غير الضرورية والتي تشتت الانتباه. م الم الم المراجب الميد والمجسس عير الصرورية والتاني لشبتت الالتباة. تحرك مقترباً من السامعين لتشجيعهم على المشاركة وتحرك بعيداً لتثبيط العزم عن المشاركة.
 - قف قريباً من وحافظ على اتصال النظر بأي فرد غير منتبه ، جازي ا المنتبة بالانتعاد عنه.

أساليب طرح الأسئلة Questioning Techniques

- الأساليب الفعالة لاستنباط الأسئلة/ الأجوبة :
- ً عادة ما توجه الأسئلة إلى الدارسين ككل ويجب أن تكون هناك وقفة حتى يتسنى للجميع فرصة التفكير في الإجابة ثم يتم دعوة أحد الأفراد بالاسم للإجابة.
- بالأسطر في أبحابه. عندها يسأل أحد الدارسين سؤالاً في الفصل ، فإن على المعلم التأكد من أن جميع الحاضرين قد سمعا السؤال ، وإذا دعت الضرورة فليكرر المعلم السؤال ، وللمعلم عدداً من الخيارات في هذا الصدد : أن يجيب على السؤال.
- المانية بينا على السؤال. أن يجيب على السؤال إلى دارس آخر بالفصل. أن يوجه السؤال إلى دارس آخر بالفصل. إذا أجاب أحد الدارسين على السؤال ، فإن على المعلم أن يتأكد من أن الجميع قد سمعوا الأجابة وان الإجابة صحيحة والا فلتستمر المناقشة حتى يتم التوصل إلى الإجابة الصحيحة وتحدد بانها الإجابة الصحيحة .

أساليب طرح الأسئلة Questioning **Techniques**

سمات الأسئلة الحيدة :

- لها غرض واحد محدد.
- لا تشجع على التخمين
 - يفهمها المشاركين.
- ليست متعددة الإجابات حيث تشدد على نقطة
 - واحدة.
 - لا تقترح الإجابة.
 - تحتاج إلى إجابة محددة.
 - تشجع الدارس على التحليل والتركيب.

أساليب طرح الأسئلة Questioning **Techniques**

- استخدامات الأسئلة: استخدم الأسئلة أثناء المقدمة لأجل :
 - كسب الانتياه.
 - حث الدارس على التفكير. • تعريف الدارسين
- استخدم الأسئلة أثناء العرض لأجل:
 - التشديد على النقاط.
 - كسب المشاركة.
- الحصول على تلقيم راجع أو معلومات. استخدم الأسئلة في نَّهاية العرض لأجل :
 - الحصول على تلقيم راجع أو المعلومات.
 - توضِيحَ النقاِط غير المفهومة.
- توصيع المعاط غير المعلومة. التأكد من أن الدارس قد بلغ مستوى الأداء المطلوب. تدعيم الدارسين.

أنماط المتدربين وكيفية التعامل معها

- إن أهداف التعليم يمكن أن تتحقق حينما تتم مشاركة المندرب بطريقة فعالة ونشطة في عملية التدريب ، وعلى استيقاف المسئلة والأحوية ، سوى نعدم لتنديب الانتباه المندرب ، والملاحظة والاستعماع والاستجواب " استيقاف المسئلة والأحوية ، اسوى نعدم لتنديب المندرب ولكى من حين لاخر فان بعض الطروف المعبة قد تنشأ طبقاً لمدى مستوى المشارك المندرب ، الون الاحتلافات في شخصيات الأفراد وافطيانهم في التدريب ودائماً ما وتحد مسئلة مستوى المشارك ولو العكاس طبيعي للاحتلافات في شخصيات الأفراد وافطيانهم في التدريب ودائماً ما وتحد مسئلة محيما المندرب أو الأمرين من المعتاد. مكن ان تكتمل عوم كل انشطاف التدريب في استطيعوا الاشتراك في التدريب كما أن يكون مضعة للوقت ولن المانا كمان سياس من المانيات المنازب المنافعة المانيب عنه المنافعة المانيب من المعتاد.
- إذا كتاب حد المتدرسين يتكلم كتبرا فإن الأخرين لي يستطيعوا الاشتراك في التدريب كما أن يكون مضيعة للوفت ولن يمكن ان تكلم عرض كل السفة التدريب. تنعيم أو تنظيم را فتاكل استهله الدريب. ما هين أراقل حول هذا السؤار ؟ "با عيرين إلت جديث العيد بالمجموعة ، لذلك فإنني اعتقد أن وجهة نظرك يمكن أن تكون لها قيمتها على وجه التحريد هما هير أراقل حول العيد بالمجموعة ، لذلك فإنني اعتقد أن وجهة نظرك يمكن أن تكون لها قيمتها على وجه التحريد هما هير أراقل وطن العيد المعلوم قط : التحريد هما عن مزيرة بالعلم بللأ من التركير على السؤال المطري فظ : التحريد قل عاريز أن يول العيد بالمجموعة ، لذلك فإنني اعتقد أن وجهة نظرك يمكن أن تكون لها قيمتها على وجه وأيجاد حلول بأن ، ولأن ما هو السبيل الذي تراد أحل مشئلة له المطري فظ : انكار المعلول الا : ولأن ما هو السبيل الذي تراد أحل مشئلة لعان المال المجموعة يعتقدون مثان أرك المحتما إلى أن علم المركير على المتوال المطري فظ : المال محمومة يعتقدون مثل عرفي المعلول الا الحريث المعام و على المؤال المطري فل : المال المحمول الذي المناصل على المالي المالي المالية الذي المالي المالي المالي المالي المالي الا المالي الذي المال المعلوم لعراب الولان أه ولان ما قلم المالي ذي المعام الموالي المالي المالي المالي المالي المالي المالي المالي الذي الذي المالي المالي المالي المالي المالي المالي المالي الذي الذي الذي الذي أولان مالي المالي المالي الذي الذي ألول المالي الذي الذي المالي الذي ألمالي المالي المالي المالي المالي الذي الذي المالي المالي الذي ألمالي المالي المالي المالي المالي المالي المالي المالي المالي المالي الذي المالي المالي المالي المالي المالي الذي المالي المالي المالي الذي الذي المالي المالي المالي المالي المالي المالي المالي الذي المالي المالي الذي الذي المالي المالي المالي المالي المالي المالي الذي المالي المالي المالي الذي المالي الذي الذي المالي المالي المالي الذي الذي المالي والي الى المالي المالي الي الي الي المالي الي المالي المالي المالي في مالي المالي في مالي المالي في مالي الذي المالي في مللي المالي في مالي المالي في مالي في ألي أل المالي المالي المالي ا

وكيفية التعامل معها

أنماط المتدربين

أنماط المتدربين وكيفية التعامل معها

- إن أهذاف التعليم بمكن أن تتحقق حينما تتم مشاركة المتدرب بطريقة فعالة ونشطة في عملية الندريب , وعلى هذا فإن مهارات النيسير المختلف وهي قدرة حدث الانتباه للمتدرب ، والملاحظة والاستماع والاستجواب استيطاق الاستانة والحوية ، سوف تعدم لشتجع المتدرب ، ولكن من حين لأحر فإن بعض الطروف المعية فد نشأ معلماً لمدت مستوى اشتراك المعربي المعربي الاختلافات في شحصيات الأدار وأفضايتهم في الندرب. وتوجد مشترك انتبرات المتدرب ، وتاريخ ان احد المتدرب بي المركز ما والاكر والأل مكن المعناد ميكن أن احد المتدربين علم كبار أقال الأحرين لي سنطيموا الاشتراك في التحريب كما أن يكون مضيعة للوقت ولن معالماً أكن أحد المتدربين مامياً قابا سيفند مشاركتهم ومداخلاتهم إلى العملية التدربية بالإضافة إلى مسكلة من قارا بأكان أحد المتدربين مامياً قابا سيفند مشاركتهم ومداخلاتهم إلى العملية التدربية بالإضافة إلى مسكلة من هي الزاك ولا هذا السؤنه أمر لا الاحرين المعاد. من على الزاك ولا هذا السؤنه إلا لا الدول حول ما تربيره بالمعارية برالا مستقد مشاركتهم ومداخلاتهم إلى العملية التدربية بالإضافة إلى مسكلة الدول حول ما تربيره بالمعارية برالا مي المعان الما ومن العام الموال لعملية علي . بي عريزي أن حولية المعار بيلام سيفنة مشاركتهم ومداخلاتهم إلى العملية للذير. من عاري أن حولية المعار بيلام المعارية واليا هدفا تعديد المسارية لم المي المعن المعارية ال الدول حول ما ترفيزه مالعل بلار مي العلى وإضافة عدينا تعديد المسارية لمان الدول والما السيفار الذي ترابة على مشكلة فالن ؟ الدول الن الوالات مقوا الما لا ليل منكرة لكن المارية من المعارية المعانية تعديد المساركان المرتف تمحضها عن هذه العارات الدول والديا مي والانا ما قوا السيار الذي ترابة على مشكلة فان ؟ الدول الن الوالات مقوا السيار الذي ترابة على مشكلة فالن ؟ الدول بين رابي الوالات من عمرة الالمانية على ملكه فان ؟ المي المار الزالي الوالي . المان الموصوعة بيفنوية مان أن راك ركون . المي المان المان راك معارة الالمستدي . المي المالي المالي المان . الما الموصوعة بيفنوية معانة المالم معها خلال المرس والطبع بمعا والدي ربعا . الما الموصوعة بيفنوية مي المالي المعاني .

أنماط المتدربين وكيفية التعامل معها

- إن أهداف التعليم بمكن أن تتحقق حينما تتم مشاركة المتدرب بطريقة فعالة ونشطة في عملية التدريب ، وعلى هذا فإن مهارات النيسير المختلفة وهي فردة خديا الانتباه للمتدرب ، والملاحظة والاستعام والاستجواب " استيطاق المنته والأحوب ، سوى تحدر للشجيع المتدرب ولكن من حين لأخر فإن بعض الطروف المعبة قد تتشا صليفا المدى مستوى المشاركة الولية واليا والتي للاختلافات في شخصيات الأفراد وافطلباتهم في التدريب ودائماً ما إذا كان أحد المتدريب نتائم في أوليا الأخرين لن يستطيعوا الاستراك في التدريب كما أن يكون مضمه للوقت ولان أما إذا كان أحد المتدريب نتائم تبرأ والان الأخرين لن يستطيعوا الاستراك في التدريب كما أن يكون مضعة للوقت ولن المثالات تحمل حرص كل أسفاط السريب المعاد ... عن معرف الاستراك في التدريب كما أن يكون مضعة للوقت ول
- .
- إذا كان احد المتدريين يتكلم كنيرا فإن الاحرين لي بستطيعوا الاشتراك في التدريب كما ان يكون مصيعة للوقت ولي يمكن ان كمل عرض كل الشعلة الندريب تقييم و تعديم اذا كانا يتطعمون أمر لا" « با عزيري ان حيدين العملون أمر لا" « با عزيري ان حيدين العملون أمر لا" الدوان حيات ما تم شريره بالغط بدأ من التركيز على السؤال المطروح فغل : الدوان حول ما تم شريره بالغط المراس المعلم و فغل : الدوان حول ما تم شريره بالغط المراس المعلم و فغل : الدوان حول في اوانان ما والسبيل الذي تراه لعل مشتكله فلان ؟ اذكر المعلم الحرب المعلم و أمر فعل من التركيز على السؤال المطروح فغل : اذكر المعلم الي اوانان ما والسبيل الذي تراه لعل مشتكله فلان ؟ اذكر المعلم الي اوانان ما والسبيل الذي تركين ما هدان عمل من المي ما هدان المعلم و فغل : اذكر المعلم الي الان معلم كما يحرب و اعتمار الما يستعرب العلم المعلم الذي المعلم على المعلم الذي تحديث المراب المال المعلم الما يستم علم العلم أو المن مشتكل فان ما المعلم على المعلم على المعلم الذي الما المعلم الي المان معلم كما يعلم و أمن هذا له معلم العلم المعلم المعلم الما لما معلم المعلم الذي المعلم على المعلم على المعلم الما لمعلم الذي المعلم على المعلم المعلم على وحه الذي المعلم الذي سنتخرمها كمراجع واعن في أن هناك معلم المعلم الذي الدي تركم على برايك الخاص. اسال المعمومية بعدين الذي أي كرى المعلم و المنافي الي ما هما المعلم الذي الدي من المعلم المعلم الذي المعلم في المال الم سنتخرم في المي المعلم و سينافي لي كرى المعديل الذي المعلم في الأبر الذي تركم على برايك الخاص. المال المع من قد على المعلم الما يضائع كرى المعديل

<u>S1.3 各公社の現状</u>

CHAPTER 1 CURRENT CONDITIONS OF 3 ACs

1.1 Organization

The organization charts of the GHAPWASCO, MCWW as of August 2014 are shown in Figure 1-1, 1-2, and the SHAPWASCO as of February 2015 are shown in Figure 1-3.

In GHAPWASCO, SOP and NRW section became independent from general department for technical support, and the both new departments have been established under operation & maintenance sector in order to disseminate the SOP and NRW technologies promptly.

MCWW established a new department for SOP named "Following up SOP's Department". C/P team was currently assigned as permanent staff, and develops SOP program for further expansion. The other hand, NRW team is organized under the general department.

Number of staff members for the GHAPWASCO, MCWW Governorates is shown as Table 1-1.

Table 1-1 Number of S	Number of Staffs for GHAPWASCO, MCWW Governorates (as o								
		GHAPWASCO	MCWW						
Engineer	ing Staff	163	228						
Technica	l Staff	2,994	4.051	T					
Other Sta	ıff	2,992	4,961						
	Total	6,149	5,189	Τ					
Source: GH	IAPWASCO, MC	WW		_					

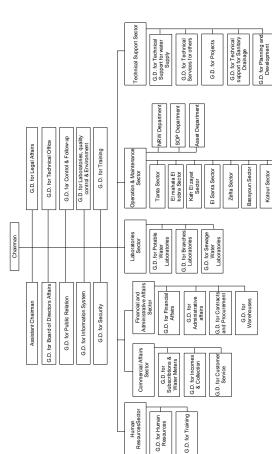
SHAPWASCO established department for WDM under the Chairman supervision directly as shown in the organization on 17th August 2014, decree No (316) for the year 2014.

Table 1-2 Number of Staffs for SHAPWASCO (as of February 2015)

	SHAPWASCO
Engineering Staff	215
Technical Staff	2,452
Other Staff	3,076
Total	5,743

1

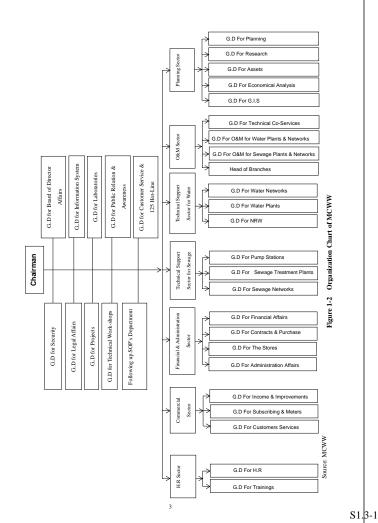
Source: SHAPWASCO

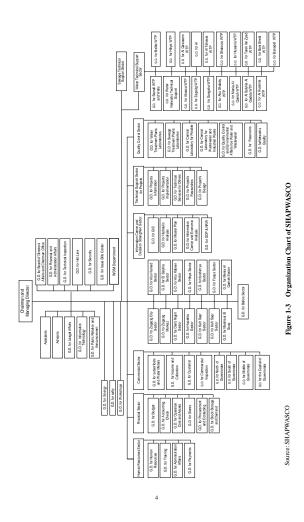


2



Source: GHAPWASCO





1.2 Served Population and Coverage

At presents, SHAPWASCO, GHAPWASCO and MCWW cover almost whole the three Governorates. The coverage ratio for water supply is, nearly, as high as 100% as shown in Table 1-3 to Table 1-5. Most citizens have accesses to the water supply service. Their needs have been already shifted from service coverage expansion to quality of service.

Table 1-3 Served Population and Coverage in each Governorate (SHAPWASCO)

FY	FY	FY	FY	FY
(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)	(2013/2014)
5,770,809	5,824,852	6,239,579	6,351,891	6,488,048
813,559	830,833	867,977	873,055	897,828
773,969	793,020	822,890	827,734	846,708
10,940	10,375	14,697	14,376	14,525
360	1,519	643	965	1,307
26,843	25,220	28,408	29,043	27,944
1,447	699	1,339	937	6,211
5,753,497	5,815,638	6,230,654	6,345,834	6,481,882
7.09	7.01	7.19	7.28	7.23
17,312	9,214	8,925	6,057	6,166
99.7%	99.8%	99.9%	99.9%	99.9%
	(2009/2010) 5,770,809 813,559 773,969 10,940 360 26,843 1,447 5,753,497 7,09 17,312	(2009/2010) (2010/2011) 5.770.809 5.824.852 813.559 830.833 773.569 793.020 10.404 10.375 360 1.519 26.843 25.220 1.447 699 5.753.497 5.815.638 7.09 7.01 17.312 9.214	(2009/2010) (2010/2011) (2011/2012) 5,770.809 5,824,852 6,239,579 813,559 880,833 867,971 773.960 793,020 822,980 10,4040 10,375 14,607 320 1,519 6,643 2,6,843 25,220 28,408 1,477 699 1,339 5,753,407 5,815,638 6,230,654 7,09 7,19 7,19 17,312 9,214 8,925	(2009/2010) (2010/2011) (2011/2012) (2012/2013) 5.770.809 5.824.852 6.239.579 6.351.891 813.559 830.833 867.977 873.055 773.569 979.500 852.2800 827.734 10.940 10.375 14.467 14.376 360 1.519 643 295.203 26.843 25.220 28.408 29.043 1.447 609 1.339 937 5.753.467 5.815.638 6.230.654 6.345.834 7.09 7.01 7.19 7.28 17.312 9.214 8.925 6.057

Table 1-4 Served Population and Coverage in each Governorate (GHAPWASCO)

	FY (2009/2010)	FY (2010/2011)	FY (2011/2012)	FY (2012/2013)
Total Population of Governorate	4,310,946	4,389,243	4,468,283	4,556,759
Number of Customers	787,195	805,944	834,641	853,633
Domestic	725,954	743,674	70,750	789,246
Governmental	9,300	9,384	9,469	9,527
Investments	3,921	4,739	5,820	6,800
Commercial	44,163	45,122	46,155	45,932
Others	3,857	3,025	2,420	2,128
Served Population	4,268,946	4,334,543	4,388,283	4,497,521
Served Population per Connection	5.48	5.45	5.35	5.34
Non Served Population	42,000	54,700	80,000	59,238
Average Percentage of Coverage	99.0%	98.8%	98.2%	98.7%

Source : GHAPWASCO

Table 1-5 Served Population and Coverage in each Governorate (MCWW)

	FY	FY	FY	FY
	(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)
Total Population of Governorate	3,648,116	3,507,988	3,640,190	3,728,485
Number of Customers	675,844	699,877	740,403	760,648
Domestic	637,343	660,793	687,830	711,837
Governmental	7,694	7,946	7,272	11,088
Investments	390	653	704	793
Commercial	30,417	30,485	34,400	36,930
Others	0	0	10 197	0

5

Table 1-7 Number and Conditions of Water Meters (SHAPWASCO)

	FY 2009/20	010	FY 2010/20	011	FY 2011/2	012	FY 2012/20	013	FY 2013/2	014
Total Number of Customers	813,559		830,833		867,977		873,055		897,828	
Number of Customers with Water Meters	808,702	99%	826,196	99%	860,129	99%	863,828	99%	884,485	98.5%
Number of Working Water Meters	702,946	86%	740,593	89%	778,361	90%	785,305	90%	811,776	92%
Number of Customers without Water Meters (Flat Rate Account)	4,857	1%	4,637	1%	7,848	1%	9,500	1%	13,343	1%
Source : SHAPW	ASCO									

Table 1-8 Number and Conditions of Water Meters (GHAPWASCO)

	FY 2009/2010		FY 2010/2011		FY 2011/2012		FY 2012/2013	
Total Number of Customers	787,195		830,833		834,641		853,633	
Number of Customers with Water Meters	772,638	98%	826,196	99%	820,022	99%	838,021	98%
Number of Working Water Meters	685,199	87%	740,593	89%	750,219	89%	687,657	81%
Number of Customers without Water Meters (Flat Rate Account)	14,557	2%	4,637	1%	14,637	1%	76,406	9%
Source : GHAPWASCO								

Table 1-9 Number and Conditions of Water Meters (MCWW)

	FY 2009/2010		FY 2010/2011		FY 2011/2012		FY 2012/2013	
Total Number of Customers	687,110		805,944		740,403		760,635	
Number of Customers with Water Meters	675,844	98%	791,354	98%	730,206	99%	749,986	99%
Number of Working Water Meters	659,244	96%	719,183	89%	681,804	92%	693,547	91%
Number of Customers without Water Meters (Flat Rate Account)	11,266	2%	14,590	2%	10,197	1%	10,649	1%

1.3.2 Water Production and Water Sale of the Water Supply Activity

The volumes of water production and sold water are estimated as shown in Table 1-10 to Table 1-12. Reflecting the growing population, both produced and sold volumes are increasing. Share of domestic water is 75% - 87%. SHAWASCO has a tendency to have high sales ratio for governmental uses. GHAWASCO and MCWW have, however, higher ratios for commercial uses and for investment customer uses. According to the mentioned information, non revenue water ratio is roughly calculated at 25% for SHAPWASCO, 20% for GHAPWASCO, and 30% for MCWW.

7

	FY	FY	FY	FY
	(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)
Served Population	1 -	-	3,567,386	3,717,300
Served Population per Connection	5.40	5.01	4.92	4.90
Non Served Population	-	-	72,804	11,185
Average Percentage of Coverage	-	-	98.2%	99.7%

1.3 Financial Status

1.3.1 General Information

(1) Tariff System

The Egyptian Government commenced step-wise increase of tariff in November 2012. The current tariff system for water and sewerage is shown in Table 1-6. Current tariff system is same for the 3 ACs.

Table 1-6 Tariff System for Water and Sewerage

Type of Usage	Water Tariff by Pound	Sewerage Tariff (Ratio of Water Tariff)
Domestic (from 0 to 10 meters ³)	0.23	
Domestic (from 0 to 20 meters ³)	0.35	
Domestic (from 0 to 30 meters ³)	0.47	40%
Domestic (from 0to 40 meters ³)	0.49	
Domestic (More than 40 meters ³)	0.54	
One room	3.9	
Two room	4.6	40%
Three rooms	6.1	40%
More than three rooms	7.5	
Services (Youth club, Clinics, NOG, Syndicates, etc)	0.64	75%
Governmental	0.84	75%
Commercial	0.99	75%
Industrial	2.34	75%
Touristic(Hotels, restaurants, etc)	2.34	75%
Others (Construction works, Farms, Petrol activity and stations, Golf club. etc) Source : SHAPWASCO, GHAPWASCO	6.4	75%

(2) Customers (Connections)

Most customers have water meters. According to the 3 ACs, the ratio of working water meters is around 90% in each governorate. Table 1-7 to Table 1-9 shows installation situations of customer water meters. Each water company has tried to increase the working water meters by new installation or replacement.

6

Table 1-10 Water Production and Water Sale (m³) (SHAPWASCO)

	FY	FY	FY	FY	FY
	(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)	(2013/2014)
Total Produced Water	309,998,020	350,551,030	353,307,772	356,417,228	362,034,482
Total Sold Water	232,709,986	263,021,146	265,119,265	267,313,919	304,734,051
Domestic	195,128,809	224,917,314	223,306,536	229,389,908	263,556,168
Governmental	32,245,947	31,233,680	36,625,886	32,169,013	3,520,815
Investments	1,314,833	1,879,180	1,334,453	1,115,120	1,215,802
Commercial	3,695,473	4,065,124	3,666,844	4,015,131	3,663,098
Others	324,924	925,848	185,546	624,747	1,093,168

Table 1-11 Water Production and Water Sale (m³) (GHAPWASCO)

	FY	FY	FY	FY
	(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)
Total Produced Water	274,338,810	287,731,568	296,362,477	300,963,800
Total Sold Water	222,332,806	235,100,704	242,359,418	247,152,254
Domestic	194,394,779	195,153,058	207,871,713	215,463,705
Governmental	10,914,129	12,966,339	11,851,211	12,771,091
Investments	2,703,113	3,868,495	3,712,370	3,287,538
Commercial	12,386,335	19,628,810	16,789,758	14,153,298
Others	1,934,450	3,484,002	2,134,342	1,476,622
ource : GHAPWASCO				

Table 1-12 Water Production and Water Sale (m³) (MCWW)

	FY	FY	FY	FY
	(2009/2010)	(2010/2011)	(2011/2012)	(2012/2013)
Total Produced Water	210,554,561	213,036,224	225,892,062	237,176,169
Total Sold Water	147,169,155	154,876,580	163,810,460	173,844,805
Domestic	115,674,628	118,839,428	124,354,250	132,006,397
Governmental	5,746,258	9,281,721	9,633,846	11,630,294
Investments	14,013,583	10,765,798	3,330,800	3,534,830
Commercial	4,534,686	8,789,633	19,291,564	19,473,284
Others	7,200,000	7,200,000	7.200,000	7,200,000
Source : MCWW				

1.3.3 Expenditures and Income

The expenditure, generally, consists of labor cost, operation maintenance cost, taxes, loan interest, depreciation and others. Incomes, generally, consists of amount of collected tariff, income from installation of water meter, subsidy from central government and saves from previous years, etc. After the revolution of 2011, prices of every goods and labor costs are increasing. Moreover, the governmental subsidies are decreasing. Accordingly, debts are accumulated in the 3 ACs. Table 1-13 to Table 1-15 show the comparison of total expenditure and income for the 3 ACs.

Table 1-13 Summary of Total Expenditures and Total Income (SHAPWASCO)

	FY	FY	FY	FY	FY
	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
	(LE)	(LE)	(LE)	(LE)	(LE)
Total of Expenditures for Water Supply and Production Activity (O&M only)	181,331,206	221,862,380	251,248,917	260,648,236	313,417,105
Total Income of Water Supply Activity	157,257,705	198,744,221	178,887,815	218,564,193	174,703,316
Balance	▲ 24,073,501	▲ 23,118,159	▲ 72,361,102	▲ 42,084,043	▲ 138,713,789

Source : SHAPWASCO

Table 1-14 Summary of Total Expenditures and Total Income (GHAPWASCO)

FY	FY	FY	FY
2009/2010	2010/2011	2011/2012	2012/2013
(LE)	(LE)	(LE)	(LE)
131,023,125	162,531,073	194,513,447	289,131,433
240,050,721	201,157,463	173,879,669	208,980,067
109,027,596	38,626,390	▲ 20,633,778	▲ 80,151,336
	2009/2010 (LE) 131,023,125 240,050,721	2009/2010 2010/2011 (LE) 2010/2011 131,023,125 162,531,073 240,050,721 201,157,463	2009/2010 2010/2011 2011/2012 (LE) (LE) (LE) 131.023,125 162.531,073 194.513,447 240.050,721 201,157,463 173,879,669

Source : GHAPWASCO

Table 1-15 Summary of Total Expenditures and Total Income (MCWW)

	FY 2009/2010 (LE)	FY 2010/2011 (LE)	FY 2011/2012 (LE)	FY 2012/2013 (LE)
Total of Expenditures for Water Supply and Production Activity	143,384,088	184,698,098	367,429,011	390,772,440
Total Income of Water Supply Activity	87,602,119	78,552,321	182,466,758	241,931,955
Balance	▲ 55,781,969	▲ 106,145,777	▲ 184,962,253	▲ 148,840,485

9

Source : MCWW

<u>S2. SOP 活動</u>

<u>S2.1 SOP 活動に係るアクションプラン</u>

GHAPWASCO



GHARBIA POTABLE WATER AND SANITATION COMPANY (GHAPWASCO)



THE PROJECT FOR IMPROVEMENT OF MANAGEMENT CAPACITY OF OPERATION AND MAINTENANCE FOR WATER SUPPLY FACILITIES IN NILE DELTA AREA

Action Plan for SOP Activities

December 2011

Project Team GHARBIA POTABLE WATER AND SANITATION COMPANY (GHAPWASCO)

Action Plan for SOP Activities

Table of Contents

Introduction
Chapter 1. Model Facility Selection
1.1 Current Conditions
1.2 Longlist Preparation
1.3 Basic Survey (Shortlist Preparation)
1.4 Detail Survey (Model Facility Selection)
Chapter 2. Actions to be taken for SOP Activities
Chapter 3. Flow of Actions for SOP Activities
Chapter 4. Description of Each Action
Action 1 Survey the current conditions of water supply facilities
in Gharbia Governorates
Action 2 Select 3 model facilities in Gharbia Governorates
Action 3 Organize SOP teams
Action 4 Conduct training for developing and applying SOPs
at the facilities of Sharkiya Governorate
Action 5 Revise SOPs of Sharkiya Governorate, if necessary
Action 6 Develop SOPs for model facilities in Gharbia Governorates
based on SOPs for SHAPWASCO
Action 7 Conduct On-the-Job Training for GHAPWASCO to apply SOPs
in operation and maintenance
Action 8 Monitor the progress of SOP activities
Action 9 Draft the policy/plan for disseminating SOP to the other Markazes 10
Chapter 5. Implementation Schedule of SOP Activities

Project Team / GHPWASCO

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

Abbreviations

 GHAPWASCO
 Gharbia Potable Water and Sanitation Company

 JICA
 Japan International Cooperation Agency

 SOP
 Standard Operations procedure

 C/P
 Counterpart

 SWTP
 Surface Water Treatment Plant

 IMRP
 Iron and Manganese Removal Plant

 OJT
 On the Job Training

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

Introduction

In order to establish SOPs for the operation and maintenance of water supply facilities in Gharbia Governorate, GHPWASCO nominated C/P members for SOP activity. C/P members have conducted site surveys with JICA Expert Team from July 2010, and determine the model facilities for SOP application. Results of our activities are compiled as "Draft Action Plan for SOP activity". C/P members of GHAPWASCO and JICA Expert Team for SOP activities are as follows;

1) C/P Members of GHAPWASCO

Mr. Ahmed Abdel Maabood	Engineer, Team Head (well monitoring)
Mr. Samy Megahed	Engineer
Mr. Rizk El Feky	Engineer
Mr. Nagy Yousry	Engineer
Mr. Essam	Engineer
Mr. Mahmoud Badr	Engineer (electrical)
Mr. Mekawy	Chemist
Mr. Hemat	Chemist

2) JICA Expert Team for SOP activity

Mr. Tomohiro Shimizu	JICA Expert for Water Treatment System
Mr. Ryoji Nagao	JICA Expert for Mechanical Equipment
Mr. Mohamed Ibrahim El-Sayed Ahamed	JICA Expert for Electrical Equipment
Mr. Nobuyuki Iijima	JICA Expert for Well Monitoring
Mr. Tomohiro Umeki	JICA Expert for Water Quality
Dr. Ahmed El-Baz	Egyptian Expert for SOP
Mr. Ahmed Ragab Hamed	Interpreter
Mr. Mohamed Abdel Kader Abouzekry	Facilitator

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Chapter 1. Model Facility Selection

1.1 Current Conditions

1) Water Treatment Facilities

In Gharbia Governorate, multiple water treatment facility exists as shown in Table 1-1. Due to the facility scale or poor function as water treatment system, compact units and direct filtration plants are not appropriate to the model facility because improvement effect will not be expected. For the above mentioned, each model facility shall be selected from SWTPs, IMRPs and production wells.

	Table 1-1 Numbers of Water Treatment Facilities					
No.	Facility	Numbers				
1	Surface Water Treatment Plant	8 facilities				
2	Iron and Manganese Removal Plant	46 facilities				
3	Direct Filtration Plant	4 facilities				
4	Compact Unit	28 facilities				

2) Production Well

In Gharbia Governorate, well station exists as shown in Table 1-2. As shown in Table 1-2, there is total 195 well stations in Gharbia Governorate. As for target well station JICA expert and C/P select a model station from well stations without IMRF.

Table 1-2 Numbers of Well Stations						
No.	Facility	Numbers				
1	Well station without Iron and Manganese	143 facilities				

Kein	oval Plant	L				
	station oval Plant		Iron	and	Manganese	52 facilities

1.2 Longlist Preparation

1) Water Treatment Facilities

In order to select model facilities, the Project team made longlist according to following criteria.

- > Comparatively big rehabilitation is not planned which may disturb SOP activity near the future. Þ
- Facility is not managed by a private company. Treated water quantity is comparatively big as a model case.

Longlist is arranged as follows tables;

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

2

lo.	Plant	Markaz
15	Snadyed	Tanta
16	Kfr el Shiekh	Tanta
17	Ekhnawy el kadyima	Tanta
18	Kfr Sebtas	Tanta
19	Kfr Torna	Tanta
20	Berma	Tanta
21	Kfr el Manshhy	Tanta
22	Shakraf	Tanta
23	Khrsyet	Tanta

1.3 Basic Survey (Shortlist Preparation)

1) Water Treatment Facilities

In order to grasp the summary for the facility conditions, basic survey has been conducted to longlisted facilities according to following criteria.

- Accessibility ۶
- Shorter access time can enhance on-site work and training. ۶
- Capacity
- Greater capacity will bring bigger impact as a result of improvement by SOP activity. Typicality Higher typicality of system can facilitate the expansion of SOP activity in the future. Condition
- ۶
- Better condition of facilities can make SOP activity smoothly.
- ۶ Availability of analytical instrument Wider availability of analytical instrument for water quality can enrich SOP activity.

> Management activity It seems to be more useful as a model case to apply SOP activity to the facility in lower management activity.

Shortlist is arranged as follows tables through the site survey;

	Table 1-6 Shortlist for SWTP			
No.	Plant		Overview	
		(a) capacity	51,840 m ³ /day (design)	
			37,000 m3/day (in operation)	
		(b) establishment	Year 1987	
			Year 1995 (expansion)	
	Tanta El Gedeeda	(c) access time	5 min	
1		(d) process	- Coagulation: baffled channel mixing	
			flocculator	
			- Sedimentation: rectangular clarifier	
			- Filtration: backwash & air scouring	
			- Chemical: aluminum sulfate, gaseous	
			chlorine	
2	Zefta El Morashaha	(a) capacity	34,000 m3/day (design)	
2	Zeita Ei worashaha		22,000 m3/day (in operation)	

Table 1-3 Longlist for SWTP

No.	Plant	Markaz
1	Tanta El Gedeeda	Tanta
2	Samanod El Morashaha	Samanod
3	Zefta El Morashaha	Zefta
4	El Mahalla El Kobra El Gedeeda	El Mahalla El Kobra
5	Kafr El Zayat El Morashaha	Kafr El Zayat

Table1-4 Longlist for IMRP			
No.	Plant	Markaz	
1	Mahalet Marhoom	Tanta	
2	Manyal El Howaishat	Tanta	
3	Damanhour El Wahsh	Zefta	
4	Hamamaat Bassyoun	Bassyon	
5	Mansheyet El Yaakobeya	Bassyon	
6	Abiar	Kafr El Zayat	
7	El Naharia	Kafr El Zayat	
8	Kesta	Kafr El Zayat	
9	Delbeshan	Kafr El Zayat	
10	El Gaefareya	El Santa	
11	El Kersheya	El Santa	
12	Katour El Kadeema	Kator	
13	Berma	Tanta	
14	Shobraelola	El Santa	

2) Production Well

In order to select model facilities, Project team collected information and data, and compiles those information and data for all well stations in the Gharbia Governorate. Longlist is shown in following table

	Table1-5 Longlist for Production Well		
No.	Plant	Markaz	
1	El Karasana	Tanta	
2	El Montaza	Tanta	
3	Kafr El Arab	Tanta	
4	Kafr El Hama	Tanta	
5	Sberbay	Tanta	
6	Knyset Dmshyet	Tanta	
7	Showny	Tanta	
8	Fisha Selim	Tanta	
9	El Ragdyea	Tanta	
10	Shbsher el Hesa	Tanta	
11	Mahala Rouh	Tanta	
12	El Ramlyia	Tanta	
13	Defra	Tanta	
14	Abou Dawoud	Tanta	

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

No.	Plant		Overview
		(b) establishment	Year 2000
		(c) access time	75 min
		(d) process	- Coagulation: mechanical slow mixing
			flocculator
			- Sedimentation: circular clarifier
			- Filtration: backwash & air scouring
			- Chemical: aluminum sulfate, gaseou
			chlorine
		(a) capacity	34,560 m ³ /day (design, phase IV)
			33,500 m3/day (in operation, phase IV)
	El Mahalla El Kobra El Gedeeda	(b) establishment	Year 2009 (phase IV)
		(c) access time	40 min
3		(d) process	(phase IV)
			- Coagulation: baffled channel mixin
			flocculator
			- Sedimentation: rectangular clarifier
			- Filtration: backwash & surface wash
			- Chemical: aluminum sulfate, gaseou
	1		chlorine

No.	Plant		Overview
		(a) capacity	2,400 m3/day (design)
			1,500 m ³ /day (in operation)
		(b) establishment	Year 1952 (well station)
			Year 1968 (Fe/Mn removal facilities)
			Year 2010 (renewal)
1	Mahalet Marhoom	(c) access time	20 min
1	Wanalet Wantoom	(d) process	 Aeration: air blowing
			- Sedimentation: w/o sediment collect
			- Filtration: raw water backwash & a
			scouring
			- Chemical: potassium permangana
			calcium hypochlorite
		(a) capacity	2,500 m3/day (design)
			2,000 m3/day (in operation)
		(b) establishment	Year 1952 (well station)
			Year 2010 (Fe/Mn removal facilities)
		(c) access time	30 min
2	Manyal El Howaishat	(d) process	 Aeration: air blowing
			- Sedimentation: w/o sediment collect
			- Filtration: raw water backwash &
			scouring
			- Chemical: potassium permangana
		() h	calcium hypochlorite
		(a) capacity	5,120 m ³ /day (design) 4,500 m ³ /day (in operation)
3		(b) establishment	4,500 m /day (in operation) Year 1970 (well station)
		(b) establishment	Year 1970 (Well station) Year 2009 (Fe/Mn removal facilities)
	El Gaefareya	(c) access time	35 min
		(d) process	- Aeration: air blowing
		(u) process	 Sedimentation: w/o sediment collect
		1	- Seamentation. w/o seament conect

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

No.	Plant	Overview
		scouring - Chemical: potassium permanganate, calcium hypochlorite

2) Production Well

(1) Selection of Facility for SOP

Based on the result of discussion with C/P, JICA expert team and C/P decided that well station for SOP should be selected in the Gharbia Markaz. Detailed information and data of well stations that are located in the Gharbia Markaz were collected and checked. After that, JICA expert and C/P discussed to select several candidate well stations then a shortlist shown in Table-1-8 was prepared

During the site survey of 18 well stations that are mentioned in the next section (2), general information of well station were checked and collected in order to understand general condition of well station in the Gharbia Governorate

In order to grasp the general for the facility conditions, basic survey has been conducted to longlisted facilities according to following criteria.

Accessibility ⊳

- Shorter access time can enhance on-site work and training. 5
- Typicality
- Higher typicality of system can facilitate the expansion of SOP activity in the future. Condition
- Typical type of facility is thought to be better in order to consider the contents of SOP, because typical type of facility has good point and bad point in terms of operation and management well station. ⊳
- Management activity
- It seems to be more useful as a model case to apply SOP activity to the facility in typical anagement activity. If well station has lower activity and intensity of SOP, it is thought that well station staff cannot understand the necessary contents and importance of SOP activity.

Shortlist is arranged as follows tables through the site survey;

	Table 1-8 Shortlist for Well Station				
	No.	Plant		Overview	
			(a) capacity	140litter/sec (design)	
			(b) establishment	Year 1965	
	1	El Karasana	(c) access time	2 min	
			(d) Service Population	Unknown	
			(e) Area of station	650	
			(f)Facility	- 3 wells	
	2	El Montaza	(a) capacity	243litter/sec (design)	
			(b) establishment	Year 1962	
			(c) access time	5 min	

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6

In order to select model facilities, detail survey has been conducted to shortlisted facilities in aspects of equipment/ facility conditions (Necessity of rehabilitation for the application of SOP activities) and improvement effect by SOP

Inspection summary is described as follows;

(1) Surface Water Treatment Plant (SWTP)

- General
- Kafr El Zayat El Morashaha SWTP added to candidates for GHPWASCO instead of Zefta El Morashaha SWTP due to the reason that Zefta El Morashaha was under rehabilitation for the application to TSM conducted by GTZ.
- Equipment/ Facility Condition
- Equipment and facility condition of El Mahalla El Kobra El Gedeeda (Phase-IV) is high evaluated, and it is available to reduce rehabilitation cost and term. Improvement effect by SOP activities 2

Since El Mahalla El Kobra El Gedeeda (Phase-IV) adopts surface wash/ back wash system as filter cleaning method, it is difficult to transfer the SOP technology to the other facilities because air scouring/ back wash system is popular in Gharbia Governorate. On the other hand, Since Kafr El Zayat El Morashaha has extremely bad condition of facility/ equipment and maintenance activities are managed by private company, this facility should be canceled from model facility.

General Assessment

Although equipment and facility condition of Tanta El Gedeeda is not high evaluated and need the rehabilitation, it is available to apply SOP activities for the improvement of filter condition due to the reason that mud ball exist in sand laver

(2) Iron and Manganese Removal Plant (IMRP)

Equipment/ Facility Condition ۶

Small rehabilitation is required in each facility. Improvement effect by SOP activities

- In Manyal El Howaishat and El Gaefareya, groundwater is supplied directly to the network without disinfection because importance of iron and manganese removal process is not recognized. On the other hand in Mahalet Marhoom, necessity of iron and manganese removal process has been recognized, and treated water is supplied to the network.
- General Assessment By the application of SOP activities to Mahalet Marhoom, it will be available to improve

operation and maintenance condition from health aspect and to transfer the technology to the other facilities from this facility

The result of detail survey shows that following facilities should be selected as model facility

	Table 1-9 Model Facilities			
No.	Water Treatment System	Branch (Markaz)	Facility	
1	SWTP	Tanta	El Gedeeda	
2	IMRP	Tanta	Mahalet Marhoom	

Project Team / GHPWASCO

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

No.	Plant	Overview	
		(d) Service Population	Unknown
		(e) Area of station	2,210
		(f)Facility	- 3 wells
			- Berman system (no information)
		(a) capacity	140litter/sec (design)
		(b) establishment	Year 1956
3	Sberbay	(c) access time	15 min
5	Sberbay	(d) Service Population	Unknown (Sberbay+ 5small villages)
		(e) Area of station	1,500
		(f)Facility	- 3 wells
		(a) capacity	64litter/sec (design)
		(b) establishment	Year 1954
4	Abou Dawoud	(c) access time	15 min
4	Abou Dawoud	(d) Service Population	Unknown (3 villages)
		(e) Area of station	928
		(f)Facility	- 2 wells
		(a) capacity	102litter/sec (design)
		(b) establishment	Year 1956
5	Kafr Sebtas	(c) access time	20 min
5	Kair Sedias	(d) Service Population	12,278
		(e) Area of station	1,900
		(f)Facility	- 3 wells

(2) Selection of Facilities for installation of the Continuous Groundwater Level measurement Equipment

In order to prepare a shortlist for the selection of well station to be installed groundwater level measurement equipment, following actions were conducted.

1) Selection of well stations for measurement of the present groundwater level

18 well stations were selected in order to grasp groundwater distribution condition and general information of well station in Gharbia. Then groundwater level measurement for selected well station was conducted.

2) Preparation of Groundwater Distribution Contour Map

Based on the result of the groundwater level measurement, groundwater distribution contour map was

3) Selection of areas for installation of the Continuous Groundwater Level Measurement

Based on the groundwater distribution condition that is grasped by the contour map, 3 areas for installation the continuous groundwater level measurement were selected.

Detail Survey (Model Facility Selection)

1) Water Treatment Facilities

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

2) Production Well

(1) Selection of Model Facility for SOP

Improvement effect by SOP activities

According to the result of well station survey, there is no guideline and instruction for operation and maintenance of well station by GHAPWASCO. And all well stations do not know actual extraction water volume from each well and supply water volume to the network. From these points, it is thought that there are many points to be improved through/by the SOP activities.

And not only for the SOP activity of selected well station, a creation of well inventory by a well monitoring system (this means that to obtain actual information of well stations periodically) regarding all well stations in the GHAPWASCO operation area will be useful on management of well stations.

- General Assessment
 - Sberbay well station has adequate facilities to establish SOP for well station. Therefore, it is thought to be useful to establish the SOP for well station and established SOP will be able to apply many of other typical well stations.

Equipment/ Facility Condition Sberbay well station has typical facility that well station need to be equipped. However, it is necessary to add two (2) flow meters to measure the supply water volume to the network and one (1) flow meter to measure extraction volume from a horizontal well.

In order to select model facilities, detail survey has been conducted to shortlisted facilities in aspects of equipment/ facility conditions (Composition of facility for the application of SOP activities) and improvement effect by SOP.

Table 1-10 Model Facility			
No.	Branch (Markaz)	Facility	
1	Tanta	Sherbay	

(2) Selection of Facilities for Installation of the Continuous Groundwater Level measurement Equipment

Well station survey was carried out in the selected three (3) areas. And one (1) well station from each area was selected. Table-1-11 shows the selected well station for installation of equipment.

Table-1-11 Well Station List for Installation of Groundwater Level Measurement Equipm ent

No.	Branch (Markaz)	Facility
1	Basyoun	Yakoubya
2	Tanta	Kfrsyer
3	Al Mahalah	Maakhaz

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Chapter 2. Actions to be taken for SOP Activities

During the SOP activity of the Project, following actions shall be taken.

Table 2-1 Actions to be Taken in SOP Activities			
Action	Title	Contents	Remarks
1	Survey the current conditions of water supply facilities in Gharbia Governorate	 Survey of existing conditions for SWTP, IMRP and well facilities. Collection of basic data for the SWTP and IMRF and Well station regarding operation and laboratory. Selection of 3 well stations for installation of the continuous groundwater level measurement equipment 	
2	Select 3 model facilities in Gharbia Governorate	 Longlist preparation. Discussion on the selection criteria. Conducting basic survey and shortlist preparation. Conducting detail survey. 	
3	Organize SOP teams in Gharbia Governorates	 Selection of fulltime SOP members in GHAPWASCO. Selection of SOP members in model facilities. 	
4	Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate	 Assessment of the effectiveness of SOPs in Sharkiya Governorate. Extraction of the problematic point. 	
5	Revise SOPs of Sharkiya Governorate, if necessary	 Revision of SOPs of Sharkiya Governorate. 	
6	Develop SOPs for model facilities in Gharbia Governorates based on SOPs for SHAPWASCO	 Examination for the model facility condition. Examination of water quality management. Preparation of unified forms of O&M records and reports. Preparation of draft SOPs for O&M with site training. Preparation of draft SOPs for water quality management. Examination of groundwater level measurement result 	

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10

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

Chapter 3. Flow of Actions for SOP Activities

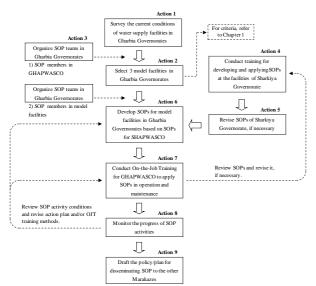


Figure 3-1 Flow of Actions for SOP Activity

Action	Title	Contents	Remarks
7	Conduct On-the-Job Training for GHAPWASCO to apply SOPs in operation and maintenance	 Preparation of basic system drawings (P&ID, Single line diagram). Trial operation with the use of draft SOPs. 	 Procurement of new water flow meters and installation
8	Monitor the progress of SOP activities	 Monitoring of activity condition on On-the-Job Training. 	
9	Draft the policy/plan for disseminating SOP to the other Markazes	 Compiling of long-term SOP activity target. Preparing the draft policy/plan of SOP activity for whole Gharbia governorate. 	
Activitie	s related to SOP activity		
1	Holding SOP workshops and seminars for transferring of experience from SHAPWASCO to GHAPWASCO and for presenting the activity results	 Holding internal workshops. Holding internal seminars. 	

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in GHAPWASCO

Chapter 4. Description of Each Action

Actions listed in Table 2-1 are described in details as follows:

Action-1 Survey the current conditions of water supply facilities in Gharbia Governorate

The JICA expert team and C/P team jointly conduct an actual condition survey of water supply facilities in Gharbia Governorate. In this survey, following view point shall be confirmed

- Conditions of operation and maintenance
- Assignment of staffs
- Existence of equipment drawings and manuals
 Water quality management
- Problems and future extension plan in facilities and etc.

Action-2 Select 3 model facilities in Gharbia Governorate

The Project team selects three (3) model facilities in Gharbia Governorate. The selected facilities will be targeted for SOP preparation in the Project. Model facilities will be selected from major water treatment plants, iron/manganese removal facilities and production wells.

Action-3 Organize SOP teams

GHAPWASCO organize a) a supervising unit of SOP activities at headquarters, and b) SOP teams in each model facility.

When organizing the SOP teams, it is necessary to aim for team formation that contributes to the establishment of mutual cooperation between personnel involved in electrical, mechanical and water quality matters.

Action-4 Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate

Staff members from GHAPWASCO are invited to the SOP model facilities of SHAPWASCO, and the JICA expert and SHAPWASCO will introduce the experience and improvement contents of SHAPWASCO.

Action-5 Revise SOPs of Sharkiya Governorate, if necessary

SHAPWASCO assess and review the existing SOP documents and SOP activities through the transfer of their experience to GHAPWASCO, and it shall be upgraded as needed via this assessment and review process.

Action-6 Develop SOPs for model facilities in Gharbia Governorate based on SOPs for SHAPWASCO

The Project team prepares appropriate SOPs for model facilities of GHAPWASCO while referring to the SOP of SHAPWASCO. It is forecast that there will be both cases of partial correction and newly preparation.

The Project team shall prepare SOP documents in both English and Arabic languages.

Action-7 Conduct On-the-Job Training for GHAPWASCO to apply SOPs in operation and maintenance

The Project team conducts operation and maintenance of the model facilities with the use of prepared SOP. Trainers from SHAPWASCO is invited at appropriate intervals in order to pass on practical experience and important points to be considered. In addition to the sharing of experience and achievements, a workshop will be planned in order to deepen understanding of 'design points in treatment facilities and relationship with operation and maintenance work'.

Action-8 Monitor the progress of SOP activities

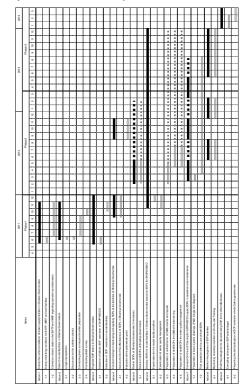
The Project team monitors operation and maintenance conditions in the model facilities and verify the effect of SOP activities.

Action-9 Draft the policy/plan for disseminating SOP to the other Markazes

The JICA expert team and C/P team jointly draft plans for applying successful improvements to facilities other than the model facilities and conveying them to the staffs of such facilities via OJT. Even the experience of partial improvements can help lay the foundation for reforming the thinking of employees.

Chapter 5. Implementation Schedule of SOP Activities

Proposed implementation schedule of SOP activity is described as follows



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14

Project Team / GHPWASCO

<u>MCWW</u>



MINUFIA COMPANY FOR WATER AND WASTEWATER (MCWW)



THE PROJECT FOR IMPROVEMENT OF MANAGEMENT CAPACITY OF OPERATION AND MAINTENANCE FOR WATER SUPPLY FACILITIES IN NILE DELTA AREA

Action Plan for SOP Activities

December 2011

Project Team MINUFIA COMPANY FOR WATER AND WASTEWATER (MCWW)

Action Plan for SOP Activities

Table of Contents

Table of Contents			
Introduction			
Chapter 1. Model Facility Selection			
1.1 Current Conditions			
1.2 Longlist Preparation			
1.3 Basic Survey (Shortlist Preparation)			
1.4 Detail Survey (Model Facility Selection)			
Chapter 2. Actions to be taken for SOP Activities			
Chapter 3. Flow of Actions for SOP Activities			
Chapter 4. Description of Each Action			
Action 1 Survey the current conditions of water supply facilities			
in Minufia Governorate			
Action 2 Select 3 model facilities in Minufia Governorate			
Action 3 Organize SOP teams			
Action 4 Conduct training for developing and applying SOPs			
at the facilities of Sharkiya Governorate			
Action 5 Revise SOPs of Sharkiya Governorate, if necessary			
Action 6 Develop SOPs for model facilities in Minufia Governorate			
based on SOPs for SHAPWASCO 10			
Action 7 Conduct On-the-Job Training for MCWW to apply SOPs			
in operation and maintenance			
Action 8 Monitor the progress of SOP activities			
Action 9 Draft the policy/plan for disseminating SOP to the other Markazes 10			
Chapter 5. Implementation Schedule of SOP Activities			

Project Team / MCWW

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

Abbreviations

 MCWW
 Minufia Potable Water and Sanitation Company

 JICA
 Japan International Cooperation Agency

 SOP
 Standard Operations procedure

 C/P
 Counterpart

 SWTP
 Surface Water Treatment Plant

 IMRP
 Iron and Manganese Removal Plant

 OJT
 On the Job Training

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

Introduction

In order to establish SOPs for the operation and maintenance of water supply facilities in Minufia Governorate, MCWW nominated C/P members for SOP activity. C/P members have conducted site surveys with JICA Expert Team from July 2010, and determine the model facilities for SOP application. Results of our activities are compiled as "Draft Action Plan for SOP activity". C/P members of MCWW and JICA Expert Team for SOP activities are as follows;

Mr. Ayman Bassyouni	Engineer, Team Head
Mr. Mohamed Fathy	Engineer
Mr. Mohamed Fawzy	Engineer
Mr. Khaled Kazamel	Engineer (electrical)
Mr. Saeed Abdelfattah	Engineer (well monitoring)
Mr. Eman Zahran	Chemist

2) JICA Expert Team for SOP activity

Mr. Tomohiro Shimizu	JICA Expert for Water Treatment System
Mr. Ryoji Nagao	JICA Expert for Mechanical Equipment
Mr. Mohamed Ibrahim El-Sayed Ahamed	JICA Expert for Electrical Equipment
Mr. Nobuyuki Iijima	JICA Expert for Well Monitoring
Mr. Tomohiro Umeki	JICA Expert for Water Quality
Dr. Ahmed El-Baz	Egyptian Expert for SOP
Mr. Ahmed Ragab Hamed	Interpreter
Mr. Mr. Mohamed Abdel Kader	Facilitator

Project Team / MCWW

Chapter 1. Model Facility Selection

1.1 Current Conditions

1) Water Treatment Facilities

In Minufia Governorate, multiple water treatment facility exists as shown in Table 1-1. Due to the facility scale or poor function as water treatment system, compact units and direct filtration plants are not appropriate to the model facility because improvement effect will not be expected. For the above mentioned, each model facility shall be selected from SWTPs, IMRPs and production wells.

Table 1-1 Numbers of Water Treatment Facilities			
No.	Facility	Numbers	
1	Surface Water Treatment Plant	5 facilities	
2 Iron and Manganese Removal Plant		76 facilities	
3	Direct Filtration Plant	21 facilities	
4	Compact Unit	19 facilities	

2) Production Well

In Minufia Governorate, well station exists as shown in Table 1-2. As shown in Table 1-2, there is total 236 well stations in Minufia Governorate. As for target well station JICA expert and C/P select a model station from well stations without IMRF.

Table 1-2 Numbers of Well Stations	

No.	Facility	Numbers
1	Well station without Iron and Manganese Removal Plant	130 facilities
2	Well station with Iron and Manganese Removal Plant (plant is under construction)	30 facilities
3	Well station with Iron and Manganese Removal Plant (Berman system)	76 facilities

1.2 Longlist Preparation

1) Water Treatment Facilities

In order to select model facilities, the Project team made longlist according to following criteria.

- > Comparatively big rehabilitation is not planned which may disturb SOP activity near the future.
- A A Facility is not managed by a private company.
- Treated water quantity is comparatively big as a model case.

Longlist is arranged as follows tables;

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

2

Table1-5 Longlist for Production Well

No.	Plant	Markaz
1	Mostashfa	Shebeen El kom
2	Gaamaa	Shebeen El Kom
3	Souk	Shebeen El Kom
4	Estad	Shebeen El Kom
5	Central	Shebeen El Kom
6	Nakaly	Shebeen El Kom
7	Abo Bakar	Shebeen El Kom
8	Main a	Shebeen El Kom
9	Nakaly	Shebeen El Kom
10	Myt Mousa	Shebeen
11	Shubra bas	Shebeen
12	El batanoun	Shebeen
13	Estebary	Shebeen
14	Tendeby	Shebeen
15	Myt khakan	Shebeen
16	Kom Akhdar	Shebeen
17	Zwyer	Shebeen
18	Mlyg	Shebeen
19	Myt Afia	Shebeen
20	Shenwan	Shebeen
21	Myt khalaf	Shebeen
22	Old May	Shebeen
23	New May	Shebeen
24	Dekma	Shebeen
25	Mnshyt Shana	Shebeen
26	El Sokarya	Shebeen
27	El Raheb	Shebeen
28	Kfr el Batanoun	Shebeen
29	Bakhaty	Shebeen
30	Monshayet Essam	Shebeen
31	Kfr Tendeby	Shebeen

1.3 Basic Survey (Shortlist Preparation)

1) Water Treatment Facilities

In order to grasp the summary for the facility conditions, basic survey has been conducted to longlisted facilities according to following criteria.

- Accessibility ۶
- Shorter access time can enhance on-site work and training. ۶ Capacity
- Greater capacity will bring bigger impact as a result of improvement by SOP activity.
- ⊳ Typicality Higher typicality of system can facilitate the expansion of SOP activity in the future.

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Table 1-3 Longlist for SWTP

No.	Plant	Markaz
1	Shebeen El Kom El Gedeeda	Shebeen El Kom
2	Mahatet Menouf El Morashaha	Menouf
3	Mahatet Behwash El Gedeeda	Menouf
4	Mahatet Ashmoon El Morashaha	Ashmoon
5	Mahatet El Sadat El Satheya	El Sadat

	Table1-4 Longlist for	IMRP
No.	Plant	Markaz
1	El kom El Akhdar	Shebeen El kom
2	El Batanoon	Shebeen El Kom
3	Zowair	Shebeen El Kom
4	Shemiates	El Shohada
5	Ashma	El Shohada
6	Zawyet El Naaora	El Shohada
7	Ashleem	Quesna
8	Meet Serag	Quesna
9	Taha Shobra	Quesna
10	Menawhala	El Bagoor
11	El Bagoor El Ertwazy 2	El Bagoor
12	Sobk El Dahak El Ertwazy	El Bagoor
13	Kolta El Kobra	El Bagoor
14	Samaleeg	Tala
15	Kafr El Arab	Tala
16	Meet Abo El Koom	Tala
17	El Rawda	Berket El Sab'a
18	El Khazan El Aaly	Berket El Sab'a
19	Gezy	Menouf
20	El Hamool	Menouf
21	Tahway	Ashmoon
22	Megreya	Ashmoon
23	Grees	Ashmoon
24	Ashmoon El Raeeseya	Ashmoon
25	Mahatet Sers El Lavan El Gedeeda	Menouf

2) Production Well

In order to select model facilities, Project team collected information and data, and compiles those information and data for all well stations in the Minufia Governorate. Longlist is shown in following table.

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The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

Condition

- Better condition of facilities can make SOP activity smoothly.
- Availability of analytical instrument ۶ Wider availability of analytical instrument for water quality can enrich SOP activity.
- Management activity
- It seems to be more useful as a model case to apply SOP activity to the facility in lower management activity.

Shortlist is arranged as follows tables through the site survey;

		Overview
	(a) capacity	68,840 m ³ /day (design) 35,680 m ³ /day (in operation)
	(b) establishment	Year 2006
	(c) access time	5 to 10 min
1 Shebeen El Kom El Gedeeda	(d) process	- Coagulation
		- Sedimentation: circular clarifier
		- Filtration: backwash & air scouring
		- Chemical: aluminum sulfate, gase
		chlorine
	(a) capacity	51,000 m ³ /day (design)
		45,000 m3/day (in operation)
	(b) establishment	Year 2001
	(c) access time	30 min
2. Mahatet Menouf El	(d) process	- Coagulation: mechanical slow mix
Morashaha		flocculator
		- Sedimentation: rectangular clarifier
		 Filtration: backwash & air scouring
		- Chemical: aluminum sulfate, gase
		chlorine
	(a) capacity	102,000 m ³ /day (design)
		50,860 m3/day (in operation)
1	(b) establishment	Year 2009
1	(c) access time	80 min
3 Mahatet El Sadat El Satheya	(d) process	 Coagulation: mechanical slow mix flocculator
, , , , , , , , , , , , , , , , , , , ,	1	nocculator
1	1	- Sedimentation: circular clarifier
1	1	- Filtration: backwash & air scouring
1	1	 Chemical: aluminum sulfate, gase chlorine
	1	cniorine
T-1	- 1 7 Ch 4k -4 f	D (DD
Tabl	e 1-7 Shortlist for	IMRP

No.	Plant		Overview
1 Shei	niates	(a) capacity(b) establishment(c) access time(d) process	6.000 m ³ /day (design) 5,300 m ³ /day (in operation) Year 1990 (well station) Year 2003 (Fe/Mn removal facilities) 30 to 40 min "BURMAN" system - Aeration: air blowing - Sedimentation: w/o sediment collector

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4

No.	Plant		Overview
			 Underground infiltration
			- Chemical: gaseous chlorine
		(a) capacity	8,500 m ³ /day (design)
			1,500 m ³ /day (in operation)
		(b) establishment	Year 1956 (well station)
			Year 2004 (Fe/Mn removal facilities)
2	Kafr El Arab	(c) access time	35 min
2	Kall El Alab	(d) process	"BURMAN" system
			 Aeration: air blowing
			- Sedimentation: w/o sediment collector
			 Underground infiltration
			- Chemical: gaseous chlorine
		(a) capacity	2,160 m ³ /day (design)
			1,800 m3/day (in operation)
		(b) establishment	Year 2009
		(c) access time	40 min
		(d) process	"Traditional" system
3	Gezy		 Aeration: air blowing
			- Sedimentation: reactor with slow
			mixer, sediment collector
			- Filtration: backwash & air scouring
			- Chemical: potassium permanganate
			gaseous chlorine

2) Production Well

(1) Selection of Facility for SOP

Based on the result of discussion with C/P, JICA expert team and C/P decided that well station for SOP should be selected in the Shebeen Markaz. Detailed information and data of well stations that are located in the Shebeen Markaz were collected and checked. After that, JICA expert and C/P discussed to select several candidate well stations then a shortlist shown in Table-1-8 was prepared.

During the site survey of 18 well stations that are mentioned in the next section (2), general information of well station were checked and collected in order to understand general condition of well station in the Minufia Governorate.

In order to grasp the general for the facility conditions, basic survey has been conducted to longlisted facilities according to following criteria.

- Accessibility
- Shorter access time can enhance on-site work and training.
- Typicality Higher typicality of system can facilitate the expansion of SOP activity in the future
 Condition
- Typical type of facility is thought to be better in order to consider the contents of SOP, because typical type of facility has good point and bad point in terms of operation and

Project Team / MCWW

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

was conducted.

2) Preparation of Groundwater Distribution Contour Map

Based on the result of the groundwater level measurement, groundwater distribution contour map was drawn.

3) Selection of areas for installation of the Continuous Groundwater Level Measurement

Based on the groundwater distribution condition that is grasped by the contour map, 3 areas for installation the continuous groundwater level measurement were selected.

1.4 Detail Survey (Model Facility Selection)

1) Water Treatment Facilities

In order to select model facilities, detail survey has been conducted to shortlisted facilities in aspects of equipment/ facility conditions (Necessity of rehabilitation for the application of SOP activities) and improvement effect by SOP.

Inspection summary is described as follows;

- (1) Surface Water Treatment Plant (SWTP)
- Equipment/ Facility Condition Equipment and facility condition of Shebeen El Kom El Gedeeda is high evaluated, and it is available to reduce rehabilitation cost and term. On the other hand, it is difficult to apply SOP activities to Mahatet Menouf El Morashaha due to the bad condition of facility/ equipment condition form acfine userent
- condition from safety aspect.> Improvement effect by SOP activities

Operation and management system of Shebeen El Kom El Gedeeda is almost established as central facility in MCWW, and Staff members understand water treatment process and operate the system by their discretion. Therefore SOP activities shall apply to other facilities which want to improve current operation and maintenance condition. General Assessment

Although equipment and facility condition of Mahatet El Sadat El Satheya is not high evaluated and need the rehabilitation, it is available to apply SOP activities for the improvement of filter condition because this facility is trying to improve the mud ball in a filter.

(2) Iron and Manganese Removal Plant (IMRP)

Improvement effect by SOP activities

Both Shemiates and Kafr El Arab adopt BURMAN system. Improvement effect of SOP activities is comparatively low due to the reason that the iron and manganese removal process will be changed from BURMAN system to Traditional system with the use of Aerator and Sand Filter near the future by the major trouble, such as inhibition of water injection due to the

6

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

management well station Management activity

It seems to be more useful as a model case to apply SOP activity to the facility in typical management activity. If well station has lower activity and intensity of SOP, it is thought that well station staff cannot understand the necessary contents and importance of SOP activity.

Shortlist is arranged as follows tables through the site survey;

Table 1-8 Shortlist for Well Station No. Plant Overview										
No.	Plant		Overview							
		(a) capacity	7,820 m ³ /day (design) 1,455 m ³ /day (in operation)							
		(b) establishment	Year 1948							
1	Shubra bas	(c) access time	25 min							
		(d) Service Population	14,025							
		(e) Area of station	914							
		(f)Facility	- 3 wells							
		(a) capacity	6,000 m ³ /day (design)							
			2,430 m3/day (in operation)							
		(b) establishment	Year 1948							
2	Kom Akhdar	(c) access time	20 min							
-		(d) Service Population	10,517							
		(e) Area of station	1,813							
		(f)Facility	- 3 wells							
			- Berman system (no information)							
		(a) capacity	3,500 m ³ /day (design)							
			850 m ³ /day (in operation)							
		(b) establishment	Year 2004							
3	Dekma	(c) access time	30 min							
		(d) Service Population	6,467							
		(e) Area of station	1,205							
		(f)Facility	- 2 wells							
		(a) capacity	6,500 m3/day (design)							
			3,500 m3/day (in operation)							
		(b) establishment	Year 1948							
4	Kfr el Batunoun	(c) access time	25 min							
		(d) Service Population	6,725							
		(e) Area of station	2,056							
		(f)Facility	- 3 wells							

(2) Selection of Facilities for installation of the Continuous Groundwater Level measurement Equipment

In order to prepare a shortlist for the selection of well station to be installed groundwater level measurement equipment, following actions were conducted.

1) Selection of well stations for measurement of the present groundwater level

18 well stations were selected in order to grasp groundwater distribution condition and general information of well station in Minufia. Then groundwater level measurement for selected well station

Project Team / MCWW

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

attachment of oxidized substances to the well screen.

Gezy is exclusive facility which adopts traditional system of iron and manganese removal

process. This facility is operated and maintained by MCWW from 1 Oct 2011.

The result of detail survey shows that following facilities should be selected as model facility

		Table 1-9 Model Fac	rilities
No.	Water Treatment System	Branch (Markaz)	Facility
1	SWTP	El Sadat	Mahatet El Sadat El Satheya
2	IMRP	Menouf	Gezy

2) Production Well

(1) Selection of Model Facility for SOP

> Improvement effect by SOP activities

According to the result of well station survey, there is no guideline and instruction for operation and maintenance of well station by MCWW. And all well stations do not know actual extraction water volume from each well and supply water volume to the network. From these points, it is thought that there are many points to be improved through/by the SOP activities.

And not only for the SOP activity of the selected well station, a creation of well inventory by a well monitoring system (this means that to obtain actual information of well stations periodically) regarding all well stations in the MCWW operation area will be useful on management of well stations. General Assessment

- Dekma well station has adequate facilities to establish SOP for well station. Therefore, it is
- thought to be useful to establish the SOP for well station and established SOP will be able to apply many of other typical well stations. Equipment/ Facility Condition
- Dekma well station has typical facility that well station need to be equipped. However, it is necessary to add one (1) flow meter to measure the extraction water volume from well in the pump house.

In order to select model facilities, detail survey has been conducted to shortlisted facilities in aspects of equipment/ facility conditions (Composition of facility for the application of SOP activities) and improvement effect by SOP.

	Table 1-1	10 Model Facility
No.	Branch (Markaz)	Facility
1	Shebeen	Dekma

Project Team / MCWW

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

(2) Selection of Facilities for Installation of the Continuous Groundwater Level measurement Equipment

Well station survey was carried out in the selected three (3) areas. And one (1) well station from each area was selected. Table-1-11 shows the selected well station for installation of equipment.

Table-1-11 Well Station List for Installation of Groundwater Level Measurement Equipment

No.	Branch (Markaz)	Facility
1	Quesna	Bgrym
2	Shebeen el Kom	Zawyt el Nawor
3	Ashmon	Kfr el Hema

Chapter 2. Actions to be taken for SOP Activities

During the SOP activity of the Project, following actions shall be taken.

ction	Title	Contents	Remarks
1	Survey the current conditions of water supply facilities in Minufia Governorate	 Survey of existing conditions for SWTP, IMRP and well facilities. Collection of basic data for the SWTP, IMRF and well station regarding operation and laboratory. 	
2	Select 3 model facilities in Minufia Governorate	 Longlist preparation. Discussion on the selection criteria. Conducting basic survey and shortlist preparation. Conducting detail survey. Selection of 3 well stations for installation of the continuous groundwater level measurement equipment 	
3	Organize SOP teams in Minufia Governorate	 Selection of fulltime SOP members in MCWW. Selection of SOP members in model facilities. 	
4	Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate	 Assessment of the effectiveness of SOPs in Sharkiya Governorate. Extraction of the problematic point. 	
5	Revise SOPs of Sharkiya Governorate, if necessary	Revision of SOPs of Sharkiya Governorate.	
6	Develop SOPs for model facilities in Minufia Governorates based on SOPs for SHAPWASCO	 Examination for the model facility condition. Examination of water quality management. Preparation of unified forms of O&M records and reports. Preparation of draft SOPs for O&M with site training. Preparation of draft SOPs for water quality management. Examination of groundwater level measurement result 	

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Action

7

8

9

1

Title

apply SOPs in operation and

Monitor the progress of SOP

Draft the policy/plan for

disseminating SOP to the

Holding SOP workshops and

eminars for transferring of

SHAPWASCO to MCWW

and for presenting the activity results by MCWW

other Marakazes

Activities related to SOP activity

experience from

Conduct On-the-Job

maintenance

activities

Training for MCWW to

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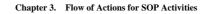
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Remarks

Procurement of new

water flow meters and installation

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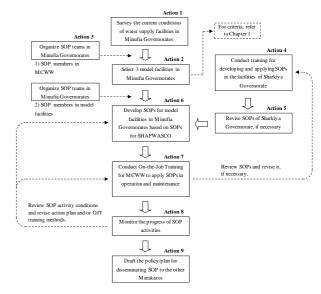


Figure 3-1 Flow of Actions for SOP Activity

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

Contents

Preparation of basic system drawings (P&ID, Single line

Trial operation with the use of draft SOPs.

Compiling of long-term SOP

Holding internal workshops.
 Holding internal seminars.

Comparing or long-term SOF activity target.
 Preparing the draft policy/plan of SOP activity for whole Garbia

Monitoring of activity condition or On-the-Job Training.

diagram).

governorate.



12

S2.1-9

Chapter 4. Description of Each Action

Actions listed in Table 2-1 are described in details as follows:

Action-1 Survey the current conditions of water supply facilities in Minufia Governorate

The JICA expert team and C/P team jointly conduct an actual condition survey of water supply facilities in Minufia Governorate. In this survey, following view point shall be confirmed

- > Conditions of operation and maintenance
- Assignment of staffs
- Existence of equipment drawings and manuals
 Water quality management
- Water quality management
 Problems and future extension plan in facilities and etc.

Action-2 Select 3 model facilities in Minufia Governorate

The Project team selects three (3) model facilities in Minufia Governorate. The selected facilities will be targeted for SOP preparation in the Project. Model facilities will be selected from major water treatment plants, iron/manganese removal facilities, wells.

Action-3 Organize SOP teams

MCWW organize a) a supervising unit of SOP activities at headquarters, and b) SOP teams in each model facility.

When organizing the SOP teams, it is necessary to aim for team formation that contributes to the establishment of mutual cooperation between personnel involved in electrical, mechanical and water quality matters.

Action-4 Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate

Staff members from MCWW are invited to the SOP model facilities of SHAPWASCO, and the JICA expert and SHAPWASCO will introduce the experience and improvement contents of SHAPWASCO.

Action-5 Revise SOPs of Sharkiya Governorate, if necessary

SHAPWASCO assess and review the existing SOP documents and SOP activities through the transfer of their experience to MCWW, and it shall be upgraded as needed via this assessment and review process.

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14

Action-6 Develop SOPs for model facilities in Minufia Governorates based on SOPs for SHAPWASCO

The Project team prepares appropriate SOPs for model facilities of MCWW while referring to the SOP of SHAPWASCO. It is forecast that there will be both cases of partial correction and newly preparation.

The Project team shall prepare SOP documents in both English and Arabic languages.

Action-7 Conduct On-the-Job Training for MCWW to apply SOPs in operation and maintenance

The Project team conducts operation and maintenance of the model facilities with the use of prepared SOP. Trainers from SHAPWASCO is invited at appropriate intervals in order to pass on practical experience and important points to be considered. In addition to the sharing of experience and achievements, a workshop will be planned in order to deepen understanding of 'design points in treatment facilities and relationship with operation and maintenance work'.

Action-8 Monitor the progress of SOP activities

The Project team monitors operation and maintenance conditions in the model facilities and verify the effect of SOP activities.

Action-9 Draft the policy/plan for disseminating SOP to the other Marakazes

The JICA expert team and C/P team jointly draft plans for applying successful improvements to facilities other than the model facilities and conveying them to the staffs of such facilities via OJT. Even the experience of partial improvements can help lay the foundation for reforming the thinking of employees.

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15

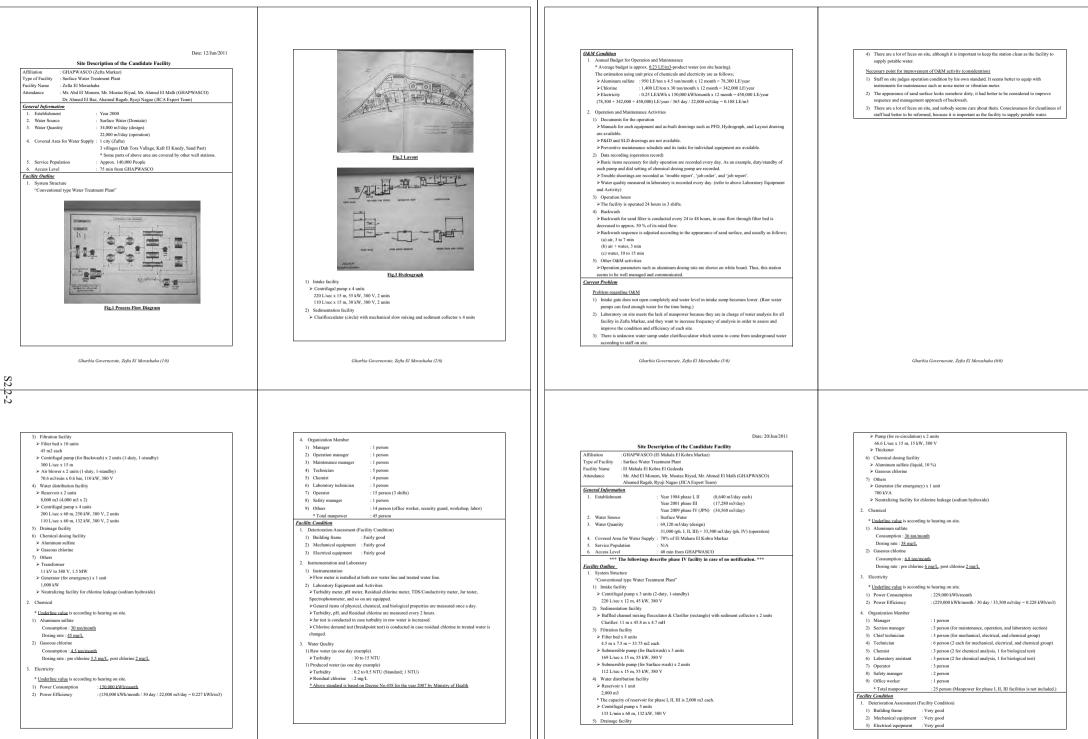
The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply in Nile Delta Area Action Plan for SOP Activity in MCWW

Chapter 5. Implementation Schedule of SOP Activities

Proposed	im	pl	em	ien	ita	tio	n s	sch	ed	ule	e o	f S	50	Pa	act	ivi	ty	is	de	sci	rib	ed	as	fo	llo	w	s.							
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				Survey the current conditions of water supplyfield filles in Minulia Covernorates	Survey of existing conditions for SWTP, BRPP and well facilities	Colo of on of basic data for the SWIP and IMUP regarding operation and taboratory	Select 3 recold tad likes in Minufia Governoedes	congli st preparation	Discussion on the selection of teria	Conducting basi is survey and short is preparation	Conducting detail survey	Organiae S OP teams in Minutia Governorales	Selection of full fire 8 OP members in MOMV	Selection of SLP members in model lacities	Conductifiaring for developing and applying SOPs at the facilities. of Shashijal Governo site	ssessmentof the electiveness of 3 OPs in 3 halebys Covernorate	Estruction of the problem all o point	Relate SOPs of Shokiya Governoste, Trecessary	Teletion of 30Ps of Shalebys Covernorate	towatop 30% for model facilities in Minula Convencriates based on 3.0% for 3HWWA3.00	senimation for the model lacity condition	Exercitation of wake quality management	Reparation of unified forms of O&M records and reports	reparation of draft 30P s for OSM with site training	Paparation of dist 30P s for water quality in anagenets	ConductOn the 300 Takining for NDWW to apply 5 OPs in operation and reamenance	Paperal on of basic system drawings (P&D). Single Ene degram)	hist operation with the use of def18 OPs	Monitor the progress of BOP ad wires	Monitoding of socil May concilition on On-the-Volo Training	Crait the policy/plan for dissersinaling 30P to the ofter Marakaces	Compliting of Longueses S.OP and My tanget	Papering the draft policypt an of SOP and My for whole Gabtia governorate	
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<u>S2.2 基礎調査</u> GHAPWASCO

Date: 15/Jun/2011	220 L/sec x 60 m, 240 kW, 3.3 kV, 2 units 400 L/sec x 60 m, 400 kW, 3.3 kV, 2 units	Date: 21/Jun/2011	Fig.1 Process Flow Diagram 1) Intake facility
Site Description of the Candidate Facility Affiliation - GHAPWASCO (Tanta Markaz)	5) Drainage facility	Site Description of the Candidate Facility Affiliation GHAPWASCO (Samanoud Markaz)	 Centrifugal pump x 2 units
Affiliation : GHAPWASCO (Tanta Markaz) Type of Facility : Surface Water Treatment Plant	Centrifugal pump x 2 units 70 L/sec x 10 m 13 kW 380 V	Affiliation : GHAPWASCO (Samanoud Markaz) Type of Facility : Surface Water Treatment Plant	50 L/sec x 20 m, 15 kW, 380 V 2) Sedimentation facility
Facility Name : Tanta El Gedeeda	70 L/sec x 10 m, 13 kW, 380 V 6) Chemical dosing facility	Facility Name : Samanoud El Morashaha	 2) Sedimentation facility > Clarifier (rectangular) x 2 units
Attendance : Mr. Abd El Monem, Mr. Moataz Riyad (GHAPWASCO) Ahamed Ragab, Ryoji Nagao (JICA Expert Team)	➤ Aluminum sulfate (liquid, 10 %)	Attendance : Mr. Abd El Monem, Mr. Mostaz Riyad, Mr. Ahmed El Malh (GHAPWASCO) Dr. Ahmed El Baz, Ahamed Ragab, Ryoji Nagao (JICA Expert Team)	3) Filtration facility
General Information	> Gaseous chlorine 7) Others	General Information	Filter bed (circle) x 2 units 9.6 m2 each
1. Establishment : Year 1987	 Others Generator (for emergency) x 1 unit 	1. Establishment : Year 1931 SWTP (Year 1975 Well station)	9.0 m2 each * Backwash is done by gravity and mechanical mixing.
: Year 1995 (Expansion) * FROM 34.560 m3/dav. TO 51.840 m3/dav at 1995 expansion	1,000 kVA	(Year 1975 Well station) Year 1990 Replacement of pumps in SWTP	 Water distribution facility
2. Water Source : Surface Water	Neutralizing facility for chlorine leakage (sodium hydroxide)	(Year 1990 Compact unit No.1)	➤ Reservoir x 1 unit 600 m3
 Water Quantity : 51,840 m3/day (design) 37,000 m3/day (operation) 	2. Chemical	(Year 1996 Compact unit No.2) (Year 2007 Expansion in well station)	 Centrifugal pump x 3 units
 Covered Area for Water Supply: 1 city (Tanta) 	* <u>Underline value</u> is according to hearing on site.	(Year 2008 Compact unit No.3)	30 L/sec x 40 m, 37.5 kW, 380 V
* approx. 60% of Tanta city is covered.	1) Aluminum sulfate Consumption : 32 ton/month	2. Water Source : Surface Water	 Drainage facility * Drain by gravity.
5. Service Population : N/A 6. Access Level : within 5 min (next to GHAPWASCO)	Dosing rate : 30 mg/L	 Water Quantity : 41,280 m3/day in total (design) 2.400 m3/day by SWTP only (design) 	6) Chemical dosing facility
Facility Outline	2) Gaseous chlorine	7,000 m3/day in total (operation)	Aluminum sulfate Gaseous chlorine
 System Structure "Conventional type Water Treatment Plant" 	Consumption : <u>5.7 ton/month</u> Dosing rate : N/A (5.7 ton / 30 day / 37,000 m3/day = 5.1 mg/L)	1,600 m3/day by SWTP only (operation) 4. Covered Area for Water Supply : 50% of Samanoud Markaz	7) Others
1) Intake facility	Dosing rate : N/A (5./ ton / 30 day / 3/,000 m3/day = 3.1 mg/L) * Breakdown of chlorine : pre chlorine <u>5 kg/hr</u> , post chlorine <u>3 kg/hr</u>	5. Service Population : Approx. 30,000 People	Generator (for emergency)
➤ Centrifugal pump x 4 units	3. Electricity	6. Access Level : 45 min from GHAPWASCO	200 kVA
220 L/sec x 15 m, 40 kW, 380 V, 1 unit 220 L/sec x 15 m, 50 kW, 380 V, 1 unit		*** The followings describe phase SWTP in case of no notification. *** Facility Outline	2. Chemical
440 L/sec x 15 m, 75 kW, 380 V, 2 units	* <u>Underline value</u> is according to hearing on site. 1) Power Consumption : (0.35 kWh/m3 x 37,000 m3/day x 30 day – 388,500 kWh/month)	1. System Structure	* Underline value is according to hearing on site.
 Sedimentation facility Baffled channel mixing flocculator & Clarifier (rectangle) x 4 units 	2) Power Efficiency : <u>0.35 kWh/m3</u>	"Conventional type Water Treatment Plant"	 Aluminum sulfate Consumption : <u>1,000 kg/month</u>
Batfled channel mixing flocculator & Clarifier (rectangle) x 4 units * 2 of 4 clarifiers have been constructed at 1995 expansion.	4. Organization Member		Consumption : <u>1.000 kg/month</u> Dosing rate : <u>22 mg/L</u>
3) Filtration facility	1) Manager : 1 person		2) Gaseous chlorine
Filter bed x 10 units (8-duty, 2-standby) 47 m2 each	2) Mech. engineer : 1 person 3) Elec. engineer : 2 person		Consumption : <u>300 kg/month</u>
* 4 of 10 clarifiers have been constructed at 1995 expansion.	4) Chemist : 7 person		Dosing rate : pre chlorine 4.5 mg/L, post chlorine 1.5 mg/L
Centrifugal pump (for Backwash) x 2 units (1-duty, 1-standby)	5) Laboratory assistant : 3 person		3. Electricity
220 L/sec x 15 m, 40 kW, 380 V ≥ Air blower x 2 units (1-duty, 1-standby)	6) Technician & Operator : 17 person (3 shifts)		* <u>Underline value</u> is according to hearing on site.
44.1 m3/min x 0.4 bar, 55 kW, 380 V	7) Labor : 17 person * Total manpower : 48 person	the second for the first	1) Power Consumption : <u>14,400 kWh/month</u> 2) Power Efficiency : (14,400 kWh/month / 30 day / 1,600 m3/day - 0.3 kWh/m3)
 Water distribution facility Reservoir x 2 units 	Facility Condition	where we are	4. Organization Member
8,000 m3 (4,000 m3 x 2)	1. Deterioration Assessment (Facility Condition)	E TRANSFORMENT	1) Manager : I person
Centrifugal pump x 4 units	Building frame : Concrete structure such as clarifier and filtration bed leaks a little. Mechanical equipment : Fairly good, but equipment such as sludge water pump is very old.		2) Chemist : 8 person
	2) Mechanical equipment . Fairly good, our equipment such as studge water pump is very ou.		
Gharbia Governorate, Tanta El Gedeeda (1/4)	Gharbia Governorate, Tanta El Gedeeda (2/4)	Gharbia Governorate, Zefta El Morashaha (1/4)	Gharhia Governorate, Zefta El Morashaha (2/4)
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 Electrical equipment : Fairly good. 	backwash. ≻Backwash sequence is as follows;	3) Laboratory assistant : 2 person 4) Technician & Operator : 13 person (3 shifts)	 Maintenance activities are recorded. Water quality measured in laboratory is recorded every day. (refer to above Laboratory Equipment
2. Instrumentation and Laboratory 1) Instrumentation	(a) air, 3 min	5) Labor : 2 person	and Activity)
 Instrumentation Flow meters are installed at raw water and treated water line. Raw water flow meter is installed on 	(b) air + water, 7 min (c) water, 10 min	6) Security guard : 4 person	3) Operation hours
the piping into distribution chamber. Treated water flow meters are installed on the 2 outgoing lines	5) Other O&M activities	* Total manpower : 30 person	The facility is managed 24 hours in 3 shifts and actually operated maximum 16 hours a day in total. 4) Backwash
individually. 2) Laboratory Equipment and Activities	> Generator is operated once a week for 15 minutes to charge batteries, and is worked approx. once a	Facility Condition 1. Deterioration Assessment (Facility Condition)	> Backwash for sand filter is conducted twice a day, for 25 minutes.
 Turbidity meter, pH meter, TDS/Conductivity meter, Jar tester, Residual chlorine meter, 	month due to blackout. Clarifier does not equip with sediment collector, therefore staff drains and cleans up clarifier every 3	 Building frame : Very old, some deterioration is going on. 	 Other O&M activities This station is very old and therefore as-built drawings are not available. But staff on site made PFD
Spectrophotometer, and so on are equipped.	months.	Mechanical equipment : Old, a lot of maintenance works required.	
 General items of physical and chemical properties are measured once a day. Turbidity, pH, and Residual chlorine are measured every 2 hours. 			and layout drawing by hand writing in order to understand the system structure. Staff seems to be
	Current Problem	 Electrical equipment : Old, a lot of maintenance works required. 	positive to improve the facility and SOP activity.
> Jar test is conducted every 2 weeks in order to determine aluminum sulfate dosing.	Problem regarding O&M	2. Instrumentation and Laboratory	positive to improve the facility and SOP activity. Current Problem
Chlorine demand test (breakpoint test) is conducted every 2 weeks.	<u>Problem regarding O&M</u> Oscrete structure such as clarifier and filtration bed leaks a little.		positive to improve the facility and SOP activity. Current Problem Problem requiring OAEM
 Chlorine demand test (breakpoint test) is conducted every 2 weeks. Water Quality 	Problem regarding O&M	 Instrumentation and Laboratory Instrumentation > 2 flow meters are installed at treated water line. 2 Laboratory Equipment and Activities 	positive to improve the facility and SOP activity. Current Problem
Chlorine demand test (breakpoint test) is conducted every 2 weeks.	Problem regarding O&M 1) Concrete structure such as charifer and filtration bod leaks a little. 2) Equipment such as shudge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. 3) Staff on eithe watto to exchange retarded water pump from 3.1kV to 380V, because it is difficult to	 Instrumentation and Laboratory Instrumentation Pathown meets are installed at treated water line. Laboratory Equipment and Activities Turbuly meet, pH meet, Residual chlorine meter, TDS Conductivity meter, Jar tester, 	positive to improve the facility and SOP activity. <u>Current Problem</u> <u>Problem constraining O&M</u> 1) Equipment in the station is old and requires a lot of maintenance works. 2) Instale cinal is diried up for a month, usually in annary. 3) The facility meets backcost frequently because of the trouble of transformer which is shared with
≻Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality i) Haw water i) Haw water > Turbishig: > Turbishig: :5.5 to 13 NTU > pH :7.8	Problem regarding O&M 1) Concrete structures such as charifer and filtration bod leaks a little. 2) Equipment such as sludge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. 3) Staff on site vanito to exchange retrated water pump from 3.34V to 386V, because it is difficult to maintain and to get spare parts for 3.34V.	 Instrumentation and Laboratory Instrumentation Partowneets are installed at treated water line. Laboratory Equipment and Activities Turbidity more, pH meerk, Fastikal chloring meter, TDSC Conductivity meter, Jar tester, Spectrophotometer, and so on are equipped. Censent alter of physical and chenical properties are measured once a day. 	positive to improve the facility and SOP activity. Current Problem Problem regarding CAEM 1) Equipment in the station is old and requires a hot of maintenance works. 2) Instate canal is diried up for a month, unually in January. 3) The facility meets balacad officiated transformer for the station which can be maintained by others. SRI Wants how as a docted transformer for the station which can be maintained by
➤Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality 1) Raw water ➤ Turbidity : 5.5 to 13 NTU ➤ ptf : 7.8 1) Produced water	<u>Problem regarding O&M</u> 1) Concrete structures such as clariffer and filtration bod leaks a little. 2) Equipment such as sludge watter pump and backwash watter pump is very old, and it costs a lot for operation and maintenance. 3) Staff on site wants to exchange treated watter pump from 3.3kV to 380V, because it is difficult to maintain and to get spare parts for 3.3kV. Necessary point for improvement of O&M activity (consideration)	 Instrumentation and Laboratory Instrumentation Pathometers are installed at treated water line. Laboratory Equipment and Activities Tatubality meter, <i>This</i> House and Charlow an	positive to improve the facility and SOP activity. Current Problem Comparison of the SoP activity. Problem recording OAM I) Equipment in the station is old and requires a hot of maintenance works. 2) Instate cannal is dired up for a month, unstally in Jamary. 3) The facility morest balaxes dudicated transformer for the station which can be maintained by themself in order to avoid the trouble.
≻Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality 1) Baw water > Turbitity : 5.5 to 13 NTU > pht : 7.8 1) Produced water > Turbitity : 0.17 to 0.35 NTU (Shandard; 1 NTU) > Residual chlerine: > Turbitity : 1.8 to 2.0 mg/L	Problem regarding O&M 1) Concrete structures such as charifer and filtration bod leaks a little. 2) Equipment such as sludge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. 3) Staff on site vanito to exchange retrated water pump from 3.34V to 386V, because it is difficult to maintain and to get spare parts for 3.34V.	 Instrumentation and Laboratory Instrumentation Partowneets are installed at treated water line. Laboratory Equipment and Activities Turbidity more, pH meerk, Fastikal chloring meter, TDSC Conductivity meter, Jar tester, Spectrophotometer, and so on are equipped. Censent alter of physical and chenical properties are measured once a day. 	positive to improve the facility and SOP activity. <u>Current Problem</u> <u>Problem regarding O&M</u> 1) Equipment in the station is old and requires a lot of maintenance works. 2) Instake canal is dried up for a month, usually in January. 3) The facility meets backcout frequently because of the trouble of transformer which is shared with others. Staff wants to have a dedicated transformer for the station which can be maintained by themself in order to avoid the trouble. <u>Necessary outing for improvement of O&M activity (consideration)</u>
≻Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality i) haw water 1 Naw water Turbidity 2 Turbidity : 5.5 to 13 NTU > pH : 7.8 1) Produced water : 1.8 to 2.0 mg/L > PH : 7.7 (Standard; 6.5 * 8.5)	<u>Problem regarding O&M</u> 1. Concrete structures such as charifer and filtration bod leaks a little. 2. Equipment such as shudge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. 3. Staff on site vanito to exchange treated water pump from 3.3kV to 380V, because it is difficult to maintain and to get spare parts for 3.3kV. <u>Necessary noisin for improvement of O&M activity (considentiation)</u> 1. Water leakage looks not so meth-mounds, that it had better to be interested in much more in order to	 Instrumentation and Laboratory Instrumentation 2 from where are an initial of at treated water line. Laboratory Equipment and Activities Turbidly moster, pH more, Residual chlorine meter, TDSC conductivity meter, Jar tester, Spectrophotometer, and so on are equipped. Censenal items of Physical and chernical exponenties are measured once a day. Censenal items of Thiological properties are measured stimes a week. Turbidly rule, July and Mahdu chernica are measured stimes a week. Turbidly rule, July and Mahdu chernica are measured stimes a week. Turbidly rule, July and Mahdu chernica are measured stimes a week. Turbidly rule, July and Kahdu chernica are measured stimes a week. Turbidly rule, July and Kahdu chernica are measured stimes are measured structure. 	positive to improve the facility and SOP activity. Current Problem Comparison of the SoP activity. Problem recording OAM I) Equipment in the station is old and requires a hot of maintenance works. 2) Instate cannal is dired up for a month, unstally in Jamary. 3) The facility morest balaxes dudicated transformer for the station which can be maintained by themself in order to avoid the trouble.
Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality 1) Baw water 1 Baw water 7 turbidity 5.5 to 13 NTU > Pift 7.8. 1) Produced water - 0.17 to 0.35 NTU (Standard; 1 NTU) > Residual chlorine : 1.8 to 2.0 mg/L > pft : 7.7. (Standard; 6.5 + 8.5) - Above standard in based on Decree Not 80.55 for the very 2007 by Ministry of Health	Problem regarding O&M 1) Concrete structures such as charifer and filtration bod leaks a little. 2) Equipment such as shudge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. 3) Staff on itie vanto to exchange reated water pump from 3.34V to 380V, because it is difficult to maintain and to get spare parts for 3.34V. Necessary point for improvement of O&M activity (consideration) 1) Water leakage looks not so much amount, but it had better to be interested in much more in order to improve water balance. 2) Staff on site is not interested in the cost and efficiency. 3) In case treated water pump may end, timal statisth SOP activity. It is not decided for the	 Instrumentation and Laboratory Instrumentation Some more are as installed at treated water line. Laboratory Equipment and Activities Turbuly more, pH more, Fastiand Lobran emetr, TDSC Conductivity meter, Jar lester, Spectrophotometer, and so on are equipped. Censeral items of physical and chernical properties are measured once a day. Censeral items of physical and chernical encourses are weak. Turbuly (PJ, and ReSubid Lobran are measured Stimes a week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes as week. Turbuly (PJ, and ReSubid Lobran are measured Stimes are meastremeters are measured Stimes are meastremeastremeteremeastrem	positive to improve the facility and SOP activity. Current Problem Problem regulation (OAM) 1 Equipment in the station is old and requires a lot of maintenance works. 2) Instace cannot is old and requires a lot of maintenance works. 3) The facility meets balacould frequently because of the troubles of transformer which is shared with others. Staff wates to have a dolicated transformer for the station which can be maintained by themself in order to avoid the trouble. Necessary point for improvement of OAM activity (consideration) 1) The station is worked and maintained well, though it is very old. It may cost higher due to a lot of
Chlorine demand test (breakpoint test) is conducted every 2 weeks. 3. Water Quality 1) Baw water 1 Baw water * Turbidity : 5.5 to 13 NTU > Pift : 7.8 1) Produced water > Turbidity : 0.17 to 0.25 NTU (Standard; 1 NTU) > Residual chlorine: : 1.8 to 2.0 mg/L > Pift : 7.7 (Standard; 6.5 - 8.5)	 Problem regarding O&M Concrete structure such as charifer and filtration bod leaks a little. Equipment such as shadge water pump and backwash water pump is very old, and it costs a lot for operation and maintenance. Staff on either watto to exchange related water pump from 3.3kV to 380V, because it is difficult to maintain and to get spare parts for 3.3kV. Necessary point for improvement of OAM activity (consideration) Water kedage looks not to much amount, but it had better to be interested in much more in order to improve water balance. Staff on either balance. 	 Instrumentation and Laboratory Instrumentation Sources are installed at treated water line. Laboratory Equipment and Activities Tarbidity meters are installed at treated water line. Laboratory Equipment and Activities Tarbidity meter, pH meter, Residual chlorine meter, TDS/Conductivity meter, Jar tester, Spectrophotometer, and so on are equipmed. Ceneral items of holysical model chemical properties are measured once a day. Ceneral items of holysical properties are measured at the saweek. Turbidity, pH, and Residual chlorine are measured every 2 hours. Jar test and chlorine demand test (treakpoint test) are conducted every 2 weeks. Water Quality Rum water (as one day example) Turbidity : 8 to 11 NTU 	positive to improve the facility and SOP activity. Current Problem Problem reansities (OAM) Equipment in the station is old and requires a lot of maintenance works. 2) Instate cannil is dired up for a month, usually in January. 3) The facility meets blackout frequently because of the trouble of transformer which is shared with others. Staff wants to have a dedicated transformer for the station which can be maintained by thermalf in order to avoid the trouble. <u>Necessary point for improvement of OAM activity Consideration</u> 1) The tation is worked and maintained well, though it is very old. It may cost higher due to a lot of maintenance work, therefore ethalistication of building and replacement of equipment seem to be
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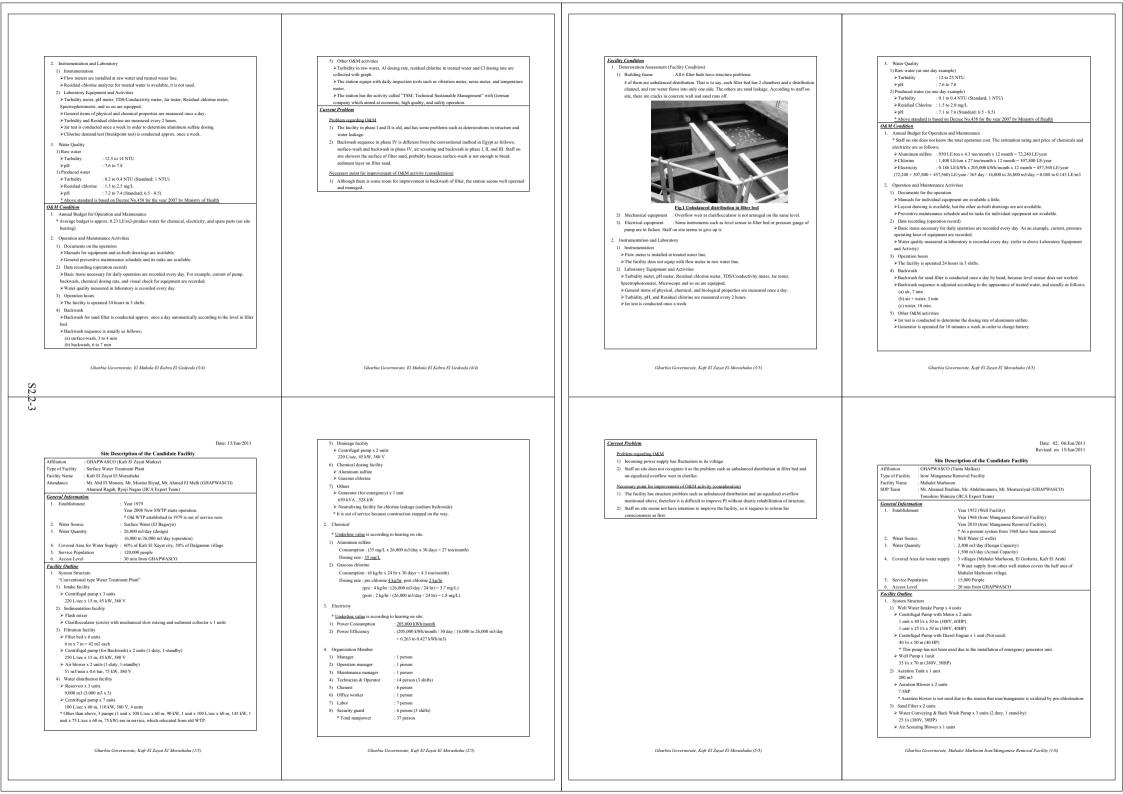


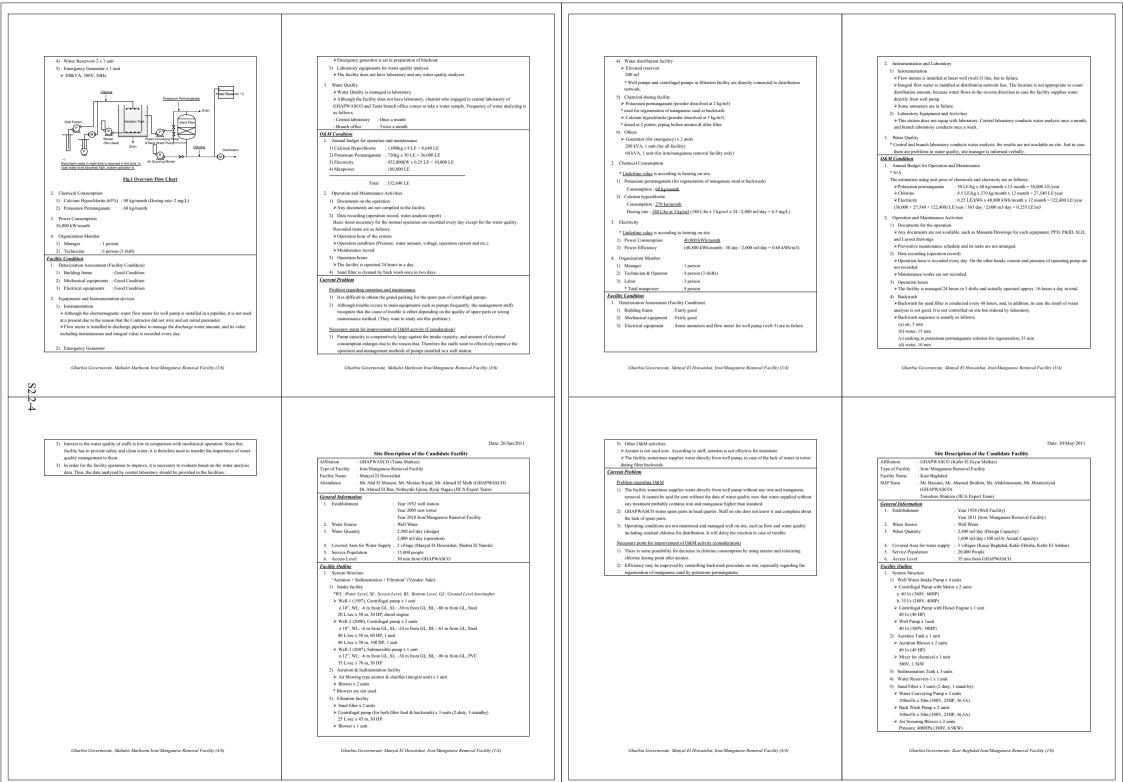
Gharbia Governorate, Zefta El Morashaha (3/6)

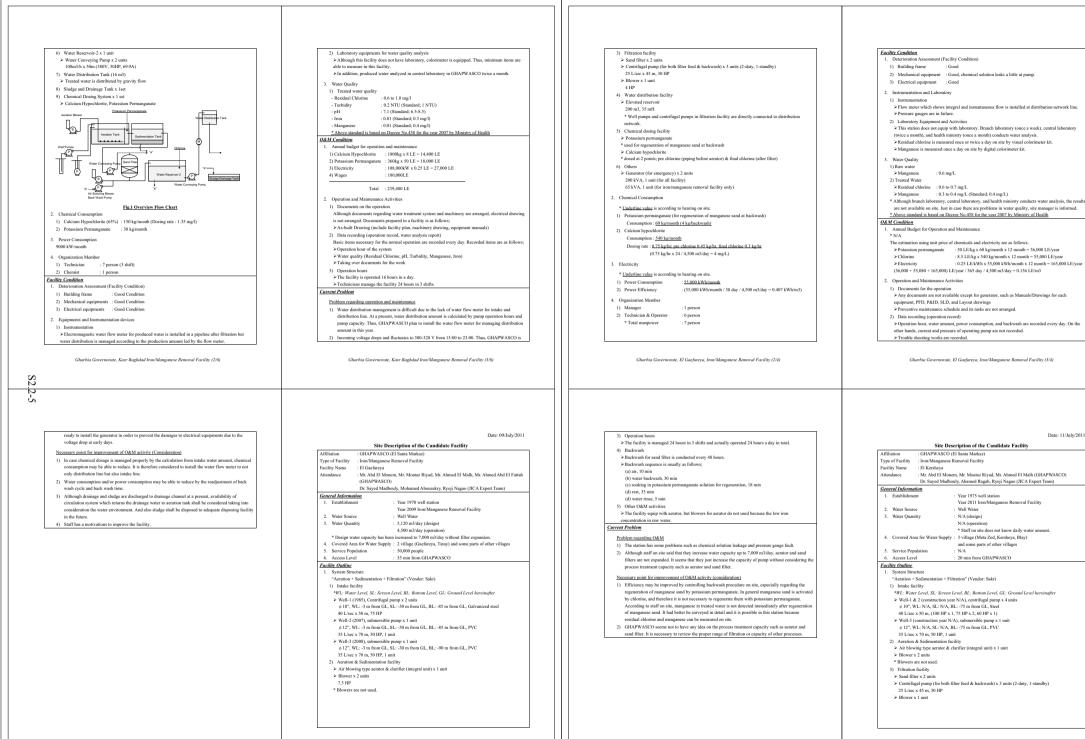
Gharbia Governorate, Zefta El Morashaha (4/6)

Gharbia Governorate, El Mahala El Kobra El Gedeeda (1/4)

Gharbia Governorate, El Mahala El Kobra El Gedeeda (2/4)







Gharbia Governorate, El Gaefareva, Iron/Manganese Removal Facility (1/4)

Gharbia Governorate, El Gaefareva, Iron/Manganese Removal Facility (4/4)

Gharbia Governorate. El Kersheva. Iron/Manganese Removal Facility (1/3)

Date: 11/July/2011

Water distribution facility 2) Laboratory Equipment and Activities 3 Water Quality > Flavated recervoir > This station does not equip with laboratory. Branch laboratory (twice a week, 20 minutes far away Site Description of the Candidate Facility * Central laboratory conducts water analysis, however the results are not available on site 200 m3 35 mH from this station) and central laboratory (twice a month 20 minutes) co **O&M** Condition * Well pumps and centrifugal pumps in filtration facility are directly connected to distribution ual Budget for Operation and Maintena Water Ouality Type of Facility : Iron/Manganese Removal Facility network * Although branch laboratory and central laboratory conduct water analysis, the results are not available * N/A acility Name · Shohmalala 5) Chemical doring facility · Mr. Abd El Monem Mr. Moataz Rivad. Mr. Ahmed El Malh. Mr. Ahmed Abd El Fattah on site. Just in case there are problems in water quality, site manager is informed. Attendance 2 Operation and Maintenance Activities > Potassium permangana **O&M** Condition (GHAPWASCO) 1) Documents for the operation * used for regeneration of manganese sand at backwash Annual Budget for Operation and Maintenance Dr. Sayed Madbouly, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) Any documents are not available, such as Manuals/Drawings for each equipment, PFD, P&ID, SLD, > Calcium hypochlorite * N/A General Information * dosed at 2 points; pre chlorine (piping before aerator) & final chlorine (after filter) and Layout drawings The estimation using unit price of chemicals and electricity are as follows; Year 1948 well station Establishment > Preventive maintenance schedule and its tasks are not arranged 6) Others Potassium permanganate 50 LE/kg x 60 kg/month x 12 month = 36,000 LE/year Year 2004 Iron/Manganese Removal Facility 2) Data recording (operation record) > Generator (for emergency) x 2 units >Chlorine : 8.5 LE/kg x 270 kg/month x 12 month = 27,540 LE/year 2 Water Source Well Water > Operation hour, treated water flow, and backwash are recorded every day. On the other hands, 200 kVA, 1 unit (for all facility) > Electricity · NI/A 3. Water Quantity 8.000 m3/day (design) 65 kVA. 1 unit (for iron/manganese removal facility only) current and pressure of operating pump are not recorded 4.500 m3/day (operation) 2 Operation and Maintenance Activities > Maintenance works are recorded 4. Covered Area for Water Supply : 7 village (Abo Ghor, Shobraelola, Kafr Slimein Awad, Sehem, Chemical Consumption 1) Documents for the operation 3) Operation hours Manshet Abd Allah, Blos El Hor, Kafr El Hag Dawod) Any documents are not available, such as Manuals/Drawings for each equipment, PFD, P&ID, SLD, > The facility is operated 24 hours in 3 shifts. * Underline value is according to hearing on site and Layout drawings 5 Service Population N/A 1) Potassium permanganate (for regeneration of manganese sand at backwash) 4) Backwash 30 min from GHAPWASCO 6. Access Level > Preventive maintenance schedule and its tasks are not arranged Backwash for sand filter is conducted every 8 hours for 20 minutes Consumption : 60 kg/month Facility Outline 2) Data recording (operation record) 5) Other O&M activities 2) Calcium hypochlorite 1. System Structure > Operation hour is recorded every day. On the other hands, current and pressure of operating pump ar > The station has 2 lines of aerator and sedimentation tank, and it operated alternately for a week in Consumption : 270 kg/month "Aeration + Sedimentation + Filtration" (Vendor: Air Plane) not recorded order to clean the line on standby. Dosing rate : N/A 1) Intake facility 3) Operation hours > The station conduct overhaul once a month *WL: Water Level, SL: Screen Level, BL: Bottom Level, GL: Ground Level hereinafter Photo la la com > The facility is managed 24 hours in 3 shifts. Well-1 (1996), Submersible pump x 1 unit Current Problem 4) Backwash * Underline value is according to hearing on site 6 10" WL: 6 m from GL SL: 42 m from GL BL: 110 m from GL Galvanized steel Problem regarding O&M > Backwash for sand filter is conducted every 48 hours for 2 hours in total 35 L/secx x 70 m 50 HP 380 V 1) Power Consumption · N/A 1) Water leakage is going on a lot from valves and piping. 5) Other O&M activities > Well-2 (1996), Submersible pump x 1 unit 2) Power Efficiency • N/A Finishing of wiring and piping work is not so good, and a lot of garbage is left on site. > The facility equips with aerator, but blowers for aerator do not used. This is because they use φ10", WL: -6 m from GL, SL: -42 m from GL, BL: -110 m from GL, Galvanized steel 3) Drain water is discharged to irrigation canal without any treatment 4. Organization Member potassium permanganate instead of aeration. 35 L/seev x 70 m 50 HP 380 V 4) Operating conditions are not monitored and managed well on site, such as flow and water quality Current Problem 1) Manager · 1 person 2) Aeration & Sedimentation facility 2) Technician & Operator including residual chlorine for distribution. It will delay the reaction in case of trouble. > Water fall type aerator & clarifier x 2 lines (1 building) : 6 person Problem regarding O&M * Total manpower Necessary point for improvement of O&M activity (consideration) 3) Filtration facility : 7 person 1) Staff on site does not understand operating parameters including even daily water amount. It seems Facility Condition > Sand filter x 3 units 1) There is some possibility for decrease in chemical consumption especially regarding potassium that staff is just doing their own dairy tasks without considering how to manage operation Centrifugal pump (for both filter feed & backwash) x 4 units 1. Deterioration Assessment (Facility Condition) permanganate. In general, manganese can be removed with both chlorine dosing and manganese 2) Water leaks a lot from K2MnO4 dosing point. It is so dangerous to come close to filter during 40 L/sec x 58 m 75 kW 1) Building frame : Good sand, without potassium permanganate dosing and re-generation backwash using K2MnO4. 4) Water distribution facility 2) Mechanical equipment : Water leaks a lot from K2MnO4 dosing point. 2) Staff on site conducts backwash every 8 hours, however it may be reduced with appropriate Necessary point for improvement of O&M activity (consideration) 3) Electrical equipment : Fairly good management > Elevated reservoir 1) Efficiency may be improved by controlling backwash procedure on site, especially regarding the * Centrifugal pumps in filtration facility are directly connected to distribution network. 2 Instrumentation and Laboratory regeneration of manganese sand by potassium permanganate. 1) Instrumentation >Flow meter N/A ≻Pressure gauges N/A Gharbia Governorate, El Kersheya, Iron/Manganese Removal Facility (2/3) Gharbia Governorate, El Kersheya, Iron/Manganese Removal Facility (3/3) Gharbia Governorate, Berma, Iron/Manganese Removal Facility (3/3) Gharbia Governorate, Shobraelola, Iron/Manganese Removal Facility (1/4) S_2 i s Date: 04/July/2011 5) Chemical dosing facility 5) Chemical dosing facility 2) Laboratory Equipment and Activities > This station does not equip with laboratory. El Santa branch laboratory (10 minute from the station) Site Description of the Candidate Facility > Potassium permanganat > Potassium permanga * dosed at piping before aerator and used for regeneration of manganese sand once a month * dosed at piping before aerato onducts water analysis twice a month GHAPWASCO (Tanta Markaz) Affiliation > Gaseous chlorine > Gaseous chlorine > Residual chlorine is measured once a day on site by colorimeter kit Type of Facility : Iron/Manganese Removal Facility * dosed at piping before aerator only * dosed at after aerator 3. Water Quality Facility Name · Berma 6) Others Staff replaced dosing point due to the lack of pump head, though originally designed at piping after : Mr. Moataz Riyad, Mr. Ahmed El Malh, Mr. Ahmed Abd El Fattah (GHAPWASCO) 1) Produced water Attendance > Generator (for emergency) x 1 unit aerator. Dr. Sayed Madbouly, Mohamed Abouzekry, Ryoji Nagao (JICA Expert Team) > Residual chlorine : 0.4 mg/L 340 kVA 6) Others * Branch laboratory conducts water analysis, however the results are not available on site. General Information > Generator (for emergency) x 1 unit 2. Chemical Consumption **O&M** Condition Year 1954 well station 1. Establishment 340 FVA Year 1994 Iron/Manganese Removal Facility 1. Annual Budget for Operation and Maintenance * Underline value is according to hearing on site. 2. Water Source : Well Water 2 Chemical Consumption * N/A 1) Potassium permang Water Ouantity 8,000 m3/day (design) The estimation using unit price of chemicals and electricity are as follows; Consumption : 90 kg/month * Underline value is according to bearing on site 4,000 m3/day (operation > Potassium permanganate : 50 LE/kg x 12 kg/month x 12 month = 7,200 LE/year 4. Covered Area for Water Supply : 2 village (Berma, Heset Berma) 2) Gaseous chlorine 1) Potassium permanganate > Chlorine : 8.5 LE/kg x 200 kg/month x 12 month = 20,400 LE/year Consumption : 10 to 12 kg/month (10 g/L solution) Service Population 120.000 people Consumption : 180 kg/month Flectricity : 0.25 LE/kWh x 55.000 kWh/month x 12 month - 165.000 LE/vear Dosing rate : 10 g/hr (10 g/hr x 24 hr / 4,500 m3/day = 0.05 mg/L) (7,200 + 20,400 + 165,000) LE/year / 365 day / 4,500 m3/day = 0.117 LE/m3 * needs to be checked again Dosing rate : 1 mg/L 30 min from GHAPWASCO 2) Gaseous chlorine 6. Access Level (180 kg/month / 30 day / 4,000 m3/day = 1.5 mg/L) 2. Operation and Maintenance Activities Consumption : 160 to 200 kg/month Facility Outline 1) Documents for the operation 3 Electricity System Structure Dosing rate : 0.4 kg/hr (0.4 kg/hr x 24 hr / 4,500 m3/day = 2.1 mg/L) > Any documents are not available except for Cl dosing unit, such as Manuals/Drawings for each "Aeration + Sedimentation + Filtration" (Vendor: Air Plane) * Underline value is according to hearing on site equipment, PFD, P&ID, SLD, and Layout drawings 3 Electricity 1) Intake facility 1) Power Consumption : N/A > Preventive maintenance schedule and its tasks are not arranged *WL: Water Level, SL: Screen Level, BL: Bottom Level, GL: Ground Level hereinafter 2) Power Efficiency * Underline value is according to hearing on site. $\cdot N/A$ 2) Data recording (operation record) ➤ Well-1 & 2 (1994), Submersible pump x 1 unit 1) Power Consumption : 47,000 to 55,000 kWh/month > Operation hour, treated water flow, and backwash are recorded every day. On the other hands 4. Organization Member 6 10" WL: -5/-7 m from GL SL: -25 m from GL BL: -100 m from GL Galvanized steel 2) Power Efficiency : (47,000 to 55,000 kWh/month / 30 day / 4,500 m3/day 1) Manager current and pressure of operating pump are not recorded. 35 L/sec. 50 HP : 1 person -0.348 to 0.407 kWh/m3) > Trouble shooting works are recorded > Well-3 (2010) Submersible numn x 1 unit 2) Technician · 6 person (3 shifts) 6 10", WL: -5/-7 m from GL, SL: -25 m from GL, BL: -120 m from GL, PVC 4 Organization Member 3) Operation hours * Total manpower : 7 person > The facility is managed 24 hours in 3 shifts and actually operated 17 to 18 hours a day. 35 L/sec. 50 HP 1) Manager Facility Condition : 1 person 4) Backwash > Well-1 (2011). Submersible numn v 1 unit Deterioration Assessment (Facility Condition) 2) Technician : 6 person Backwash for sand filter is conducted every day for 20 minutes (15 minutes backwash and 5 minutes) \$ 12", WL: -5/-7 m from GL, SL: -25 m from GL, BL: -120 m from GL, PVC 3) Labor 1) Building frame : Fairly good : 1 person 35 L/sec. 50 HP rinse wash). 2) Mechanical equipment : Water leakage is going on a lot from valves and piping. * Total manp 8 persor 2) Aeration & Sedimentation facility 5) Other O&M activities 3) Electrical equipment : Finishing of wiring works is not so good. Facility Condition > Water fall type aerator & clarifier x 2 lines (1 building) > The station has 2 lines of aerator and sedimentation tank, and it operated alternately for 15 days (10 sment (Facility Condition . Instrumentation and Laboratory Filtration facility days in summer) in order to clean the line on standby. 1) Building frame · Good 1) Instrumentation Current Problem > Sand filter x 3 units 2) Mechanical equipment : Good > Flow meter which shows integral and instantaneous flow is installed treated water line > Centrifugal pump (for both filter feed & backwash) x 4 units Problem regarding O&M 3) Electrical equipment : Good 40 L/eec x 58 m 75 kW > Some of well pumps do not have pressure gauge. 1) There is not enough room for well capacity, because the other 2 wells have been clogged 2) Laboratory Equipment and Activities 4) Water distribution facility 2 Instrumentation and Laboratory 2) The station sometimes meets the problems with biological test, though colorimeter kit for residual This station does not equip with laboratory. Branch laboratory (30 minute from the station) conducts > Elevated reservoir 1) Instrumentation chlorine is available on site. water analysis once a week 100 m3 25 mH > Flow meter which shows integral and instantaneous flow is installed treated water line * Centrifugal pumps in filtration facility are directly connected to distribution network

Gharbia Governorate, Berma, Iron/Manganese Removal Facility (2/3)

Gharbia Governorate, Berma, Iron/Manganese Removal Facility (1/3)

Gharbia Governorate. Shobraelola. Iron/Manyanese Removal Facility (2/4)

Gharbia Governorate, Shobraelola, Iron/Manganese Removal Facility (3/4)

Date: 09/July/2011

Current Problem Necessary point for improvement of O&M activity (consideration) Site Description of the Tanta El Teraa El Melahia SWTP ≻pH : 7.6 1) It is necessary to construct new wells, because current operating 2 wells are old (15 years old) and do Problem regarding O&M : GHAPWASCO (Tanta Markaz) 1) Produced water not have enough capacity in case: Well pump capacity is 3.000 m3/day each against 4.500 m3/day of Type of Facility : Surface Water Treatment Plant > Turbidity · 0.4 NTU (Standard- 1 NTU) 1) Drawings and manuals are not prepared in the facility. (The Contractor didn't hand over them.) operating capacity. In case one of the well is in failure, the station cannot meet the demands. : Tanta El Teraa El Melahia SWTP Facility Name ≥Residual chlorine : 1.5 mg/L 2) There is some possibility for decrease in chemical consumption especially regarding potassiun Attendance : Ahmed El Maleh, Rezq El Feky, Mahmoud Badr, Mohamed Massaud (GHAPWASCO) 2) There is no problem regarding O&M activities except for the some equipment troubles caused by low ≻pH : 7.6 (Standard: 6.5 - 8.5) equipment quality and insufficiency of facility design. permanganate. In general, manganese can be removed with both chlorine dosing and manganese Mohamed Abouzekry, Sayed Osman Madbouly, Tomohiro Shimizu (JICA Expert Team) * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health sand, without potassium permanganate dosing. General Information > Clogging of the intake screen (need to install the intake barrier) **O&M** Condition 1 Jan 2011 (Establishment) Annual Budget for Operation and Maintenance > Leakage from the pump head 7 July 2012 (Handed over date) * Average budget is not available on site. Staff on site does not care about the operation cost and unit > And etc, 2 Water Source Surface Water (El Melahia Cabal) price of chemicals and electricity. * 7 technicians graduated the water treatment school. They try to improve above problems. 3. Water Quantity : 1,400 l/sec (design) 2. Operation and Maintenance Activities Necessary point for improvement of O&M activity (consideration) 600 l/sec (operation) * 800 l/sec at peak time (from 10:00 to 16:00) 1) Documents for the operation Operation staff concern about the countermeasure in the emergency situation, such as power failure and gaseous chlorine leakage. (Preparation of SOP for the countermeasures in emergency situation is > Any documents are menared excent for facility layout drawing 4. Covered Area for Water Supply : This facility has 3 distribution lines. 1 line is for Tanta city, another required.) lines are for some village in Tanta Markaz. 2) Data recording (operation record) 5. Service Population : 3,000 peoples (500,000 peoples after expansion) > Any operation conditions are not recorded. (Operation recording formats are not prepared.) 2) Supporting rods of clarifier assembled in sedimentation tanks damages sometime due to the overload 6. Access Level : 15 min (next to GHAPWASCO) Water quality measured in Jahoratory is recorded every day caused by the accumulation of sludge Facility Outline * Frequency of sludge drainage is once 10 to 15 days, because it's hard to operate drainage valves 3) Operation hours System Structure The facility is operated 24 hours in 3 shifts. due to the equipment quality. (To avoid the damage to rods, clarifiers operate 2 or 3 days. Then "Conventional type Water Treatment Plant" 4) Backwarh stop it until sludge drainage.) Intake facility 3) Because inlet water balance is not equal at the right and left filters, head loss doesn't become equal at > Backwash for sand filter is conducted 3 times per 2 days. (Timing of backwash is decided by > Intake Screen : Inclined screen x 3units (3 line) both sides. (Inlet water balance should be improved.) Vertical Shaft Centrifugal Pump x 5 units Backwash semence is as follows: 550L/sec x 17m 380V x 50Hz x 160kW 286 7A (a) air, 10 min Inlet water balance is not equal. 2) Sedimentation facility : 4 tanks (b) air + water 10 min > Flash mixer x 1 unit/tank (c) water, 10 min 380V x 50Hz x 2.2kW > Machanical clow mixer x dunite/tank 380V x 50Hz x 0.12kW Sludge collector x 1 unit/tank 380V x 50Hz x 0.55kW 3) Filtration facility - Outla Filter hed v 16 units Sand Filter Backwash Sump Deckwash Sump Vertical Shaft Centrifugal Pump (for Backwash) x 3 units 275L/sec x 15m, 380V x 50Hz > Air blower x 2 units (1-duty, 1-standby) 4354 m3/h x 500mbar, 380V x 50Hz x 90kW, 159A 4) Water distribution facility Reservoir x 3 tanks 8,000 m3 (4,000 m3 x 2) @ each tank Gharbia Governorate, Shobraelola, Iron/Manganese Removal Facility (4/4) Gharbia Governorate, Tanta El Teraa El Melahia WTP (1/6) Gharbia Governorate, Tanta El Teraa El Melabia WTP (4/6) Gharbia Governorate, Tanta El Teraa El Melahia WTP (5/6) S_2 <u>-1</u> > Double Suction Centrifugal Pump x 10 units * Average consumption is not available on site 290L/sec x 60m, 380V x 50Hz x 315kW, 554.6A 1) Aluminum sulfate 5) Drainage facility Dosing rate : 38 mg/L > Drainage Tank x 2 tanks 2) Gaseous chlorine Vertical Shaft Centrifugal Pump x 3 units 200mm Dosing rate : 7mg/L (Pre-Chlorine), 3mg/L (Post-Chlorine) 250L/sec x 25m, 380V x 50Hz x 160kW, 290.8A 6) Chemical dosing facility 3. Electrical consumption ➤ Aluminum sulfate * Average consumption is not available on site • Alum storage tank x 3 tanks 40.40 1 1 130t x 2tanks 68t x 1tank 4. Organization Member • Alum transfer pump x 4 units 1) Manager (Engineer) : 1 person Centrifugal pump 12-54m3/h x 20.9-9m, 380V x 50Hz x 3kW, 6.38A 2) Vice engineer (Engineer) · 1 nerson Chemist · 4 person Alum dilution tank x 3 tanks 4) Laboratory assistant · 2 person 1-6-1-1 81m3/tank (4.5 x 4.5 x 4mH) Alum dosing pump x 3 units 5) Technician & Operator : 26 person (3 shifts) Diaphragm pump 6) Labor : 3 person * Total manpower 37 person 531-3541 L/h x 8kg/cm2. 380V x 50Hz x 5.5kW, 10.1A 1 (1 ➤ Gaseous chlorine Facility Condition Deterioration Assessment (Facility Condition) Chlorine Dosing equipment Pre-Chlorine dosing equipment : 60kg/h x 2units (1duty, 1 stand-by) Building frame : Good Post-Chlorine dosing equipment : 25kg/h x 2units (1duty, 1 stand-by) 2) Mechanical equipment : Fairly good. 樹 Booster Pump for pre-chlorination : Vertical type centrifugal pump x 2units Some equipment is already broken despite of new facility. 9-24 m3/h x 195-86m, 380V x 50Hz x 11kW, 18.2A Pressure gauges Booster Pump for post-chlorination : Vertical type centrifugal pump x 2units 9-24 m3/h x 65-28.6m, 380V x 50Hz x 4kW, 7.53A Sludge discharge valve condition (Open-close action is difficult.) 3) Electrical equipment : Good. • Weight balance x 2 units 2. Instrumentation and Laboratory 7) Others > Neutralizing facility for chlorine leakage 1) Instrumentation Caustic soda pump > Flow meters are installed at raw water and treated water line. In addition, weight balance, chlorine Centrifugal pump leakage detector and other instrumentation is prepared. However, some instrumentations, such as level 66-216 L/min x 36-14m, 380V x 50Hz x 1.7kW, 3A meter for filters, may need arrangement, but not essential. • Blower 2) Laboratory Equipment and Activities 380V x 50Hz x 5 5kW 12 1A > Turbidity meter, pH meter, TDS/Conductivity meter, Jar tester, Residual chlorine meter, Mixer Spectrophotometer, and so on are equipped. 380V x 50Hz x 1.1kW > General items of physical and chemical properties are me ed once a day Leakage detector >Turbidity, pH, and Residual chlorine are measured every 2 hours. 4 sensors > Jar test is conducted twice per week in order to determine aluminum sulfate dosing. > Emergency Generato > Chlorine demand test (breakpoint test) is not conducted. Depend on the result of residual chlorine check dosing rate is adjusted 3. Water Ouality 2. Chemical consumption 1) Raw water Gharbia Governorate, Tanta El Teraa El Melahia WTP (2/6) Gharbia Governorate, Tanta El Teraa El Melahia WTP (3/6) Gharbia Governorate, Tanta El Teraa El Melahia WTP (6/6)

Selection Criteria List

	No.	8	9	10	11	
	ltem	Data Management	Document Arrangement	Maintenance Activity	Safety Precaution	total marks
	Full Marks	10	10	10	10	135
Selection Criteria	Criteria	Point-Deduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) operation hour - 1 point (2) flow - 1 point (3) current - 1 point (4) pressure - 1 point (5) backwash - 1 point (6) chemical consumption - 1 point (7) water quality - 4 points	Point-Deduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) process flow diagram (PFD) - 2 points (2) layout drawing - 2 points (3) olping & instrument diagram (P&ID) - 2 points (4) single line diagram (SLD) - 2 points (5) equipment drawing & manual - 2 points	Point-Daduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) preventive maintenance schedule -2 points (2) preventive maintenance task instruction -4 points (3) preventive maintenance record -2 points (4) trouble shooting record -1 point (5) spare parts stock -1 point	Marks shall be the total of the marks which is defined for individual item as follows; (1) safety control staff - 3 points (2) neutralizing facility for chlorine leakage - 3 points (3) coupling/belt cover - 2 points (4) handrall in high place - 2 points	

3/3

Selection Criteria List

	No.	1	2	3	4
	Item	Access Time	Design Capacity	Staff Number	System Typicality
	Full Marks	10	15	10	10
	Criteria	access time	design capacity	total staff number of; - Engineer - Chemist (for the facility) - Technician - Operator	system typicality in neighborhood Note) The typicality of surface water treatment plant shall be evaluated from the viewpoint of; - backwash - mixing - sludge treatment
Selection Criteria	Marks	0 to 19 min 20 to 39 min 40 to 59 min 60 min over 3	First the biggest facility gets full marks (15), then the other facility get marks as follows; $\frac{Mx = Qx / Qmax x 15}{Mx: marks of 'x facility}Qx: capacity of 'x facilityQmax: capacity of biggest facility15: full marksMx shall be truncate after thedecimal point, for example, 9.6 istruncated to be 9.$	First the biggest facility gets full marks (10), then the other facility get marks as follows; $Mx = Nx / Nmax \times 10$ Mx: marks of x' facility Nn:cumber of x' facility Nn:cumber of x' facility Nn:cumber of biggest facility 10: full marks Mx shall be truncate after the decimal point, for example, 9.6 is truncated to be 9.	most dominant secondary dominant 5 thirdly dominant 3 3

1/3

	No.	5	6	-	7
		5 m o m	Instrumentation Device	Water A	Analysis
	Item	Facility Condition	Instrumentation Device	Surface Water Treatment Plant	Iron/Manganese Removal Facility
	Full Marks	20	15	1	5
ia	Criteria	(1) capability & sustainability as water treatment facility (2) construction year	Marks shall be the total of the marks which is defined for individual equipment as follows; (1) flow meter for raw water - available: 2 points - need repair: 1 point (2) flow meter for treated water - available: 2 points - need repair: 1 point (3) flow mater for chemicals - all available: 1 point	Total marks shall be the total of the marks which is defined for individual equipment as follows; (1) turbidity meter - 3 points	(1) laboratory availability on site (2) access time to nearest laboratory Note) Laboratory had better equip with the following meters at least fo reference. - iron (Fe) - manganese (Mn) - ammonium (NH4) - TDS/conductivity meter - utvikity meter - utvikity meter - residual chlorine meter
Selection Criteria	Marks	Comparative Assessment high capability new construction (20% of total) (30% of total) (30% of total) (20% of total) (20% of total) I0 construction	(4) lovel meter for reservoir - available: 1 point (5) lovel meter for filter bed - available: 1 point (6) lovel meter (or balance) for chemical - available: 2 points (7) linconing power meter - available: 3 points - anear (spar, 2 points (8) armwater for equipment - all available: 1 point (9) pressure gauge for idstribution network - available: 1 point (10) pressure gauge for equipment - all available: 1 point	(2) pH meter - 3 points (3) residual chlorine meter - 3 points (4) jar test - 3 points (5) chlorine demand test (breakpoint test) - 3 points	15 points in case laboratory is available on site otherwise access time to nearest laboratory shall be evaluated. laboratory available on site access time: 0 to 19 min access time: 20 to 39 min access time: 40 min over

S2.2-8

<u>MCWW</u>

Date: 11/Jun/2011	Clariflocculator (circle) with sediment collector x 4 units	Date: 14/lun/2011	
Site Description of the Candidate Facility	32 r/day, 1.6 kW, 380 V	Site Description of the Candidate Facility	 5) Drainage facility > Centrifugal pump x 2 units
Affiliation : MCWW (Shebeen El Kom Markaz)	 Filtration facility Filter bed x 10 units 	Affiliation : MCWW (Menouf Markaz)	260 L/sec x 17 m, 75 kW, 380 V 6) Chemical dosing facility
Type of Facility : Surface Water Treatment Plant Facility Name : Shebeen El Korn El Gedeeda	Centrifugal pump (for Backwash) x 3 units (2-duty, 1-standby)	Type of Facility : Surface Water Treatment Plant Facility Name : Mahatet Menouf El Morashaha	 b) Chemical dosing facility ➤ Aluminum sulfate
Attendance : Mr. Ayman Bassuni, Mr. Mohammed Fathi, Mr. Salem Hamdy (MCWW)	200 L/sec x 9 m, 30 kW, 380 V ➤ Air blower x 2 units (1-duty, 1-standby)	Attendance : Mr. Mohammed Fathi, Mr. Salem Hamdy (MCWW)	> Gaseous chlorine 7) Others
Mohammed Abd El-kader, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) General Information	77.8 m3/min x 0.5 bar, 110 kW, 380 V	Mohammed Abd El-kader, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) General Information	Generator for main facility (for emergency) x 3 units
1. Establishment : Year 2006	 Water distribution facility Reservoir x 4 units 	1. Establishment : Year 2001	500 kVA each ➤ Generator for intake station (for emergency) x 1 unit
Water Source : Surface Water (Bahr Shebeen) Water Quantity : 68,000 m3/day (design)	12,000 m3 (3,000 m3 x 4)	2. Water Source : Surface Water (El Bagoria canal) 3. Water Quantity : 51,000 m3/day (design)	317 kVA
35,680 m3/day (operation)	 Centrifugal pump x 6 units 200 L/sec x 60 m, 250 kW, 380 V 	45,000 m3/day (operation)	Neutralizing facility for chlorine leakage (sodium hydroxide)
Covered Area for Water Supply : 1 city (Shebeen El Kom) Service Population : Approx. 170,000 People	5) Drainage facility	 Covered Area for Water Supply : 3 city (Mefouf, Sers Elyan, El Bagoria) 3 village (Teta, Sengrg, Barhem) 	2. Chemical
6. Access Level : 5 to 10 min from MCWW	Centrifugal pump x 3 units 200 L/sec x 18 m, 55 kW, 380 V	5. Service Population : Approx. 150,000 People 6. Access Level : 30 min from MCWW	<u>Underline value</u> is according to hearing on site. Aluminum sulfate
Facility Outline 1. System Structure	6) Chemical dosing facility	6. Access Level : 30 min from MCWW Facility Outline	Consumption : <u>38 ton/month</u>
"Conventional type Water Treatment Plant"	 Aluminum sulfate Gaseous chlorine 	 System Structure "Conventional type Water Treatment Plant" 	Dosing rate : <u>25 to 30 mg/L</u> 2) Gaseous chlorine
Process Flow	7) Others	1) Intake facility	Consumption : 8 ton/month
	Generator (for emergency) x 1 unit 1,000 kVA	Centrifugal pump x 4 units 330 L/sec x 20 m, 90 kW, 380 V	Dosing rate : pre chlorine 6 to 9 mg/L, post chlorine 1 to 2 mg/L
and the same the same the same the	Neutralizing facility for chlorine leakage (sodium hydroxide)	* Intake station is outside of main facility, approx. 8 km (5 to 10 minutes).	3. Electricity
	2. Chemical Consumption	 Sedimentation facility Flash mixer x 3 units 	 <u>Underline value</u> is according to hearing on site. Power Consumption : main facility <u>297,383</u>, intake station <u>105,278 kWh/month</u>
house the state of the state of the	* <u>Underline value</u> is according to hearing on site. 1) Aluminum sulfate	> Mechanical mixing flocculator & Clarifier (rectangle) with sediment collector x 3 units	 Power Consumption main facility <u>297/385</u>, infake station <u>105,276 kWn/montn</u> Power Efficiency : (402,661 kW/month / 30 day / 45,000 m3/day = 0.298 kWh/m3)
Annual Annual Provide State	Consumption : <u>25 to 30 ton/month</u> ···(a)	 Filtration facility Filter bed x 8 units 	4. Organization Member
	Dosing rate : <u>16 mg/L</u>	60 m2 each	1) Manager : 1 person for main facility, 1 person for intake station
A manufacture and a manufactur	* Consumption calculated by dosing rate is as follows; 16 mg/L x 35,680 m3/day x 30 day = 17 ton/month ···(b)	Centrifugal pump (for Backwash) x 2 units (1-duty, 1-standby) 714 L/sec x 20 m. 110 kW. 380 V	2) Elec. engineer : 2 person 3) Chemist : 3 person (3 shifts)
HARD AND A DECK	The difference of consumption between (a) hearing and (b) calculation suggests, for example,	➤ Air blower x 2 units (1-duty, 1-standby)	4) Technician : 5 person for main facility (2 shifts)
Fig.1 Process Flow Diagram	overdose of aluminum sulfate. 2) Gaseous chlorine	75 kW 4) Water distribution facility	5) Operator : 7 person (3 shifts), 4 person for intake station 6) Labor : 8 person for main facility, 5 person for intake station
 Intake facility ▶ Intake piping φ 600 mm x 3 lines 	Consumption : (8 to 9 mg/L x 35,680 m3/day x 30 day = 8.6 to 9.6 ton/month)	Reservoir x 2 units	* Total manpower : 36 person
Centrifugal pump x 6 units	Dosing rate : pre chlorine <u>7 mg/L</u> , post chlorine <u>1 to 2 mg/L</u>	6,200 m3 (2,000 m3 x 1,4,200 m3 x 1) ➤ Centrifugal pump x 6 units	Facility Condition 1. Deterioration Assessment (Facility Condition)
220 L/sec x 9 m, 30 kW, 380 V 2) Sedimentation facility	3. Electricity	300 L/sec x 60 m, 315 kW, 3.3 kV, 4 unit 200 L/sec x 60 m, 200 kW, 380 V, 2 unit	1) Building frame : Fairly good
➢ Flash mixer x 1 unit	* <u>Underline value</u> is according to hearing on site. 1) Power Consumption : <u>250,000 kWh/month</u>	200 L/see x 80 m, 200 kW, 580 V, 2 unit	 Mechanical equipment : Good Electrical equipment : Flow meter on raw water and treated water line are in failure.
100 rpm, 2 kW, 380 V	2) Power Efficiency : <u>0.25 kWh/m3</u>		 Electrical equipment : Piow meter on raw water and realed water line are in failure.
Minufia Governorate, Shebeen El Kom El Gedeeda (1/4)	Minufia Governorate, Shebeen El Kom El Gedeeda (2/4)	Minufia Governorate, Mahatet Menouf El Morashaha (1/4)	Minufia Governorate, Mahatet Menouf El Morashaha (2/4)
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C - C - C - C - C - C - C - C - C - C -	O& M Condition 1. Annual Budget for Operation and Maintenance	2. Instrumentation and Laboratory	➤ Backwath sequence is usually as follows; (a) air, 4 min
- <u>></u> -9	 Annual Budget for Operation and Maintenance * Average budget is approx. 2,042,352 LE/year, although it is managed by MCWW 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. 	
	 Annual Budget for Operation and Maintenance * Average brandpati rapports. 20:2332. Elyvera, Holough it is managed by MCWW (2,042,352 LEyvar/365 day/35,680 m3/day = 0.157 LEm3) 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. ⊁ Residual chlorine analyzer is installed at treated water line, but it is out of service. 	(a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Other O&M activities
	1. Annual Budge for Operation and Maintenance * Average bracket approx. 20:2332 LEyear. 13:0304 it is managed by MCWW (2,042,352 LEyear. / 365 day / 35,680 m3/day = 0.157 LE/m3) 2. Operation and Maintenance Archivites 1) Documents for the operation	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but it is out of service. Laboratory Equipment and Activities Turbidly in meter, pH meter, TDS conductivity meter, Jar tester, Residual chlorine meter, 	(a) air, 4 min (b) air 4 min (c) water, 12 min (c) water, 12 min 5) Other O&M activities >N/A
	Annual Budge for Operation and Maintenance *Average budget is approx. 2,042,352 LEyear, 1dhough it is managed by MCWW (2,042,352 LEyear/ 365 day 3/586 milday – 0.157 LE/m3) Operation and Maintenance Activities	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but it is out of service. Laboratory Equipment and Activities Furbidity meter, pH meter, TDS:Conductivy meter, Jar tester, Residual chlorine meter, Spectrophometer, Microscope, and soon are equipped. 	(a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Other O&M activities
	 Armal Budge for Operation and Maintenance * Average budget is approx. 20:20:32. UE/year. Holough it is managed by MCWW (2;042;352 LE/year. / 365 day / 35,680 m3/day = 0.157 LE/m3) Operation and Maintenance Activities Documents for the operation Manualis for each equipment and as-built drawings such as PFD, P&LD, SLD, and Layout drawing are available. Operation manual for system are also available. PREID drawing are displayed arelevant facility on site. 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but it is out of service. Laboratory Equipment and Activities Turbuilty meter, JH meter, TDS Conductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. > General items of physical, chemical, and biological properties are measured once a day. > Turbuilty and Residual chemica are measured very 2 hours. 	(a) air, 4 min (b) air 4 min (c) water, 12 min 5) Other O&M activities >N/A <u>Current Problem</u> <u>Problem regarding O&M</u> 1) Suff on aite believes that three is no problem. Equipment necessary for water transfer seems to work
4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 2 person 3) Elsc. engineer : 3 person 4) Chemist : 7 person (3 shifts) 5) Technician : 6 person (3 shifts) 6) Operator : 1 person (3 shifts) 7) Safety manager : 1 person (3 shifts) 8) Others : 1 person (1 shifts) 9) Others : 1 person (1 shifts) * Total mappened : 1 person (1 shifts)	 Annual Budge for Operation and Maintenance * Average backget is approx. 24:2532 (E/year, 1362 332) (E/year, 1362 34) Queration and Maintenance Activities Operation and Maintenance Activities Documents for the operation from and not should arriving such as PFD, P&ID, SLD, and Layout drawing are available. 	 Instrumentation Flow meets are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but it is out of service. Laboratory Equipment and Arcivities Taubidity meter, pHI meter, TDSC onductivity meter, Jar toter, Residual chlorine meter, Spectrophanmeter, Mircosce, and so on are cupped. General items of physical, chemical, and biological properties are measured once a day. Turbidity and Residual chlorine are measured every 2 hours. Jar tote is conducted once a week in order to determine adminism salifate dosing. 	(a) air, 4 min (b) air - 4 min (c) water, 12 min 5) Other C&M activities N/A Current Problem Problem counting O&M
4. Organization Member 1) Manager :1 person 2) Mech, engineer :2 person 3) Elsc, engineer :2 person 4) Chemist :? person (3 shifts) 5) Technician :? person (3 shifts) 6) Operator :: 15 person (3 shifts) 7) Safery manager :: 1 person 8) Ötders :: 1 person offfee worker, security guard, gardener, labor) ** Total manpower :: 46 person Hardin Condition :	 Annual Budge for Operation and Maintenance * Average backget is approx. 24:2532 UE/year, 36:352 UE/year,	 Instrumentation Flow meets are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at reared water line, but it is out of service. Laboratory Equipment and Arcivides Turbidity meter, pHI meter, TDS/Conductivity meter, Jar toter, Residual chlorine meter, Spectrophanmeter, Mircores, and so on are cupped. General items of physical, chernical, and hislogical properties are measured once a day. Turbidity and Residual chlorine are measured every 2 hours. Jar tot is conducted once a week in order to determine duminum sulfate dosing. Water Quality Water Quality Reserved. 	(a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Other Odd mcivities N/A CurrentProblem Problem recording Odd 1) Suff on site believes that there is no problem. Equipment necessary for water transfer seems to work well, however some problems are left unsolved, for example flow meter necessary for good management. 2) Three is problem between the station and agriculture ministry. Shadge generated in the station is
4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 2 person 3) Elsc. engineer : 2 person 4) Chemist : 7 person (3 hifth) 5) Technician : 6 person (3 hifth) 6) Operator : 15 person (3 hifth) 7) Safety manager : 16 person (3 hifth) 7) Safety manager : 16 person (3 hifth) 8) Others : 11 person (3 fiftee worker, security guard, gardener, labor) * Total mapover : 46 person Facility Condition * 1) Detrioration Assessment (Facility Condition) 1) Building farme : 60 gerson	 Annual Budge for Operation and Maintenance Average backget is approx. 24:2532 (EUyear, 3532) Euyear, 3532 (EUyear, 3532) Coperation and Maintenance Activities Documents for the operation P Manuals for each equipment and as-built drawings such as PFD, P&ID, SLD, and Layout drawing are available. P REID drawings are displayed at relevant facility on site. P revenitive maintenance schuldue and it studies are available. P revenitive maintenance schuldue and it studies are available. Data recording (operation record) P lassic item sneessay for daily operation are recorded every day. Water quality measured in laboratory is recorded every day. Operation hours 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but at is out of service. Laboratory Equipment and Activities Turbidity meter, pH meter, TDS conductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. General items of physical, chemical, and biological properties are measured once a day. Turbidity and Residual chlorine are measured every 2 hours. Jar testic conducted once a week in order to determine aluminum sulfate dosing. Water Quality Raw water Turbidity : 20 to 30 NTU 	(a) air, 4 min (b) air + 4 min (c) water, 12 min 5) Other O&M activities >N/A Current Problem regarding: O&M 1) Suff on aite believes that there is no problem. Equipment necessary for water transfer seems to work well, howvert some problems are left unsolved, for example flow meter necessary for good management.
4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 2 person 3) Elsc. engineer : 3 person 4) Chemist : 7 person (3 shift) 5) Technician : 6 person (3 shift) 6) Operator : 1 person (3 shift) 7) Safety manager : 1 person (6 shift) 8) Oblers : 1 person (6 shift) 9) Oblers : 1 person (6 shift) * Total mangewer : 46 person Edeffur Condition . Deterioration Assessment (Facility Condition) 1) Building frame : Good 2) Mechanical equipriment : Good	 Annual Budge for Operation and Maintenance *Average budget is approx. 24:2532 LE/year. 15:352 LE/year. 15:352 LE/year. 15:352 Operation and Maintenance Activities Documents for the operation manual for system are also available. PAEID drawings are displayed at relevant facility on site. *Pretenity maintenance schedule and its tasks are available. Data recording (operation man do the are recorded every day. *Water lack in specific and the operation manual for a system are recorded every day. Water anglity meantered in balanchary is recorded every day. Operation hours *The factor is proved balance in a shifts. 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but at it is out of service. Laboratory Equipment and Activities Turbidity meter, pH meter, TDS conductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. General items of physical, chemical, and biological properties are measured once a day. Furthidity and Residual chlorine are measured every 2 hours. Jar test is conducted once a week in order to determine aluminum sulfate dosing. Water Quality Raw water Turbidity : 20 to 30 NTU pHi 7.7 Photoe Vater 	(a) air, 4 anin (b) air + 4 anin (c) water, 12 min 5) Other O&M activities
4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 2 person 3) Elsc. engineer : 2 person 4) Chemist : 7 person (3 hifth) 5) Technician : 6 person (3 hifth) 6) Operator : 15 person (3 hifth) 7) Safety manager : 16 person (3 hifth) 7) Safety manager : 16 person (3 hifth) 8) Others : 11 person (3 fiftee worker, security guard, gardener, labor) * Total mapover : 46 person Facility Condition * 1) Detriviotation Assessment (Facility Condition) 1) Building frame : 60 gettion	 Annual Budge for Operation and Maintenance Average budget is approx. 24:2532 UE/year. 15:352 UE/year. 15:302. UE/year. 10:352 Operation and Maintenance Activities Documents for the operation manage of a system are available. Decounts for the operation for and for system are available. PRED drawings are displayed at relevant facility on site. Prevenitve maintenance Schedule and its tasks are available. Data recording (operation reason) for displayed at relevant facility on site. Patrice time ancessary for daily operation are recorded every day. Water quality in search of laboratory is recorded every day. Water quality is segreted 24 hours in 3 shifts. Backwash for and filter is conducted every 24 hours. In addition, in case water level in filter bed is 	1) Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Pacidal chlorine analyzer is installed at raw water and treated water line, but is out of service. 2) Laboratory Equipment and Arcivities Turbidity meter, Plit meter, TDSC onductivity meter, Jar tester, Residual chlorine meter, Spectrybutmoter, Microscop, and so on are outpred. Concerl items of physical, chemical, and hological properties are measured once a day. Turbidity in AR existed atherine are measured over 2 bours. Jar test is conducted once a week in order to determine aluminum sulfate dosing. Water Quality Turbidity : 20 to 30 NTU pli : 7.7 Produced water Turbidity : 0.10 to 5 NTU (Sindard; 1 NTU)	(a) air, 4 min (b) air 4 min (c) water, 12 min 5) Other O&M activities →NNA Current Problem Problem regarding O&M 1) Staff on site believes that there is no problem. Equipment necessary for water transfer seems to work, well, however some problems are left unsolved, for example flow meter necessary for good management. 2) There is problem retrieven the station and agriculture ministry. Shadge generated in the station is discharged into severe without any treatment. Agriculture ministry has intakes for the irrigation system at sever. Necessary point for improvement of OAM activity. Consideration) 1) The appreament of small articles looks somehow dirity, it had better to be considered to improve
Performation Member I. Menager in person Menk engineer if person Menk engineer if person if Chemis if person (3 shifts) Technican if person (3 shifts) Stafey manager if person if person (3 shifts) Stafey manager if person if pe	 Annual Budge for Operation and Maintenance Average badget in approx. 24:2532 (EUyera, 1363 UEyera 1363 (Euyera) Operation and Maintenance Activities Documents for the operation Afmania for each equipment and as-built drawings such as PFD, P&ID, SLD, and Layout drawing are available. PKED drawings are displayed at relevant facility on site. PKED drawings are displayed at relevant facility on site. Preventive maintenance schedule and its taska are available. Data recording (operation macro) Mains macrosci bid operation macro) Plassic items macrosci bid bid operation are recorded every day. Water quality measured in laboratory is recorded every day. Operation hours The facility is operated 24 hours in 3 shifts. Backwash for and fiber in conducted every 24 hours, in addition, in case water level in filter bed is increased, backwash is done in other interval automatically by water level in filter bed is increased, backwash is done in other interval automatically by water level in filter bed in furnates are increased. 	 1) Instrumentation >Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but is out of service. 2) Laboratory Equipment and Arcivides > Truthidity meter, plit meter, TDS Conductivity meter, Jar toter, Residual chlorine meter, Spectrybutmoter, Mircorego, and so on are outputed. > General items of physical, chernical, and hological properties are measured once a day. > Turbidity in Residual chlorine are measured over 22 burn. > Jar test is conducted once a week in order to determine aluminum sulfate dosing. 3. Water Quality > Turbidity : 20 to 30 NTU > plit : 7.7 1) Produced water > Turbidity : 1.5 mg/L > plit : 7.4 (Standard; 5 - 8.5) 	(a) air, 4 min (b) air + vater, 4 to 5 min (c) water, 12 min) Other OAM activities N/A Carrent Problem rearganing O&M 1) Staff on aite believes that there is no problem. Equipment necessary for water transfer seems to work well, however some problems are left unsolved, for example flow meter necessary for good management. 2) There is problem between the station and agriculture ministry. Studge generated in the station is discharged into severe without any treatment. Agriculture ministry. Studge generated in the irrigation system at sever.
4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 2 person 3) Elsc. engineer : 2 person 4) Chemist : 7 person (3 kifts) 5) Technician : 6 person (3 kifts) 6) Operator : 15 person (3 kifts) 7) Stefay Technican : 6 person (3 kifts) 8) Otters : 11 person (office worker, security guard, gardmer, labor) * Total immorver : 46 person Keittr Condition . 9. Deterioration Assessment (Facility Condition) . 10. Building frame : Good 2. Mechanical equipment : Good 3. Electrical equipment : Cood 3. Instrumentation and Laboratory : 4. Instrumentation and :	 Annual Budge for Operation and Maintenance Average budget is approx. 24:2532 UE/year. 15:352 UE/year. 15:302. UE/year. 10:352 Operation and Maintenance Activities Documents for the operation manage of a system are available. Decounts for the operation for and for system are available. PRED drawings are displayed at relevant facility on site. Prevenitve maintenance Schedule and its tasks are available. Data recording (operation remains) for data operation are recorded every day. Water anguing measter all inductive system are are conded every day. Water anguing measter all inductive is a shifts. Backwash for and filter is conducted every 24 hours. In addition, in case water level in filter bed is 	 1. Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Pacsidual chlorine analyzer is installed at treated water line, but it is out of service. 2. Laboratory Equipment and Activity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. V General fittems of physical, chemical, and biological properties are measured once a day. > Turbidity and Residual chlorine are measured every 2 hours. > Jar test is conducted once a week in order to determine aluminum sulfate dosing. 3. Water Quality 1) Raw water > Turbidity 2 to to 30 NTU > prit 7.7 1) Produced water > A Turbidity is 0.1 to 0.5 NTU (Standard; 1 NTU) > Residual chlorine 1: 7.4 (Standard; 5.8.5) > Aplit 1: 7.4 (Standard; 5.8.5) > Abre state Andrea State State	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
4. Organization Member 1) Mach, engineer :1 person 2) Mech, engineer :2 person 3) Elsc. engineer :2 person 4) Chemist :? person (3 hifth) 5) Technician :6 person 6) Operator ::1 person (3 hifth) 7) Safety manager :1 person (3 hifth) 9) Others ::1 person (3 hifth) 9) Others ::1 person (3 hifth) 10) Others ::1 person (3 hifth) 11) Deteriorition Assessment (FacIify Condition) :1 Betalling frame 12) Building frame : Good 2) Mechanical equipment : Good 2) Mechanical equipment : Good 3) Electrical equipment : Good 3) Electrical equipment : Cood 4) Mechanical equipment : Cood 5) Instrumentation and Laboratory : 1) Instrumentation >Flow meter and pressure sensor with transmit function are installed at raw water and treated water line.	 Annual Budge for Operation and Maintenance Average badget is approx. 24:25:32 (E-year. Holough it is managed by MCWW	 1. Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Paciskal chlorine analyzer is installed at treated water line, but it is out of service. 2. Laboratory Equipment and Activity meter, Jar tester, Residual chlorine meter, Spectrophonimeter, Microscope, and so nar equipped. V General ferms of physical, chemical, and Molosigal properties are measured once a day. > Turbidity meter, Jar Internation, and Molosigal properties are measured once a day. > Turbidity and Residual chlorine are measured every 2 hours. > Jar test is conducted once a week in order to determine aluminum sulfate dosing. 3. Water Quality 1) Raw water > Turbidity 2 20 to 30 NTU > pft : 7.7 1) Produced water > Turbidity : 0.1 to 0.5 NTU (Standard; 1 NTU) > Residual chlorine : 1.5 mg.L > pft : 7.4 (Standard; 5 - 8.5) 2. Abore standard housed on Decret No.458 for the var 2007 by Ministry of Health OAM Condition 1. Annual Baget for Operation and Maintenance 	(a) air, 4 anin (b) air + 4 anin (c) water, 12 min 5) Other O&M activities >N/A Current Problem Problem creating O&M 1) Staff on site believes that there is no problem. Equipment necessary for water transfer seems to work well, however some problems are left unsolved, for example flow meter necessary for good management. 2) There is problem stress left unsolved, for example flow meter necessary for good management. 2) There is problem stress left unsolved, for example flow meter necessary for good management. 3) There is problem stress well write the station and argiculture ministry. Shadge generated in the station is discharged into seven without any treatment. Agriculture ministry has intakes for the irrigation system at sever. <u>Necessary robit for improvement of OAM activity (consideration)</u> 1) The appearance of stand surface boots somehow drive, it had better to be considered to improve sequence and management approach of fackwash. 2) However will for asie wates to improve the efficiency, he does not know the current efficiency or
4. Organization Member 1. Manager :: 1 person 2. Mach. engineer : 2 person 3. Elsc. engineer : 3 person 4. Christ : 5 person (3 shifts) 5. Technician : 6 person (3 shifts) 6. Operator : 1 5 person (3 shifts) 7. Safety manager : 1 person 8. Others : 1 person 9. Others : 1 person 7. total magneever : 6 person 7. total magneever : 6 person Methoding frame Operator • Total magneever Detertorizion Assessment (Facility Condition) 19. Building frame : Good 3. Electrical equipment : Cond 9. Flow meter and pressue sensor with transmit functions are installed at raw water and treated water line. 9. Flow meter and pressue sensor with transmit functions are installed at raw water and treated water line. Nextureation * Residual cheheine matyper with transmit f	 Annual Budge for Operation and Maintenance Average badget is approx. 247:2332 LEyear. Alsough it is managed by MCWW (2.042.352 LEyear.) 355.680 m.Nday = 0.157 LE/m.S) Operation and Maintenance Activities Documents for the operation frame for system are also available. P/RED drawings are displayed at relevant facility on site. P/RED drawings are displayed at relevant facility on site. P/RED drawings are displayed at relevant facility on site. P/RED drawings are displayed at relevant facility on site. P/RED maintenance Schwidts and its tasks are available. Data recording (operation record) Hastic item snecessary for daily operation are recorded every day. Vater quality measured in laboratory is recorded every day. Operation hours The facility is operated 24 hours in 3 shifts. Backwash for and filter is conducted every 24 hours. In addition, in case water level in filter bed is increased, backwash is done in shorter interval automatically by water level in filter bed is increased, backwash is done in shorter interval automatically by water level in filter bed, or sometimes manality. Plackwash sequence is usually as follows; (a) air, 3 min (b) air + water by 1 pumpt, 12 min (c) water by 2 pumpt, 7 min 	 Instrumentation Flow meters are installed at raw water and treated water line, but out of service. Residual chlorine analyzer is installed at treated water line, but is out of service. Labexoty Equipment and Activities Turbidity meter, plit meter, TDSC onductivity meter, Jar tester, Residual chlorine meter, Spectrybohometer, Microscope, and so on are cupped. General items of physical, chemical, and biological properties are measured once a day. Turbidity in Residual chlorine are measured overy 2 bours. Jar test is conducted once a week in order to determine aluminum sulfate dosing. Water Quality Residue avaire Turbidity : 20 to 30 NTU plit :: 7.7 Producted water Turbidity :: 1.5 mg/L Turbidity :: 1.5 mg/L plit :: 7.4 Quanty: 1.5 Mandard, 5.5.5.5 <u>Above standard based on Descree No.458 for the year 2007 by Miniatry of Health</u> OLM (Contlinin) 	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
4. Organization Member 1. Manager :: 1 person 2. Mach, engineer : 2 person 3. Elsc, engineer : 3 person 4. Charlist :: 2 person 5. Technician :: 6 person (3 shifts) 5. Technician :: 6 person (3 shifts) 6. Operator :: 1 person (3 shifts) 7. Safety manager :: 6 person 8. Observe :: 1 person (3 shifts) 9. Safety manager : 6 person * Total magneymer : 4 operson * Total magneymer : 6 operson 9. Bechristical equipment : Cond 10. Electrical capagement : Communication between SCADA and instruments has some problem and is under repair. 10. Instrumentation > Flow meter and presure sensor with transmit functions are installed at raw vater and treated vater line. Plow meter and presure sensor with transmit functions are installed at reared water line, but it is out of acrive. 10. Laboratory Equipment and Acrivities	 Annual Budge for Operation and Maintenance Average badget in approx. 24:2532 (EUyera, 1363) Coperation and Maintenance Activities Documents for the operation Phannals for each equipment and as-built drawings such as PFD, P&ID, SLD, and Layout drawing are available. PKD1 drawings are displayed at relevant facility on site. PKED drawing are displayed at relevant facility on site. PKED drawing are displayed at relevant facility on site. Preventive maintenance schedule and its taska are available. Data recording (operation record) Phase: Inten necessary for daily operation are recorded every day. Water quality measured in laboratory is recorded every day. Operation hours The facility is operated 24 hours in 3 shifts. Backwash for and fiber in conducted every 24 hours. In addition, in case water level in filter bed, or sometimes mannally. Plackwash Plackwash for sum filter is collows; april april april 2000; april 2010; appil 2010; appil 2010; appil 2010;	 1 Instrumentation >Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but is out of service. 2) Laberstory Equipment and Activities > Truthidity meter, plit meter, TDSC onductivity meter, Jar tester, Residual chlorine meter, Spectryboundeer, Microscope, and so on as equipped. > General items of physical, chemical, and biological properties are measured once a day. > Turbidity in Residual chlorine are messared overy 2 bours. > Jar test is conducted once a week in order to determine aluminum sulfate dosing. 3. Water Quality 1 Research and the set of the set	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
4. Organization Member 1) Mach, engineer :1 person 2) Mech, engineer :2 person 3) Elec, engineer :2 person 4) Chemis :? person (3 hifth) 5) Technician :2 person 4) Orenia :? person (3 hifth) 5) Technician :2 person 6) Operator :: 15 person (3 hifth) 7) Safety manager :1 person (3 hifth) 8) Obters :: 1 person (3 hifth) 9) Obters :: 1 person (3 hifth) 7) Total manoyever :46 person * Total manoyever :46 person * Destrontation Assessment (Facility Condition) : 1) Building frame : cood 2) Mechanical equipment : cood 3) Electrical equipment : cood 3) Electrical equipment : cood 3) Electrical equipment : cood 3) Instrumentation and Loontary : 1) Instrumentation and alcontary : 1) Instrumentation and alcontary : 2) Mechanical adjustry with transmit function are installed at treated water line, but it is out of service.	 Annual Budge for Operation and Maintenance Average badget in approx. 24:2532 (EUyera, 1363) Coperation and Maintenance Activities Documents for the operation Approx. 24:2542 (Euyera, 1364 Say) 35:860 m3/day = 0.157 (Eim3) Operation and Maintenance Activities Documents for the operation manage for system are also a valiable. PARID drawings are displayed at relevant facility on site. PKRD drawing are displayed at relevant facility on site. Preventive maintenance schedule and it takias are available. Data recording (operation record) Mainstein mescessary for daily operation are recorded every day. Water quality measured in laboratory is recorded every day. Operation hours PTa facility is operated 24 hours in 3 shifts. Backwash for sand fiber in torolated every 24 hours. In addition, in case water level in fiber bed is increased, fackwash is done in theore interval submatically by water level in fiber bed, or sometimes manually. Plackwash for sand fiber in collected every 24 hours. (a) air, 3 min (b) air: 4 mater by 1 pump, 12 min (c) water by 2 pump, 7 min (c) water by 2 humps, 7 min Other Odd Macivitias 	 1) Instrumentation Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but it is out of service. 2) Laboratory Equipment and Activities > Truthidity meter, pH meter, TDSC onductivity meter, Jar toter, Residual chlorine meter, Gyerhormeter, Microscope, and so on are cupped. > General items of physical, chemical, and biological properties are measured once a day. > Turbidity and Residual chlorine are measured every 2 hours. > Jurbidity and Residual chlorine are measured every 2 hours. > Jurbidity and Residual chlorine are measured every 2 hours. > Water Quality 1) Rew water > Turbidity : 20 to 30 NTU > pI it : 7.7 1) Produced water > Turbidity : 1.5 mg/L > pH it: 7.4 (Sandarch, 6.5 - 8.5) > Alows standard biologics of Decrees Pool S58 for the year 2007 by Ministry of Health OMM Condition 1. Annual Budget for Operation and Maintenance * Average badget is approx. 2580 972 LE year, although it is managed by MCWW. This include chemical, electricity, manpower, and approx print. (2,888,972 LE/yar, 2/65 day / 45,000 m3/day - 0.171 LE/m3) 2. Operation and Maintenance Activities 	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
4. Organization Member 1. Manager :: 1 person 2. Manager :: 2 person 3. Mech. engineer :: 2 person 4. Organization Member : 2 person 5. Elsc. engineer :: 2 person 6. Organization (Comparison (Comparis	 Annual Budge for Operation and Maintenance * Average badget is approx. 24:2532 UE/year, 365 day, 35:808 mJ/day = 0.157 LE/m3) Coperation and Maintenance Activities 10 Documents for the operation manual for system are also available. > PKRD drawings are displayed at relevant facility on site. > PKRD drawings are displayed at relevant facility on site. > PKRD drawings are displayed at relevant facility on site. > PKRD drawings are displayed at relevant facility on site. > PKRD drawings are displayed at relevant facility on site. > PKRD drawings are displayed at relevant facility on site. > Prevenitve mininteruse scholute and its tasks are available. 2) Data recording (operation record) > Maine ancessary for daily operation are recorded every day. > Water quality measured in laboratory is recorded every day. > Operation hours > The facility is operatio af theore interval automatically by water level in filter bed is increased, backwash is done in shorter interval automatically by water level in filter bed, is somamuly. > Plackwash for sind filter is conducted every 24 hours. In addition, in case water level in filter bed, is somamuly. > Plackwash for sind filter is conducted every 24 hours. In addition, in case water level in filter bed, is manually. > Plackwash is done in shorter: > Plackwash is done in shorter: interval automatically by water level in filter bed, is somimative manually. > Plackwash is done in shorter: > Plackwash is done in shortere: > Plackwash is done in shorter:	 1. Instrumentation FFlow meets are installed at raw water and treated water line, but out of service. P. Residual chlorine analyzer is installed at treated water line, but it is out of service. 2. Laboratory Equipment and Activities Purtubity ingenet, pill meetry. TDSConductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. General items of physical, chemical, and biological properties are measured once a day. Purbitity and Residual chlorine are measured every 2 hours. Jar test is conducted once a week in order to determine aluminum sulfate dosing. 3. Water Quality 1) Raw water Purbitity 2 to bo 30 NTU ptil 7.7 1) Produced water Purbitity 2 to 1 to 0.5 NTU (Standard; 1 NTU) Residual chlorine 1: To mg.L ptil 7.4 (Standard; 5.5.5) Alorest and Boget for Operation and Maintenance Average badget is approve. 2080;972 Elyper, atthough it is managed by MCWW. This include chemical, checking, and spingers, and spinge	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
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 9. Organization Member 1. Manager :: 1 person 2. Mech. engineer :: 2 person 3. Mech. engineer :: 2 person 4. Chemist :: 2 person (3 hith) 6. Chemist :: 7 person (3 hith) 7. Chemist :: 15 person (3 hith) 7. Staffy manager :: 1 person 9. Othera :: 15 person (3 hith) 9. Safety manager :: 1 person 9. Othera :: 16 person (3 hith) 9. Deterioration Assessment (Facility Condition) 9. Deterioration and person (3 hith) 9. Deterioration (4 hith) 9. Plow meter and pressure sensor with transmit function are installed at raw water and treated water line. 9. Loboratory Equipment and Activities 9. Turbidity mere, Finder, TSX-Conductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. 9. Turbidity and Residual chlorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residual chorine are measured over 2 hours. 9. Turbidity and Residen (2 hours)<th> Annual Budge for Operation and Maintenance Average badget is approx. 24:2532 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3554 UE/3532 UE/3524 UE/3532 UE/3524 UE/3532 UE/3524 U</th><th> 1) Instrumentation Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but is out of service. 2) Laboratory Equipment and Activities >> Turbibily meter, JB meter, TDS Conductivity meter, Jar tester, Residual chlorine meter, Spectrophonmetr, Marcuscope, and so in are equipped. >> General immo of physical, whetheria, and biological importies are meanared once a day. >> Turbibily meter, JB meters in a sea weak in order to determine sufface dosing. >> Water Quality >> Residual chlorine are measured every 2 hours. >> Turbibily 2 (20 to 30 NTU) >> pit 2 (27 T) >> Produced water >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.0 to 30 NTU (20 to 20 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.1 to 0.5 NTU (Sandard; 1.5 T.S.) >> Altore standard to based on Decree No.655 for the year 2007 by Mininty of Health OLAM Condition 1. Annual Badget for Operation and Maintenance >> Average badget is approv. 2808.972 L15year, Albough ti is managed by MCWW. This include chemical, electricity, manyower, and apper parts. C.2808.972 L15year (35 day) / 45,000 m3/day – 0.171 L15m3) 2. Operation and Maintenance Archivitise 1) Documents on the operation >> Manual Kongupter and are partially available. Operation manual for system are available. >> Pation Maintenance schoolid as in task are available. >> Proventive maintenance schoolid as its nak are available. >> Pation Recoil (operation are recoil devery day. >> Water Coolidity operation are available. >> Pation Recoil (operation are available. >> Pation Recoil (operation recoil devery day. >> W</th><th> (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of</th>	 Annual Budge for Operation and Maintenance Average badget is approx. 24:2532 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3553 UE/year, 3554 UE/3532 UE/3524 UE/3532 UE/3524 UE/3532 UE/3524 U	 1) Instrumentation Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but is out of service. 2) Laboratory Equipment and Activities >> Turbibily meter, JB meter, TDS Conductivity meter, Jar tester, Residual chlorine meter, Spectrophonmetr, Marcuscope, and so in are equipped. >> General immo of physical, whetheria, and biological importies are meanared once a day. >> Turbibily meter, JB meters in a sea weak in order to determine sufface dosing. >> Water Quality >> Residual chlorine are measured every 2 hours. >> Turbibily 2 (20 to 30 NTU) >> pit 2 (27 T) >> Produced water >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.0 to 30 NTU (20 to 20 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.1 to 0.5 NTU (Sandard; 1.5 T.S.) >> Altore standard to based on Decree No.655 for the year 2007 by Mininty of Health OLAM Condition 1. Annual Badget for Operation and Maintenance >> Average badget is approv. 2808.972 L15year, Albough ti is managed by MCWW. This include chemical, electricity, manyower, and apper parts. C.2808.972 L15year (35 day) / 45,000 m3/day – 0.171 L15m3) 2. Operation and Maintenance Archivitise 1) Documents on the operation >> Manual Kongupter and are partially available. Operation manual for system are available. >> Pation Maintenance schoolid as in task are available. >> Proventive maintenance schoolid as its nak are available. >> Pation Recoil (operation are recoil devery day. >> Water Coolidity operation are available. >> Pation Recoil (operation are available. >> Pation Recoil (operation recoil devery day. >> W	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of
 9. Organization Member Media enginese :: 1 perion Media enginese :: 2 perion Media enginese :: 2 perion Media enginese :: 2 perion (3 http:) Technician ::: 15 perion (3 http:) Media enginese :: 1 perion (3 http:) Media enginese :: 1 perion (1 http:) Media engines	 Annual Budge for Operation and Maintenance Average badget is approx. 247:233 UE/year, 1363 UE/year, 1364 UE/year, 1374 UE/year, 1364 UE/year, 1374 UE/year,	 1) Instrumentation Flow meters are installed at raw water and treated water line, but out of service. > Residual chlorine analyzer is installed at treated water line, but is out of service. 2) Laboratory Equipment and Activities >> Turbibily meter, JB meter, TDS Conductivity meter, Jar tester, Residual chlorine meter, Spectrophonmetr, Marcuscope, and so in are equipped. >> General immo of physical, whetheria, and biological importies are meanared once a day. >> Turbibily meter, JB meters in a sea weak in order to determine sufface dosing. >> Water Quality >> Residual chlorine are measured every 2 hours. >> Turbibily 2 (20 to 30 NTU) >> pit 2 (27 T) >> Produced water >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily (20 to 30 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.0 to 30 NTU (20 to 20 NTU) >> Pational chlorine : 1.5 mg.l. >> Turbibily : 2.1 to 0.5 NTU (Sandard; 1.5 T.S.) >> Altore standard to based on Decree No.655 for the year 2007 by Mininty of Health OLAM Condition 1. Annual Badget for Operation and Maintenance >> Average badget is approv. 2808.972 L15year, Albough ti is managed by MCWW. This include chemical, electricity, manyower, and apper parts. C.2808.972 L15year (35 day) / 45,000 m3/day – 0.171 L15m3) 2. Operation and Maintenance Archivitise 1) Documents on the operation >> Manual Kongupter and are partially available. Operation manual for system are available. >> Pation Maintenance schoolid as in task are available. >> Proventive maintenance schoolid as its nak are available. >> Pation Recoil (operation are recoil devery day. >> Water Coolidity operation are available. >> Pation Recoil (operation are available. >> Pation Recoil (operation recoil devery day. >> W	 (a) air, 4 min (b) air + water, 4 to 5 min (c) water, 12 min 5) Odber Odd activities >N/A Current Problem Problem requestion for the station of the state of

Minufia Governorate, Shebeen El Kom El Gedeeda (3/4)

Minufia Governorate, Shebeen El Kom El Gedeeda (4/4)

Minufia Governorate, Mahatet Menouf El Morashaha (3/4)

Minufia Governorate, Mahatet Menouf El Morashaha (4/4)

Date: 14/Jun/2011 Date: 19/Jun/2011 4) Water distribution facility Chemical dosing facility > Aluminum sulfate > Reservoir v 3 unit Site Description of the Candidate Facility Site Description of the Candidate Facility Sodium hypochlorit 2,400 m3 (2,000 m3 x 1, 200 m3 x 2) MCWW (Menouf Markaz) MCWW (Ashmoon Markaz 7) Others > Centrifugal pump x 4 units Type of Facility : Surface Water Treatment Plan Type of Facility : Surface Water Treatment Plan 100 L/sec x 60 m 150 HP 380 V 3 units > Generator (for emergency) x 1 unit acility Name Mahatet Behwash El Gedeeda Facility Name : Mahatet Ashmoon El Morashaha 50 L/sec x 60 m, 75 HP, 380 V, 1 unit 160 FVA PE 0.80 Mr Avman Bassuni Mr Mohammed Fathi Mr Saeed Abdelfattah (MCWW) Attendance · Mr. Mohammed Fathi, Mr. Salem Hamdy (MCWW) Attendance 5) Drainage facility Mohammed Abd El-kader, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) Chemical Consumption Mohammed Abd El-kader, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) > Centrifueal nump y 2 units General Information General Information 250 L/sec x 10 m, 75 HP, 380 V * Underline value is according to hearing on site. 1 Establishment Year 2007 1 Establishment Year 2005 6) Chemical dosing facility 1) Aluminum sulfate Water Source Surface Water (El Kanaaya canal) Water Source Surface Water (El Kanaava canal) Consumption : 1 ton/month 3 Water Quantity > Aluminum culfata 3 Water Quantity : 2,500 m3/day (design) 17 000 m3/day (design) 1st stage > Gaseous chlorine Dosing rate : 23 to 27 mg/L 1 600 m3/day (operation) 16 000 m3/day (operation) 7) Others 4. Covered Area for Water Supply : 2 village (Bahwash, Damleg) 2) Cossous obloring * Another 17.000 m3/day at 2nd stage is under construction > Generator (for emergency) x 1 unit 5 Service Population · Approx 16 000 People Consumption : 2 ton/month 4 Covered Area for Water Sunnly - 1 city (Ashmoon) 2.000 kVA, 1.600 kW 6. Access Level 60 min from MCWW 5. Service Population Approx. 75,000 People Dosing rate : 35 mg/L Neutralizing facility for chlorine leakage (sodium hydroxide) 6. Access Level 80 min from MCWW Facility Outline * Breakdown of sodium hypochlorite dosed into raw water and treated water is not figured out on 2 Chemical Consumption Svetem Structure Facility Outline "Conventional type Water Treatment Plant" 1. System Structure Power Consumption * Underline value is according to hearing on site. Intake facility "Conventional type Water Treatment Plant" 1) Aluminum culfate Centrifugal pump x 3 units (1-duty, 2-standby) * Underline value is according to hearing on site. 1) Intake facility 16 L/sec x 8 m, 4 HP, 380 V Consumption : 9 to 10 ton/month > Intake piping x 2 lines 1) Power Consumption 170 to 220 kWh/month 2) Sedimentation facility Dosing rate : 16 to 20 mg/L 10% solution 2) Power Efficiency : (170 kWh/month / 30 day / 1.600 m3/day = 0.00354 kWh/m3) Centrifugal pump x 3 units (2-duty, 1-standby) Flash mixer x 1 unit 2) Gaseous chlorine However it is strange, above value is based on the hearing on site. 110 L/sec x 10 m 25 HP 380 V Clarifier (rectangle) with mechanical slow mixing x 2 unit Consumption : 5 ton/month 4 Organization Member Filtration facility 2) Sadimentation facility Dosing rate : pre chlorine 4 mg/L, post chlorine 2 mg/L 1) Manager > Filter hed v 2 units Flash mixer x 1 unit * (4 + 2) mg/L x 16,000 m3/day x 30 day = 2.88 ton/month, either consumption or dosing rate seem 5 m2 (2.5 m x 2 m) each 2) Technician & Operator · 10 person (3 shifts) to be misunderstood Centrifugal pump (for Backwash) x 2 units (1-duty, 1-standby) 11 person in total > Clariflocculator (circle) with mechanical slow mixing and sediment collector x 1 unit 3. Electricity 50.5 L/sec x 8 m 10 HP 380 V Facility Condition slow mixer: 3.5 rpm Deterioration Assessment (Facility Condition) 1) Power Consumption 163 309 kWh/month (according to MCWW) > Air blower x 2 units (1-duty, 1-standby) clariflocculator: 2.000 m3 2) Power Efficiency : (163,309 kWh/month / 30 day / 16,000 m3/day = 0.340 kWh/m3) 15 1417 1) Building frame : Good 3) Filtration facility 4) Water distribution facility 2) Mechanical equipment : Good > Filter bed x 4 units 4 Organization Member $6 \text{ m x } 8 \text{ m} = 48 \text{ m}^2 \text{ each}$ Reservoir x 2 units 3) Electrical acuinment Some of ammeters are not active because of range mismatch Manager 1 person (Elec. engineer) > Centrifugal pump (for Backwash) x 2 units 1 000 m3 (500 m3 x 2) 2) Elec. engineer : 1 person 2 Instrumentation and Laboratory 400 L/sec x 10 m, 75 HP, 380 V Centrifugal pump x 3 units (1-duty, 2-standby) 3) Chemist · 2 person 15 L/min x 45 m, 30 HP, 380 V 1) Instrumentation > Air blower v 2 units Flow meter and are installed at backwash water and sludge water line, but not at raw water and I shorstory seeistant - 2 nereon 50 m3/min x 0.8 bar, 110 kW, 380 V 5) Drainage facility treated water line 5) Technician & Operator 11 person (3 shifts) > Centrifugal pump x 2 units Residual chlorine analyzer is installed at treated water line. 6) Labor : 2 person > Thickener x 1 unit > Turbidity sensor is installed at raw water and treated water line, but it is out of service > Drving bed x 1 unit * Total manpower : 19 person Minufia Governorate, Mahatet Behwash El Gedeeda (1/4) Minufia Governorate, Mahatet Behwash El Gedeeda (2/4) Minufia Governorate, Mahatet Ashmoon El Morashaha (1/4) Minufia Governorate Mahatet Ashmoon El Morashaha (2/4) S_2 ÷ 2) Laboratory Equipment and Activities Facility Condition 2) Data recording (operation record) Necessary point for improvement of O&M activity (consideration) This plant does not have laboratory, and does not equipped with any tools for water analysis except ent (Facility Condition) > Basic items necessary for daily operation such as operation hour and chemical consumption are Deterioration Ass 1) Although this plant does not have laboratory and does not equipped with any tools for water analysi for on-line instrument mentioned above. Water quality is analyzed every day at Sadat water treatment 1) Building frame : Some deterioration and water leakage are going on. recorded every day. On the other hands, current and pressure of operating pump are not recorded. Sadat laboratory is close to this site. In addition, if they repair the on-line turbidity meter, it is useful nlant (5 minutes from Behwash) and every week at Menouf branch laboratory (15 minutes) 2) Mechanical equipment : Sediment collector of clariflocculator is in failure and left unsolved. > Water quality measured in laboratory is recorded every day to monitor operation condition. > pH, Residual chlorine, and so on are measured once a day at Sodot laboratory 3) Electrical equipment Some instruments such as indicator on filter control panel and flow met-3) Operation hours 2) The capacity of this plant is much smaller than the other Surface Water Treatment Plant in Menouf "> Turbidity in raw water and treated water and are measured every hour at Sodot laboratory > The facility is operated 24 hours in 3 shifts are out of service. Markaz, and it has only 2 trains of filtration facility. Flexibility of operation and similarity should be 4) Backwash Water Quality nsidered to apply SOP activity. For example, this plant can treat only 50% of rated capacity during 2. Instrumentation and Laboratory Backwash for sand filter is conducted every 24 hours 1) Raw water (as one day example) shut-down of one filtration train in order to clean up or other SOP activities. 1) Instrumentation > Backwash sequence is usually as follows; ≻Turbidity : 19 NTU > Flow meters are installed at raw water and treated water line, but in failure and left unsolved (a) air 2 min ≽nH .76 > Residual chlorine analyzer for treated water is available. But, according to staff on site, it is not (b) air + water, 10 min 1) Produced water (as one day example) (c) water, 5 min > Torbidity - 0.1 NTU (Standard: 1 NTU) 2) Laboratory Equipment and Activities Residual chlorine : 1.5 mg/L 5) Other O&M activitie > Turbidity meter, pH meter, TDS/conductivity meter, Jar tester, Residual chlorine meter, : 7.4 (Standard; 6.5 - 8.5) ≻pH ≻N/A Spectrophotometer, Microscope, and so on are equipped. Current Problem * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health > General items of physical, chemical, biological properties are measured once a day. O&M Condition >General items of biological properties are measured twice a week. Problem regarding O&M Annual Budget for Operation and Maintenance > Turbidity and Residual chlorine are measured every 2 hours. 1) Staff on site has some difficulty to get spare parts, because it takes a long time to develop a series of * Average budget is approx, 309.846 LE/year, although it is managed by MCWW > Jar test is conducted once a week in order to determine aluminum sulfate dosing procedure in Ashmoon Markaz and MCWW (309,846 LE/year / 365 day / 1,600 m3/day = 0.531 LE/m3) > Staff controls chlorine dosing rate by residual chlorine concentration as follows; at clariflocculator Turbidity of clariflocculator outlet water is high; 8 mg/L. Operation and Maintenance Activities outlet water to be 1 mg/L and treated water to be 1.5 to 2.5 mg/L. 3) Treated (filtered) water is pumped by way of not treated water reservoir but small receiver, and therefore it does not have enough chlorine contact time. It is not clear how treated water flows. 1) Documents for the operation 3 Water Quality > Manuals and drawings for electrical facility are available, but others are not available 4) Different types of water collecting device are installed for chambers in one filter unit, and therefore 1) Raw water (as one day example) > General preventive maintenance schedule and its tasks which provided by MCWW are available. : 9 to 20 NTT ➤Turbidity water level in each chamber is not equal 2) Data recording (operation record) 5) Staff on site complains about the design of 1st stage facility, however, the same design is adopted for ≥nH · 7.5 to 7.7 > Basic items necessary for daily operation and maintenance activity are recorded every day 1) Produced water 2nd stage. > Water quality record is not stored on site. · 0.9 to 1.4 NTU (Standard: 1 NTU) > Turbidity 6) There are a lot of construction materials and garbage on site, which seems so bad from the view poin 3) Operation hours ≥ Residual chlorine : 1.7 mg/L of safety and the role of water treatment plant > The facility is operated 24 hours in 3 shifts : 7.1 to 7.3 (Standard; 6.5 - 8.5) ≻pH Necessary point for improvement of O&M activity (consideration) 4) Backwash * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health 1) Although the station has only one clariflocculator, it is necessary to clean up the bottom of > Backwash for sand filter is conducted every 24 to 36 hours automatically. **O&M** Condition clariflocculator and to repair sediment collector. ➤Backwash sequence is as follows; Annual Budget for Operation and Maintenance 2) It is necessary to review the treated water piping route, and modify if necessary. (a) air. 2 min * Average budget is approx, 1.402.903 LE/year, although it is managed by MCWW (1,402,903 LE/year / 365 day / 16,000 m3/day = 0.240 LE/m3) 3) Water collecting device under sand layer should be exchanged in order to equalize the pressure loss. (b) air + water, 10 mi (c) water 15 min Operation and Maintenance Activities 5) Other O&M activities 1) Documents for the operation The appearance of sand filter surface looks not so bad. > Any documents are not available, such as Manuals for each equipment and P&ID, SLD, and Lavou Current Problem drawings > Preventive maintenance schedule and its tasks are not available Problem regarding O&M 1) Staff on site has some difficulty to get spare parts, because of low activity of local agent Minufia Governorate, Mahatet Behwash El Gedeeda (3/4) Minufia Governorate, Mahatet Behwash El Gedeeda (4/4) Minufia Governorate, Mahatet Ashmoon El Morashaha (3/4) Minufia Governorate, Mahatet Ashmoon El Morashaha (4/4)

Date: 18/Jun/2011 Site Description of the Candidate Facility MCWW (El Sadat Markaz) Type of Facility : Surface Water Treatment Plan acility Name Mahatet El Sadat El Satheya · Mr Avman Bassuni Mr Mohammed Fathi Mr Saeed Abdelfattah (MCWW) Attendance Mohammed Abd El-kader, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) General Information 1 Establishment Year 2009 Water Source Surface Water (El Riah El Nasry) 102 000 m3/day (design) Water Quantity 50 860 m3/day (operation) 4. Covered Area for Water Supply : 1 city (El Sadat) 5 Service Population · Approx 50,000 People * This plant supplies water not only domestic use but also industrial and irrigation. 6 Access Level · 80 min from MCWW Facility Outline System Structure "Conventional type Water Treatment Plant" 1) Intake facility > Intake piping x 1 line ⇔ 1.000 nn Centrifugal pump x 6 units 320 L/sec x 85 m 420 kW 380 V * Intake station is outside of main facility approx 20 km 20 minutes 2) Sedimentation facility > Flash mixer x 4 unit > Clariflocculator (circle) with machanical alow mixer and sediment collector v 4 units 3) Filtration facility Filter bed x 16 units > Centrifugal pump (for Backwash) x 3 units (1-duty, 2-standby) 250 L/sec x 15 m 55 kW 380 V > Air blower x 2 units (1-duty, 1-standby) 50 m3/min x 0.6 bar, 90 kW, 380 V 4) Water distribution facility Reservoir x 3 units 15 000 m3 (5 000 m3 x 3) > Centrifugal pump x 6 units 300 I /min x 85 m 450 kW 380 V

Minufia Governorate, Mahatet El Sadat El Satheva (1/4)

S2.2-11

Instrumentation and Laborators 1) Instrumentation > Flow meters are installed at raw water and treated water line. But, according to staff on site, these meters are not calibrated. Residual chlorine analyzer for treated water is available. But, according to staff on site, it is not calibrated. > Some of level sensors and pressure gauge are out of service and left unsolved 2) Laboratory Equipment and Activities Turbidity meter, pH meter, TDS/Conductivity meter, Jar tester, Residual chlorine meter, Spectrophotometer, Microscope, and so on are equipped. > General items of physical, chemical, and biological properties are measured once a day. > Turbidity and Residual chlorine are measured every 2 hours. > Jar test is conducted once a week in order to determine aluminum sulfate dosine Water Ouality 1) Raw water ➤ Turbidity - 8 to 12 NTU ≻pH : 7.6 to 7.8 1) Produced wate 0.2 to 0.4 NTU (Standard: 1 NTU) >Turbidity Residual chlorine : 1.3 to 1.6 mg/L : 7.2 to 7.5 (Standard; 6.5 - 8.5) ≻pH * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health **O&M** Condition Annual Budget for Operation and Maintenance * Average budget is approx. 4,744,675 LE/year including intake facility, although it is managed by MCWW (4 744 675 LE/year / 365 day / 50860 m3/day = 0 256 LE/m3) Operation and Maintenance Activities 1) Documents for the operation > Manuals for equipment and are partially available. As-built drawings such as layout with piping route and detail of filter bed are stored. However these drawing are not organized well, drawings such as P&ID and SLD are not found. > General preventive maintenance schedule and its tasks which provided by MCWW are available. But staff on site does not follow its instructions and operate and maintain the station on his standard. 2) Data recording (operation record) Basic items necessary for daily operation are recorded every day. > Water quality measured in laboratory is recorded every day 3) Operation hours

> The facility is operated 24 hours in 3 shifts.

Minufia	Governorate,	Mahatet	El Sadat	El Sathe	ya (3/4)

 Drainage facility Centrifugal pump x 3 units
 250 L/sec x 20 m, 90 kW, 380 V > Sludge drying bed * Drving bed has underground nining in order to re-circulate water to distribution chamber 6) Chemical dosing facility > Aluminum sulfate > Greeoue chlorine 7) Others Generator (for emergency) x 2 unit 1 406 LVA for main facility 1 500 kVA for intake facility > Neutralizing facility for chlorine leakage (sodium hydroxide) 2 Chamical * Underline value is according to hearing on site. 1) Aluminum sulfate Consumption : 25 to 30 ton/month Dosing rate : 20 to 30 mg/L 2) Gaseous chlorine Consumption : 8 to 9 ton/month Dosing rate : pre chlorine 6 mg/L, post chlorine 2 mg/L 3 Electricity * Underline value is according to hearing on site 1) Power Consumption · 603 727 kWh/month (according to MCWW) · 421 546 kWh/month (according to MCWW) 2) Power Efficiency : 1.025.273 kWh/month / 30 day / 50.860 m3/day - 0.672 kWh/m3 4. Organization Member 1) Manager : 1 person 2) Mech. engineer : 1 person 3) Chemist : 4 person 4) Technician & Operator : 28 person (3 shifts) 5) Labor · 6 person · 40 nerson (Mannower for intake facility is not included) * Total mannower Facility Condition Deterioration Assessment (Facility Condition) 1) Building frame : Good 2) Mechanical equipment Good 3) Electrical equipment : Some of level sensors for filter hed are not available Minufia Governorate, Mahatet El Sadat El Satheya (2/4)

Backwash for sand filter is conducted every 18 hours manually (backwash is started by operator,

1) The range of flow meters for chemical is not appropriate. Staff had exchanged flow meter, but they

2) Big trash sometimes comes into intake pump station from river, because station does not equip with

4) It takes a time to conduct backwash for sand filter and to prime pumps, so site manager wants to

1) Staff had tried to calibrate flow meters and residual chlorine analyzer, but failed. Operation &

intenance procedure had better to be improved to cover how to manage such instruments

2) Site manger wants to install automation system for daily works, but it should be remind that they

have to pay more attention to and manage well instrumentation and measurement than now in

automation system. Therefore, it may require more efforts and/or costs in some case.

Minufia Governorate, Mahatet El Sadat El Satheva (4/4)

3) Some instruments such as flow meters and residual chlorine analyzer are not calibrated.

4) Backwash

NI/A

Current Problem

Neo

(a) air, 3 to 5 min

(c) water, 10 min

5) Other O&M activities

Problem regarding O&M

screen at the intake point.

automate such routine works.

(b) air + water, 4 to 6 min

backwash sequence is proceeded automatically).

still have some difficulty to know dosing rate.

5) Dial of aluminum sulfate dosing pump has some problem to use

ssary point for improvement of O&M activity (consideration

> Backwash sequence is usually as follows:

- Date: 1/Jun/2011 Site Description of the Candidate Facility MCWW (Shebeen El Kom Marka Affiliatio Type of Facility : Iron/ Manganese Removal Facility Facility Name · El Kom El Akdhr SOP Team · Mr Aiman Bassuni Mr Said Mohammed (MCWW) Tomohiro Shimizu (JICA Expert Team) General Information 1 Establishmen Year 1952 (Well Facility) Year 2004 (BURMAN System 2 Water Course Wall Watar 3 Water Quantity 3 500 m3/day (Design Canacity) 2,800 m3/day 4. Covered Area for water supply : 4 villages (El Kom El Akdhr, Kafar Tanbedy El Batanoon Meet Mosa) * Water is supplied mainly to El Kom El Akdhr and Kafar Tanbedy (Other villages have individual water supply system.) 5. Service Population Approx. 20,000 People 6 Access Level 15 min from MCWW Facility Outline System Structur 1) Well Station No 1 Centrifugal Pump with Motor x 2 units 20 1/2 × 50 m (280 V 40 HP) 2) Well Station No.3 Centrifugal Pump with Motor x 2 units 401/s x 50m (380V, 60HP), 301/s x 50m (380V, 40HP) 3) Well Station No 2 Centrifugal Pump with Motor x 1 unit 40 l/s x 50 m (380 V, 60 HP) > Centrifugal Pump with Diesel Engine x 1 unit 40 l/s x 50 m (60 HP) 4) Iron/ Manganese Removal Equipment (BURMAN System) x 1 unit > Aeration system (Air blower 5.5HP) 5) Chlorination Dosing System > Gaseous Chlorine 6) High Storage Tank (200m3) 7) Transformer (200kVA) Minufia Governorate, El Kom El Akdhr Iron/Manganese Removal Facility (1/6)
- * Water Quality is managed in central laboratory. Only In case some trouble occurs in water quality, the manager is informed from central laboratory.
 1 Raw Water Quality (Average)
 * Turbidity : 0.49 NTU
 > pH : 7.7
 > from : 0.07 mg/l
 > Manganase: 0.27 mg/l
 1) Produced water quality (Net work)
 > Turbidity : 0.48 NTU (Sundard; 1 NTU)
 > pH : 7.3 (Sindards 6.5.45.)

Firm : 0.23 me/l (Standard: 0.3 me/l)

Manganese : 0.16 mg/l (Standard; 0.4 mg/l)

* Above standard is based on Decree No.458 for the year 2007 by Ministry of Health ORM Condition

Water Quality

Annual budget for operation and maintenance

- * Manager does not grasp the budget allocated to the facility, since it is managed by MCWW.
- 2. Operation and Maintenance Activities
- Documents on the operation
 Any documents are not compiled in the facility.
- 2) Data recording (operation record)
- Basic items necessary for the normal operation are recorded every day except for the water quality, and
- these data is submitted to MCWW ever month. Recorded items are as follows; > Operation hour of the system
- > Operation condition (Pressure, water amount, voltage and operation current are recorded every 8 hours)
- Operation hours
 The facility is operated 24 hours in a day.
- Technicians manage the facility 24 hours in 3 shifts.
- Other O&M activities
- > Maintenance work is managed by MCWW and Shebeen El Kom Malkaz. Their staffs come to check
- the facility condition every week. Frequency of checking for the conditions are; - MCWW : Twice a month
- Malkaz : Twice a month
- > The well to be used is changed cyclically every 15 days.
- Water amount to be provided to BURMAN system is 35m3/h at a present. This amount is managed by the experience of chemist, permeated water amount have been decided by the chemist 2 years ago.
- by the experience of chemist, permeated water amount have been decided by the chemist 2 year In case water quality, especially iron and manganese increase, he will change it.
- BURMAN system is cleaned every 15 days by draining and removing the sludge.
- Technical assistance project conducted by US Aid are applied to the facility operation. As an achievement, operation instruction chart is displayed to each facility.

Minufia Governorate, El Kom El Akdhr Iron/Manganese Removal Facility (3/6)

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- Deterioration Assessment (Facility Condition)
- 1) Building frame : Good Condition
- 2) Mechanical equipments : Good Condition
- 3) Electrical equipments : Some Meters, such as voltage meter, ammeter and etc, is damaged.
 2. Equipments and Instrumentation Assicose
- Equipments and instru-1) Instrumentation
- >Water meter to manage the supplied water to BURMAN system is installed individually to well
- station, and also water meter to manage the distribution water is installed in a pipeline.
- 2) Laboratory equipments tor water quanty analysis > Although the facility does not have laboratory and water quality analyzer, chemist who engaged in central laboratory of Shebeen EI Kom comes to take a water sample from each well and distribution
- line once a week.
- > Sampled water is analyzed in central laboratory of Shebeen El Kom.

Minufia Governorate, El Kom El Akdhr Iron/Manganese Removal Facility (2/6)

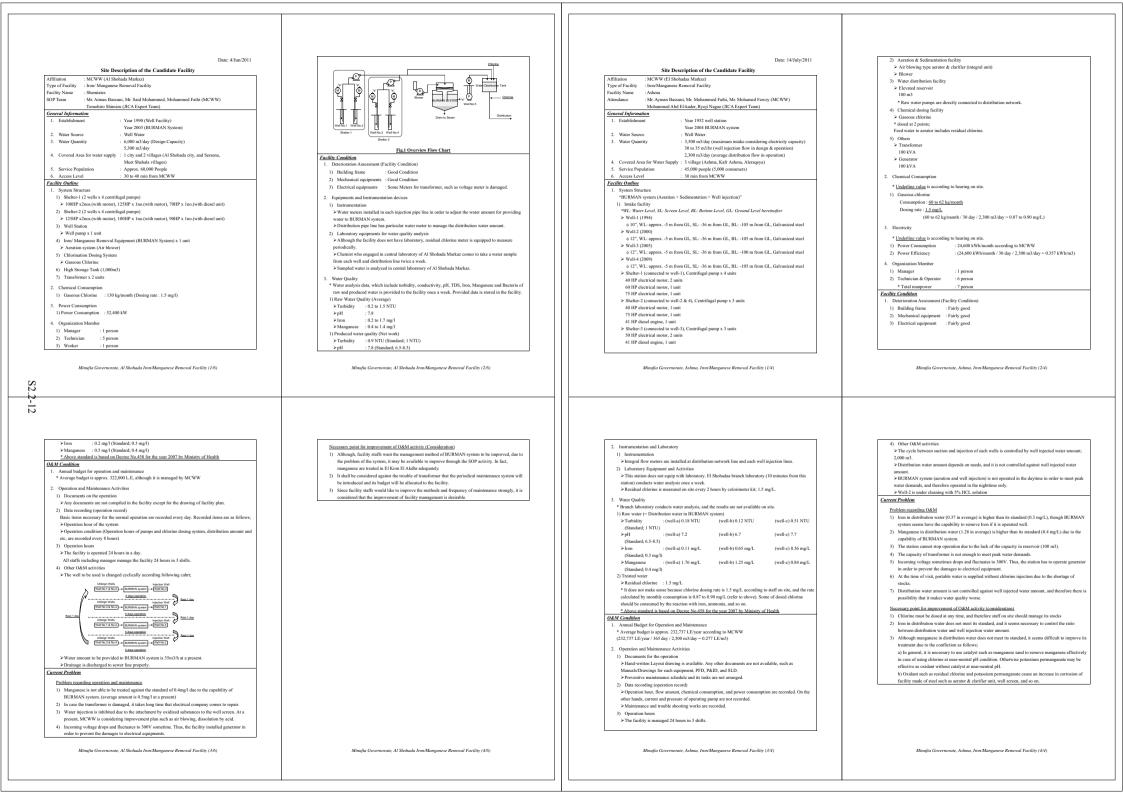
Current Problem

Problem regarding operation and maintenance 1) Water injection is inhibited due to the attachment by oxidized substances to the well screen. At a present, MCW is considering improvement plan such as air blowing, dissolution by acid. In the future, the material will be changed from steel to PVC. The other BURMAN system has also same problem.

Necessary point for improvement of O&M activity (Consideration)

- 1) Facility manager understands the importance of removal of iron and manganese, it is considered that
- the improvement of facility management is desirable. 2) In order for the facility operation to improve, it is necessary to evaluate based on the water analysis
- data. Thus, the data analyzed by central laboratory should be provided to the facilities.
- 3) The manager hope to manage water quality in the facility, water quality analyzer is not arranged yet
- 4) Technicians do not understand the importance of operation management, MCWW want to transfer it
- through the SOP activities.

Minufia Governorate, El Kom El Akdhr Iron/Manganese Removal Facility (4/6)



Date: 30/Jun/2011 Date: 12/July/2011 4) Chemical dosing facility Chemical dosing facility > Greeoue chlorine > Gaseous chlorine Site Description of the Candidate Facility Site Description of the Candidate Facility dosed at 2 points; one is located at piping for elevated reservoir, and the other is piping for aerator dosed at 2 points; MCWW (Tela Markaz MCWW (Quesna Markaz) Affiliation and distribution network before the branch One is located at piping for elevated reservoir, and the other is piping for aerator and distribution : Iron/Manganese Removal Facility : Iron/Manganese Removal Facility Type of Facility Type of Facility 5) Others network before the branch. It is not clear how to use and switch over the points, and staff uses both · Meet Abo El Kom acility Name Ashleem Facility Name > No generator Attendance · Mr. Avman Bassuni, Mr. Mohammed Fathi, Mr. Mohamed Fawzy (MCWW) Attendance · Mr. Avman Bassuni, Mr. Mohammed Fathi, Mr. Mohamed Fawzy 5) Others Chemical Consumption Mr. Khalid Mohammed (MCWW) Nobuyuki Iijima, Ahamed Ragab, Ryoji Nagao (JICA Expert Team) > Transformer General Information Dr. Sayed Madbouly, Mohammed Abd El-kader, Ryoji Nagao (JICA Expert Team) * Underline value is according to hearing on site. 200 kVA 1 Establishment · Year 1958 well station General Information 1) Gaseous chlorine > Generator Year 2003 BURMAN system Year 2004 well station 1 Establishmen 100 kVA Consumption : 100 kg/month 2 Watar Course Wall Wotor Vors 2005 DUDMAN contour Dosine rate : (100 kg/month / 30 day / (2 000 + 840) m3/day = 1.2 mg/L) 2. Chemical Consumption Water Quantity 5 000 m3/day (maximum intake considering electricity caracity) 2 Water Source Well Water 840 m3/day (well injection flow in design & operation) Water Ouantity 7,000 m3/day (maximum intake considering electricity capacity) 3 Electricity * Underline value is according to hearing on site. 2 100 m3/day (average distribution flow in operation) 30 to 35 m3/hr (well injection flow in design & operation) 1) Gaseous chlorine * Underline value is according to hearing on site 4. Covered Area for Water Supply : 4 village (Ashleem, Kafr Ashleem, Shobra, Kafr El Salamia) 2,700 m3/day (average distribution flow in operation) : 23,590 people : 22.317 kWh/month according to MCWW Consumption : 75 kg/month Service Population 1) Power Consumption 4. Covered Area for Water Supply : 3 village (Meet Abo El Kom, Kafr Zorkan Kafr Meet, Abo El Kom) : (22,317 kWh/month / 30 day / 2,100 m3/day - 0.354 kWh/m3) Dosing rate : 1 mg/L 2) Power Efficiency Access Level 30 min from MCWW 5 Service Population · 11.840 neonle 6. Access Level 35 min from MCWW (100 kg/month / 30 day / 2.700 m3/day - 1.2 mg/L) Facility Outline 4. Organization Member Facility Outline System Structure 1) Manager 2 Elastriaity · 1 nerson "BURMAN system (Aeration + Sedimentation + Well injection)" 1. System Structure 2) Operator : 4 person (3 shifts) * Underline value is according to hearing on site 1) Intake facility "BURMAN system (Aeration + Sedimentation + Well injection)" * Total manpower : 5 person *WL: Water Level SL: Screen Level RL: Bottom Level GL: Ground Level hereinafter 1) Intake facility 1) Power Consumption · 20 400 kWh/month according to MCWW ➤ Well-1 (2003) Facility Condition *WL: Water Level, SL: Screen Level, BL: Bottom Level, GL: Ground Level hereinafter : (20.400 kWh/month / 30 day / 2.700 m3/day = 0.252 kWh/m3) 2) Power Efficiency Deterioration Assessment (Facility Condition) 6 10" WI : annrox -2 m from GL SI : N/A BL: -110 m from GL > Wall 1 (2002) 4. Organization Member 1) Building frame : Good. > Well-2 (2008) 6 10" WI annrox -5 m from GL SI N/A BL -100 m from GL Galvanized steel 1) Manager φ 12", WL: approx. -2 m from GL, SL: N/A, BL: -120 m from GL 2) Mechanical equipment : Good > Well-2 (2003) : 1 person 2) Technician & Operator : 5 person Centrifugal pump x 5 units 60 L/sec x 50 m, 75 HP electrical motor, 1 unit 3) Electrical equipment : Good d 10" WI : annrox -5 m from GL SI : N/A BI : -100 m from GL Galvanized steel Well-3 (2008), submersible pump * Total manpower : 6 person 7 Instrumentation and Laboratory 50 HP electrical motor, 2 units ¢ 12", WL: approx. -5 m from GL, SL: -40 m from GL, BL: -108 m from GL Facility Condition 1) Instrumentation 1. Deterioration Assessment (Facility Condition 54 HP diesel engine 1 unit 75 HP Integral flow meters are installed at distribution network line and each well injection lines. 41 HP diesel engine, 1 unit * This well pump is not connected BURMAN system, but directly to distribution network. 1) Building frame : Good 2) Laboratory Equipment and Activities 2) Aeration & Sadimentation facility > Well-4 (2010) 2) Mechanical equipment : Good This station does not equip with laboratory. Central laboratory conducts water analysis once a week. > Air blowing type aerator & clarifier (integral unit) o 12", WL: approx. -5 m from GL, SL: -50 m from GL, BL: -120 m from GL 3) Electrical equipment : Good > Residual chlorine is measured on site every hour by colorimeter kit. Centrifugal pump x 3 units > Blower 2 Instrumentation and Laboratory 5 5 HP 40 L/sec x 50 m 60 HP electrical motor 2 units * Blower is not used 40 L/sec x 50 m, 60 HP diesel engine, 1 unit 1) Instrumentation Integral flow meters are installed at distribution network line and each well injection lines. Water distribution facility 2) Aeration & Sedimentation facility 2) Laboratory Equipment and Activities Elevated reservoir. > Air blowing type aerator & clarifier (integral unit > This station does not equip with laboratory. Tela branch laboratory conducts water analysis once a * Raw water pumps are directly connected to distribution network. > Blower 3) Water distribution facility The station does not have any equipment and tools to measure water quality > Elevated reservoir * Raw water pumps are directly connected to distribution network Minufia Governorate, Ashleem, Iron/Manganese Removal Facility (1/4) Minufia Governorate, Ashleem, Iron/Manganese Removal Facility (2/4) Minufia Governorate, Meet Abo El Kom, Iron/Manganese Removal Facility (1/4) Minufia Governorate, Meet Abo El Kom, Iron/Manganese Removal Facility (2/4) S_2 Current Problem Current Problem Water Quality Water Quality * Branch laboratory conducts water analysis, and the results of residual chlorine at the end of network i * Although central laboratory conducts water analysis the results are not available on site Problem regarding O&M Problem regarding O&M informed; 0.3 to 0.4 mg/L. 1) Raw water 1) The station needs to increase water supply amount, however it is impossible due to the lack of 1) Manganese in distribution water is higher than its standard (0.4 mg/L) due to the capability of ≻ Turbidity : (well-1) 0.25 NTU. (well-2) 0.4 NTU transformer capacity; 100 kVA. 1) Raw water (- Distribution water in BURMAN system) BURMAN system (0.98 in average). : (well-1) 7.2, (well-2) 7.5 : (well-1) 0.70 NTU (well-2) 0.50 NTU (well-4) 0.98 NTU ≻pH ➤Turbidity 2) The aerator & clarifier unit made of carbon steel is rapidly corroded, and therefore it is necessary to 2) Incoming voltage sometimes drops and fluctuates to 300V. Thus, the station has to operate generate > Iron : (well-1) 0.01 mg/L. (well-2) 0.03 mg/L (Standard: 1 NTU) repaint that unit every 6 months. in order to prevent the damages to electrical equipment. ≻ Manganese : (well-1) 0.34 mg/L. (well-2) 0.01 mg/L ≻pH : (well-1) 7.8 (well-2) 7.7 (well-4) 7.9 The blower is not used, though it is essential component for the system to oxidize iron. 3) Distribution water amount is not controlled against well injected water amount, and therefore there is . (Standard; 6.5-8.5) 2) Treated water 4) Well flow is decreasing. possibility that it makes water quality worse > Residual chlorine : 1.5 mg/L > Iron : (well-1) 0.19 mg/L (well-2) 0 19 mg/L (well-4) 0 13 mg/L 5) Operating conditions are not monitored and managed well on site, such as flow and water quality. It * It does not make sense because chlorine dosing rate calculated by monthly consumption is 1.2 mg/L (Standard; 0.3 mg/l) Necessary point for improvement of O&M activity (consideration) will delay the reaction in case of trouble. (refer to above calculation). Some of dosed chlorine should be consumed by the reaction with iron, ≻ Manganese : (well-1) 0.79 mg/L (well-2) 1.00 mg/L (well-4) 1.14 mg/I 1) Although manganese in distribution water does not meet its standard, it seems difficult to improve it Necessary point for improvement of O&M activity (consideration) treatment due to the confliction as follows: ammonia, and so on. (Standard: 0.4 mg/l) **O&M** Condition 1) The blower is not used, instead chlorine dosed at the line to aerator. The followings had better be * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health a) In general, it is necessary to use catalyst such as manganese sand to remove manganese effectively Annual Budget for Operation and Maintenance considered to improve O&M activity; **O&M** Condition in case of using chlorine at near-neutral pH condition. Otherwise potassium permanganate may be 1 Annual Budget for Operation and Maintenance * Average budget is approx. 183,457 LE/year according to MCWW effective as oxidant without catalyst at near-neutral pH. a) Which of methods is more effective and economical for iron oxidization? (183,457 LE/year / 365 day / 2,100 m3/day = 0.239 LE/m3) * Average budget is approx. 196,939 LE/year according to MCWW b) Oxidant such as residual chlorine and potassium permanganate cause an increase in corrosion of b) It is necessary to use catalyst such as manganese sand to remove manganese effectively in case of (196,939 LE/year / 365 day / 2,700 m3/day = 0.200 LE/m3) facility made of steel such as aerator & clarifier unit, well screen, and so on. using chlorine at near-neutral pH condition. Otherwise potassium permanganate may be effective as Operation and Maintenance Activities oxidant without catalyst at near-neutral pH. 1) Documents for the operation 2 Operation and Maintenance Activities c) Oxidant such as residual chlorine and potassium permanganate cause an increase in corrosion of > Any documents are not available, such as Manuals/Drawines for each equipment_PFD_P&ID_SLD 1) Documents for the operation and Layout drawings aerator & clarifier unit well screen and so on > Any documents are not available, such as Manuals/Drawings for each equipment, PFD, P&ID, SLD, > Preventive maintenance schedule and its tasks are not arranged and Layout drawings > Preventive maintenance schedule and its tasks are arranged. 2) Data recording (operation record) > Operation hour and distribution flow amount are recorded every day. On the other hands, current and 2) Data recording (operation record) > Operation hour, flow amount, chemical consumption, and power consumption are recorded. On the pressure of operating pump are not recorded. > Trouble shooting works by MCWW are recorded other hands, current and pressure of operating pump are not recorded. > Residual chlorine concentration is recorded every day > Maintenance and trouble shooting works are recorded. 3) Operation hours 3) Operation hours > The facility is managed 24 hours in 3 shifts and actually operated approx. 18 hours a day in total. > The facility is managed 24 hours in 3 shifts and actually operated approx. 16 hours a day in total 4) Other O&M activities 4) Other O&M activities > The cycle between suction and injection of each wells is controlled by well injected water amount: > The cycle between suction and injection of each wells is controlled by well injected water amount 2 000 m3 2 000 m3 > Distribution water amount depends on needs, and it is not controlled against well injected water > Distribution water amount depends on needs, and it is not controlled against well injected water > Service life of wells becomes shorter: 5 to 10 years, though 10 to 15 years previously. It is sometim >BURMAN system (aeration and well injection) is not operated in the daytime in order to meet peal effective to conduct chemical cleaning with 5% HCL solution water demands, and therefore operated in the nighttime only

Minufia Governorate, Ashleem, Iron/Manganese Removal Facility (4/4)

Minufia Governorate, Meet Abo El Kom, Iron/Manganese Removal Facility (3/4)

Minufia Governorate, Meet Abo El Kom, Iron/Manganese Removal Facility (4/4)

Date: 14/July/2011 Date: 22/Jun/2011 6) Chemical dosing facility 4) Chemical dosing facility > Potassium permanganat Gaseous chlorine * dosed at sedimentation tank (after aeration Site Description of the Candidate Facility Site Description of the Candidate Facility * dosed at aerator MCWW (Menouf Markaz) MCWW (Achmoon Markaz) in Consons obtains 7) Others Type of Facility : Iron/Manganese Removal Facility : Iron/Manganese Removal Facility Type of Facility * dosed at 2 points: pre chlorine and final chlorine > Transformer v 1 unit acility Name Gezy Facility Name : Tahway 5) Drainage facility 200 FVA Mr. Avman Bassuni Mr. Mohammed Fathi Mr. Mohamed Fawzy (MCWW) Mr Mohammed Fathi Mr Saeed Abdelfattah (MCWW) Attendance Attendance > Backwash drain tank > Generator (for emergency) x 1 unit Mohammed Abd El-kader, Ryoji Nagao (JICA Expert Team) Ahamed Ragab, Ryoji Nagao (JICA Expert Team) * Backwash drain is to be discharged outside and/or recycled to serator 300 FVA General Information General Information > Clarifier sediment drain tank 1 Establishment Year 2009 1 Establishment Year 2004 2 Chemical Consumption > Thickener * This station is still managed by the contractor and staff from MCWW is under training. Water Source Well Water > Sludge drying bed * Underline value is according to hearing on site 9 640 m3/day (maximum intake considering electricity capacity) 2 Water Courses . Wall Wotor 3 Water Quantity 6) Others 1) Gaseous chlorine Water Quantity · 2 160 m3/day (Design) * Process treatment canacity is N/A > Transforme Consumption : 300 kg/month 1,800 m3/day (Operation) 2,500 to 2,800 m3/day (operation) 300 kVA Dosing rate : 500 g/hr (500 g/hr / (2,800 m3/day / 24 hr) = 4.3 mg/L) 4 Covered Area for Water Supply : mainly 1 village (Gezy) and some other small villages 4 Covered Area for Water Supply - 3 village (Tabway, Dihome, Kafr El Taruna) > Generator Service Population : approx. 40,000 people (6,000 consumers) and some parts of other villages 3. Electricity 250 FV A 5 Service Population 36,600 people 6. Access Level : 40 min from MCWW > Detector and neutralizing facility for chlorine leakage (out of automatic service) * Underline value is according to hearing on site. 80 min from MCWW Facility Outline 6 Access Level : 6.057 kWh/month according to MCWW 2. Chemical Consumption Facility Outline 1) Power Consumption System Structure "Aeration + Sedimentation + Filtration" System Structure 2) Power Efficiency : (6 507 kWh/month / 30 day / 2 500 to 2 800m3/day * Underline value is according to hearing on site. 1) Intake facility "Aeration + Sedimentation + Filtration" - 0.0775 to 0.0868 kWh/m3) *WL: Water Level, SL: Screen Level, BL: Bottom Level, GL: Ground Level hereinafter 1) Potassium permanganate 1) Intake facility * Above value based on the data in MCWW seems so low, and therefore it is necessary to review Consumption : 120 kg/month > Well-1 (2006) submersible nump > Well o 10", WL: -5 m from GL, SL: N/A, -40 m from GL: -120 m from GL, Galvanized steel
 Dosing rate : 2.2 mg/L 2 wells in use, 2 wells under repair, 2 well under new construction 4. Organization Member 25 L/sec 50 HP 2) Gaseous chlorine Submersible pump x 4 units 1) Manager · 1 person > Well-2 (2006) submersible numn Consumption : 389 kg/month 40 L/sec x 50 m 50 HP 2 untis φ 10", WL: -5 m from GL, SL: N/A, -40 m from GL: -120 m from GL, Galvanized steel 50 L/sec x 50 m 75 HP 2 units 2) Technician & Operator 5 person (3 shifts) Dosing rate : pre-chloring 4.0 to 5.0 mg/L final chloring 1.0 mg/L 20 HB * Each one of pump (one 40L/sec, one 50 L/sec) are under repair. I shor - 1 mercon (389 kg/month / 30 day / 1.800 m3/day - 7.2 mg/L) Aeration & Sedimentation facility 2) Aeration & Sedimentation facility * Total manpower · 7 person 3 Electricity > Air blowing type aerator x 1 lines > Waterfall type aerator & clarifier x 2 lines Facility Condition > Reactor with clow mixer v 1 lines * Underline value is according to hearing on site Clarifier: 140 m3 each 20 mH 1 Datasianation According (Equility Condition) > Clarifier (rectangle) with sediment collector x 1 lines 3) Filtration facility 1) Power Consumption · 21 000 kWh/month 1) Building frame · Water leakage is going on a little > Filter v 2 lines Sand filter x 3 units Mechanical equipment : 2 well pumps are under repair. 2) Power Efficiency : (21,000 kWh/month / 30 day / 1,800 m3/day = 0.389 kWh/m3) > Blower (for aerator) x 2 units > Centrifugal pump (for both filter feed & backwash) x 6 units 3) Electrical equinment Fairly good Centrifugal pump (for backwash) x 2 units 4. Organization Member * 3 pumps are in each line of aerator (1-duty, 2-standby). 2 Instrumentation and Laboratory 44.4 L/sec x 9 m 10 HP 1) Manager : 1 person (engineer) 40 L/sec x 60 m 75 HP 380 V > Blower (for backwash) x 2 units 1) Instrumentation 2) Technician & Operator · 5 person 4) Water distribution facility Water distribution facility > Flow meters are not installed Labor : 1 person * Centrifugal numps in filtration facility are directly connected to distribution network > Elevated reservoir (under construction) * Total manpower > Some pressure gauges are in failure. 5) Drainage facility : 8 person > Underground reservoir 2) Laboratory Equipment and Activities > Centrifugal pump x 1 unit > Centrifugal pump x 2 units > This station does not equip with laboratory. Ashmoon branch laboratory conducts water analysis 25 L/sec x 60 m. 75 HF once a week Residual chlorine is sometimes measured on site by capsular reagent. Minufia Governorate, Gezy, Iron/Manganese Removal Facility (1/4) Minufia Governorate, Gezy, Iron/Manganese Removal Facility (2/4) Minufia Governorate, Tahway, Iron/Manganese Removal Facility (1/3) Minufia Governorate, Tahway, Iron/Manganese Removal Facility (2/3) S_2 4 Facility Condition Onoration and Maintonanas Astivitias Water Quality Deterioration Assessment (Facility Condition) 1) Documents for the operation * Although Ashmoon central laboratory conducts water analysis once a week, the results are not availab 1) Building frame · Good Any documents are not handed over from the contractor. on site. Just in case there are problems in water quality, site manager is informed. Mechanical equipment : Some valves cannot fully shut off the water. 1) Raw water 2) Data recording (operation record) 3) Electrical equipment : There seem be some problems with electrical wiring in construction work ➤ Turbidity : (well-1) 0.76 NTU. (well-2) 0.79 NTU > Staff from MCWW does not have any record * Some flow meters and ammeters are not working from the beginning. : (well-1) 7.3. (well-2) 7.3 ≻pH 3) Operation hours * Chlorine leakage detector does not work automatically. ≻Iron : (well-1) 1.15 mg/L. (well-2) 1.24 mg/L > The facility is managed 24 hours in 3 shifts. ≻ Manganese : (well-1) 1.14 mg/L, (well-2) 1.16 mg/L * Backwash drain pumps do not work automatically. 4) Backwash O&M Condition Backwash for sand filter is conducted every 12 hours Instrumentation and Laboratory 1. Annual Budget for Operation and Maintenance > Backwash sequence is usually as follows; 1) Instrumentation * Average budget is approx. 280,494 LE/year according to MCWW (a) air, 10 min (b) air + water, 7 min Flow meters which show integral and instantaneous flow are installed at well-1 backwash backwash (280 494 LE/year / 365 day / 2 500 to 2 800 m3/day = 0 274 to 0 307 LE/m3) drain recycle, clarifier sediment, and distribution water line. However some of them do not work (c) water, 20 min 2. Operation and Maintenance Activities >On-line turbidity and pH meter are installed at raw water line, and turbidity, pH, and residual 5) Other O&M activities 1) Documents for the operation chlorine meter at treated water line. > Some pressure gauges do not work. > This station is still managed by the contractor and staff from MCWW is under training Any documents are not available, such as Manuals/Drawings for each equipment, PFD, P&ID, SLD, 2) Laboratory Equipment and Activities Current Problem and Layout drawings Preventive maintenance schedule and its tasks are not arranged. > This station equips with laboratory. pH meter and Spectrophotometer are available. Problem regarding O&M 2) Data recording (operation record) > Menouf laboratory (15 minutes from this station) conducts water analysis once a week. 1) Training for operator is not completed and the station is managed by the contractor. Although the > Operation hour is recorded every day. On the other hands, current and pressure of operating pump a contractor manages the facility instrumentation such as flow meters, ammeters, and chlorine leakage Water Ouality not recorded. detector do not work properly. There are a lot of other problems which must be solved between the * Although central laboratory conducts water analysis, the results are not available on site. > Maintenance works are recorded. tractor and MCWW before final hand over. 1) Raw water 3) Operation hours • 9.5 NTU 2) At the time of visit feed water for sand filter overflows into drain channel in spite of under filtratine > Turbidity The facility is managed 24 hours in 3 shifts and actually operated approx 20 hours a day in total ≻pH operation, though the contractor manages the facility, -79 4) Backwash : 2.4 mg/L ≻Iron Necessary point for improvement of O&M activity (consideration) Backwash for sand filter is conducted twice a day for 30 minutes. It is not controlled on site but ➤ Manganese : 1.4 mg/l 1) Backwash frequency and/or sequence should be improved because feed water for sand filter ordered by MCWW > Ammonium : 0.8 mg/L overflows into drain channel in spite of under filtrating operation. 5) Other O&M activities 2) Treated water > The station has 2 lines of aerator and sedimentation tank, and it operated alternately for 15 days in > Torbidity - 0.2 NTU (Standard: 1 NTU) order to clean the line on standby. ≥ Residual chlorine : 1.7 mg/L : 7.6 (Standard; 6.5 - 8.5) Current Problem ≻pH > Iron : 0.01 mg/l (Standard: 0.3 mg/l) Problem regarding O&M ≻ Manganese : 0.02 mg/L (Standard; 0.4 mg/L) 1) Staff on site complains the lack of manpower, and want to increase; 10 technicians and 5 labors. > Ammonium • 0.2 me/L 2) Operating conditions are not monitored and managed well on site, such as flow and water quality * Above standard is based on Decree No.458 for the year 2007 by Ministry of Health including residual chlorine, although site manager wants laboratory and is motivated to conduct **O&M** Condition water analysis on site. It will delay the reaction in case of trouble. Annual Budget for Operation and Maintenance Necessary point for improvement of O&M activity (consideration) * N/A 1) Efficiency may be improved by controlling backwash time and chlorine dosing rate properly on site. Therefore, some monitoring instruments and water quality check kits had better to be installed. Minufia Governorate, Gezy, Iron/Manganese Removal Facility (3/4) Minufia Governorate, Gezy, Iron/Manganese Removal Facility (4/4) Minufia Governorate, Tahway, Iron/Manganese Removal Facility (3/3)

Selection Criteria List

S2.2-15

	No.	8	9	10	11	
	Item	Data Management	Document Arrangement	Maintenance Activity	Safety Precaution	total marks
	Full Marks	10	10	10	10	135
Selection Criteria	Criteria	Point-Deduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) operation hour - 1 point (2) flow - 1 point (3) current - 1 point (4) pressure - 1 point (5) backwash - 1 point (6) chemical consumption - 1 point (7) water quality - 4 points	Point-Deduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) process flow diagram (PFD) - 2 points (2) layout drawing - 2 points (3) piping & instrument diagram (P&ID) - 2 points (4) single line diagram (SLD) - 2 points (5) equipment drawing & manual - 2 points	Exist-Daduction Scouring Each marks which defined for individual item as follows shall be deducted from full marks; (1) preventive maintenance schedule -2 points (2) preventive maintenance task instruction -4 points (3) preventive maintenance record -2 points (4) trouble shooting record -1 point (5) spare parts stock -1 point	Marks shall be the total of the marks which is defined for individual item as follows; (1) safety control staff - 3 points (2) neutralizing facility for chlorine leakage - 3 points (3) coupling/belt cover - 2 points (4) handrall in high place - 2 points	

3/3

Selection Criteria List

	No.	1	2	3	4
	Item	Access Time	Design Capacity	Staff Number	System Typicality
	Full Marks	10	15	10	10
	Criteria	access time	design capacity	total staff number of; - Engineer - Chemist (for the facility) - Technician - Operator	system typicality in neighborhooc Note) The typicality of surface water treatment plant shall be evaluated from the viewpoint of; - backwash - mixing - sludge treatment
Selection Criteria	Marks	0 to 19 min 20 to 39 min 40 to 59 min 5 60 min over 3	First the biggest facility gets full marks (15), then the other facility get marks as follows; $\underline{Mx} = \underline{Ox} / \underline{Omax} \times 15$ Mc: marks of X facility \underline{Ox} : capacity of X facility \underline{Omax} : capacity of biggest facility 15: full marks Mx shall be truncate after the decimal point, for example, 9.6 is truncated to be 9.	First the biggest facility gets full marks (10), then the other facility get marks as follows; $Mx = Nx / Nmax \times 10$ Mx: marks of Y facility Nx: number of Y facility N: mark; number of biggest facility 10: full marks Mx shall be truncate after the decimal point, for example, 9.6 is truncated to be 9.	most dominant for the secondary dominant 5 thirdly dominant 0 the secondary 0 the

1/3

Selection Criteria List

	No.	5	6	7	7
	Item	Facility Condition	Instrumentation Device	Water A	Analysis
	nem	Tacility Condition	Institumentation Device	Surface Water Treatment Plant	Iron/Manganese Removal Facility
	Full Marks	20	15	1	-
	Criteria	(1) capability & sustainability as water treatment facility (2) construction year	Marks shall be the total of the marks which is defined for individual equipment as follows: (1) flow meter for naw water - awailable: 2 points - need repair: 1 point (2) flow meter for translat water - need repair: 1 point (3) flow meter for chemicals	Total marks shall be the total of the marks which is defined for individual equipment as follows;	 Jaboratory availability on site (2) access time to nearest laboratory Note) Laboratory had better equip with the following meters at least for reference. iron (Fe) manganese (Mn) ammonium (NH4) TDS/conductivity meter utrividity meter pH meter residual chlorine meter
Selection Criteria	Marks	Comparative Assessment high capability new construction (20% of total) (30% of total) (30% of total) (20% of total) (20% of total) (20% of total)	all available: 1 point (4) level meter for reservoir - available: 1 point (5) level meter for filter bed - available: 1 point (6) level meter for that bed - available: 2 points - need repart: 1 point (7) incoming power meter - available: 3 points - need repart: 2 points (8) annmeter for equipment - all available: 1 point (9) pressure gauge for distribution networks (9) pressure gauge for distribution networks (10) pressure gauge for equipment - available: 1 point	 Utubidity meter a points points points points points (3) residual chlorine meter a points (4) jar test a points (5) chlorine demand test (breakpoint test) a points 	15 points in case laboratory is otherwise access time to nearest laboratory shall be evaluated. laboratory available on site access time: 0 to 19 min access time: 20 to 39 min access time: 40 min over

<u>S2.3</u>詳細調査 GHAPWASCO

Date 11-Oct-2011

Site Description in Detail Survey (Facility & Equipment Condittion)

Check and Repair

Affiliation : GHAPWASCO Type of Facility : Surface Water Treatment Plant

Facility Name : Tanta El Gedeela Attendance

: Mr. Ahamed Abddel Maaboud, Mr. Samy Megahed Mr. Rezk El Feky, Mr. Nagy Yousay, Mr. Mahmoud Badr (GHAPWASCO) Mr. Tomohiro Shimizu, Mr. Kazuhiro Umeki, Mr. Ahamed Ragab (JET)

garbage are removed twice a day.

Special Instruction

2. Equipment

1. Future Plan for the replacement of facility

Gharbia Governorate. Tanta El Gedeeda Surface Water Treatment Plant

Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

Although the Tanta SWTP has a future plan to replace the distribution pump to low voltage use due to the procurement problems of spare parts, following points are determined through our survey.

	procurement problems of spare parts, following points are determined through our survey.	2	Capacity	500 Ib/d	Require
			Installation Number	lunit	Installat
	Because in order to replace the system, not only pump but power receiving system have to be replaced, it is	4	Accessory		
	 a) expected that plan will be materialized more slowly than anticipated (over 4 to 5 years) 		Injector	lunit	
	. In case this facility is selected as model facility for the SOP, the plan can postpone until the completion of				
	b) the Project.				
2	. Equipment		cification of Chlorine Dosi		
~			Type	Injector Type	Workin
	Because plant operators don't understand the function and its operation method of some equipment such as		Capacity	4000g/h	Require
	pressure switch and flow amount control valve for sand filter, and etc., equipment that we cannot judge the		Installation Number	lunit	Installat
	operation condition, exists.		Accessory		
			Injector	lunit	
3	Installation of Ultrasonic Flow Meter				
	. Installation of Childsonic Flow Acted				
	Ultrasonic flow meter have been installed in this facility in order to measure the raw water and				
	distribution water amount.		cification of Booster Pump		
			Type		Workin
			Capacity	24m3/h	Deterior
-4	. Others	3	Out Put		1 Pump
	The C/P team want to improve intake structure during SOP training, because in current	4	Rated Voltage	380V x 50Hz	
	situation, water intake is inhibited by the accumulation of garbage on the screen even though			9.7A	
	garbage are removed twice a day.	6	Installation Number	3units	
	garbage are removed twice a day.	7	Accessory		
		Spe	cification of Chlorine Store	age System	
		1	Accessory		Require
			Overhead Crane	lunit	Chlorin
					(Due to
					Installatio
					(In orde

	Objective	Chlori	ne Dosins	Second second	Equipment Condition		Action	
	-				equipment Condition		Before	SOP
	cification of C	hlorine Dos				_		
1			Injector		Working Condition good			
2	Capacity		500 Ib/d		Required item			
3	Installation No	umber	lunit		Installation of spare unit	Clock and Repair		0
4	Accessory							
	Injector		lunit					
	cification of C	hlorine Dos						
1	Type		Injector		Working Condition good			
2	Capacity		4000g/h		Required item			
3	Installation No	umber	lunit		Installation of spare unit	Installation		0
4	Accessory		1					
	Injector		lunit					
			-				L	
			-				L	
	ecification of B	ooster Pum	8					
	Type				Working Condition good			
2			24m3/h		Deterioration to be remedied			
	Out Put		7.5kW		1 Pump have been broken. (need to replace)	Replace		0
4			380V x	50Hz				
5	Rated Curren		9.7A					
6	Installation No	umber	3 units					
7	Accessory							
Sp	cification of C	hlorine Stor	age Syste	m				
1					Required Item			
	Overhead Crane		1 unit		Chlorine gas leackage detector have not been used.	Replace		0
					(Due to the breakage)			
					Installation of weight machine shall be considered as a future plan.			
					(In order to measure the consumption, it is required.)			
					Calibration of electromagnetic flow meter is recommendable, if possible			
Ар	paratus			•				
		Name		Quantity	Deterioration to be remedied			
1	Piping			lset				
1	Piping Valves (for Be	ooster line)		lset lset	Deterioration to be remedied			
1	Piping	ooster line)	e line)	lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
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1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
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1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
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1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	e line)	lset lset	Deterioration to be remedied			
1	Piping Valves (for Be	ooster line)	s line)	lset lset	Deterioration to be remedied			

Equipment (Condition	Check Sheet	t (4 /7)

_				upment	Condition Check Sheet (4/1)	-	Action	
	Objective	Alun	Dosing !	System	Equipment Condition		Before	SOP
e	dfaatlaa of	Alum Receivi	. Tesh				Before	SOP
1	Type	Alum Receivi		cal Tank	Working Condition good			
2	Capacity		N/A	cai 12lik	Deterioration to be remedied			
	Number of 1	Seals.	Iunit		N/A	Only and Repair		
	Accessory	ank	TUIIIC			t leve are heper		
4					Required Item	Intellation	~	
	N/A				Level Gauge	Installation	0	
					(In order to measure the consumption, it is required.)			
		Alum Transfe						
	Type		Chemica		Working Condition good			
2	Capacity			in x 15.5m	Deterioration to be remedied			
	Out Put		1.5 kW		1 Pump have been broken. (need to replace)	Replace		0
4	Rated Volta	ge	220V x	50Hz				
5	Installation 1	Number	2units					
6	Accessory							
	N/A							
			1				1	
	-		1				-	
Sn.	cification of	Alum Storage	Tank				-	
1	Type	And Storage	Concrete	Teah	Working Condition good	-		
2	Capacity		10m3	- I mask	Deterioration to be remedied		-	
	Number of 1	Seals.	3basin					
3		ank	soasin		N/A		<u> </u>	
4	Accessory						<u> </u>	
	Agitator		Junits (1	Not used)				
	for address of field Alami							
Spe	cification of	Alum Dosing	Equipme	nt				
1	Type		Gravity		Working Condition good			
2	Capacity		N/A		Deterioration to be remedied			
	(Flow Meter)			Indication value of 1 flow meter have been erased.	Replace	0	
3	Installation 1	Number	2units		(In order to measure thedosage, it is required.)			
	Accessory							
-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
							-	
Ar	paratus				1		-	
лP	ALCHONS .	Name		Ownerity	Datasiantian to be somediad			
1	Distant	ryanie		Quantity	Deterioration to be remedied N/A			
	Piping Manual Value			lset	NA			
2		es (for transmi	osi0D)	lset			I	
3	Manual Valv	res (tor dose)		lset			L	
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Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

Equipment Condition

Action Before SOP

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Equipment Condition Check Sheet (5/7)

king Con

ctro Magnetic Flow Meter o one know the location of

Back Wash System

CW OV x 50Hz

Objective

Specification of B 1 Type 2 Capaci

2 Capacity 3 Out Put 4 Rated Voltage 5 Rated Current 6 Installation Nu

 S_2 .<u>3</u>-1

Objective	Kaw W	ater Pump		Equipment Condition			
				Equipment Continion		Before	SO
cification of Pr	imp (A)						
Type			gal Pump	Working Condition good			
Capacity		440 L/se	c x 15m	Deterioration to be repaired			
					Casis and Reput	0	
			50Hz	(All gauges are requested to be repaired.)			
	mber	Zunits					
Compound Ga	uge	zunits					_
differentiane of De							_
	IMD (B)	Cantrilla	and Domain	Washing Condition and			_
			A LOUI		Ranlar	0	
			SOHz		replace	0	
				conferências contractantes en contragage)			
	mber						
				1			-
		Iunit					
		Lunit					
cification of Pr	IMD (C)						
		Centrifu	gal Pump	Working Condition good			
		220L/set	x 15m				
Out Put		40kW		(All gauges are requested to be repaired.)	Replace	0	
Rated Voltage		380V x 3	50Hz				
Rated Current		106A					
Installation Nu	mber	lunit					
Accessory							
Pressure Gaug	2	lunit					
Pressure Switc	h	lunit					
aratus							
	Name		Quantity				
		(V)		Required Item			
	with gauge			Calibration of ultrasonic flow meter is recommendable, if possible.			
							_
	w Meter						_
Iniet valves			Iset				
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Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

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3 3 0.0 µ ⁻¹ 300 W Some process gamp and compand jung and brokes. Notward									
4 Read Cargo Display Operation on particle regard or specific here regard o					1 x 60m			0	
5 Rand Course Sol \sim Non-					6017		Clock and Repair	0	
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Near Output Description to regulation ($\mathbf{Perturbut}$) $\mathbf{Perturbut}$ $\mathbf{Perurbut}$ $\mathbf{Perurbut}$ <t< td=""><td>1</td><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td></t<>	1			1					
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Pro Vacuum Un a) Pump Specification of Air Sco 1 Type 2 Capacity 3 Out Put 4 Rated Voltage rking Condition equired Item x 50Hz In order to measure the flow rate, it is re- A Rated Voltage Rated Voltage State Voltage Installation Number Accessity A Quantity 10units 10units 10units 10units Deterioration to be remedied On-site residual chlorine meter have been be (As future plan) 7 Electro Magnetc Flow Meter (for Product Water) 8 On-site Residual Chlorine Mete 9 Piping 10 Pressure Switch 10 Pressure Switch 11 Air Supply Unit for Pro-a) Compressor b) Air Tank with Pres

Equipment Condition Check Sheet (6/7)

Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

	Objective Sludge Discharge Pump		Duran	Equipment Condition		Action		
			Discharg	e Pump	Equipment Condition		Before	SOP
lud	ge Discharg	e Pump						
1	Type		Centrifu	gal Pump	Working Condition good			
2	Capacity		70L/sec	x 10mH	Deterioration to be remedied			
	Out Put		13kW			Onà mi Repir	0	
4	Rated Volta	70	380V x :	60U-r	(All gauges are requested to be repaired.)	-	~	
	Rated Curre		N/A	70112.	(An galger an inspense of the reparter.)			
	Installation 1		2units					
7		vanioei	zumes					
	Accessory							
	Pressure Gat		2units					
	Compound C	lauge	2units					
	Suction Valv		2units					
	Discharge V	alve	2units					
	Check Valve		2units					
-	Overhead Cr	200	lunit					
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	aratus						-	
ψł.	our acces	Name		Quantity	No. 1. J. A. I. P. I.			
_		reame		Qualitity	Deterioration to be remedied			
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Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

Gharbia Governorate, Tanta El Gedeeda Surface Water Treatment Plant

Equipment Condition Check Sheet (7/7)		Equipment Condition Check Sheet (2/7)	Equipment Condition Check Sheet (3/7)
Objective Building Condition Equipment Condition Action Before SOP	Date : 11-Oct-2011	Objective Discharge Water Pump System Equipment Condition Action Before SOP	Objective Chlorine Dosing System Equipment Condition Action Before SOP
Mixing Basin		Specification of Pump (A)	Specification of Chlorine Dosing Equipment (Pre) 1 Type Injector Type Working Condition good
2 Number of Basin Ibasin		1 Type Centrifugal Pump Working Condition good 2 Capacity 100Lis x 60m Deterioration to be repaired 3 Out Put 110kW All pressure gauges and compound gauges are broken. Replace ○	2 Capacity 16kg/H Deterioration to be remedied 3 Installation Number 2units N/A
		4 Rated Voltage 380V x 30Hz 5 Rated Current 210A	4 Accessory
	Site Description in Detail Survey	6 Installation Number 4units	
	(Facility & Equipment Condition)	7 Accessory Pressure Gauge 4units	Specification of Chlorine Dosing Equipment (Post)
I Type Baffled Type Concreate Condition Fairly Good	(raciity & Equipment Condition)	Compound Gauge 4units	1 Type Injector Type Working Condition good 2 Capacity 6kg/H Deterioration to be remedied
2 Number of Basin 4basins Deterioration		Specification of Pump (B) 1 Type Centrifugal Pump Working Condition good	3 Installation Number Zunits N/A
	Affiliation : GHAPWASCO Type of Facility : Surface Water Treatment Plant	2 Capacity 75L/s Deterioration to be repaired	4 Accessory
	Facility Name : Kafr El Zavat El Morashaha	Out Put 100HP All pressure gauges and compound gauges are broken. Replace 4 Rated Voltage 380V x 50Hz	
Summariation Redu	Attendance : Mr. Ahamed Abddel Maaboud, Mr. Samy Megahed	A Rated Voltage S80V x 50Hz S80V x 50	Specification of Booster Pump (for Pre-Chlorination) I Type Working Condition good (Not used)
Sedimentation Basin	Mr. Rezk El Feky, Mr. Mahmoud Badr (GHAPWASCO)	7 Accessory	I Type Working Condition good (Not used) Capacity GOOLImin x 38.5mH Deterioration to be remedied Jour Pat 7.5W NA
2 Number of Basin 4basins Deterioration		Pressure Gauge lumit Compound Gauge lumit	4 Rated Voltage 3800 x 50Hz 5 5 Rated Current 16.5A
3 Equipment Collecting Wire		Specification of Pump (C)	6 Installation Number 2units
		3 Out Put 180HP All pressure gauges and compound gauges are broken. Replace □	N/A
		4 Rated Voltage 380V x 50Hz 5 Rated Current N/A	Specification of Booster Pump (for Post-Chlorination)
Sand Filter 1 Type Gravity Flow Concreate Condition Good		6 Installation Number 1unit 7 Accessory	Type Working Confinion good (Not used) Capacity I20Limin X4mH Deterioration to be remedied Out Put I.65.W NA
1 Type Gravity Flow Concreate Condition Good 2 Number of Basin Stand Condition Bad Check ○ 3 Equipment Image: Stand Condition on out of shadge are accumulated on surface of sand.) □		Pressure Gauge Tunit	3 Out Part 1.65kW N/A 4 Rated Voltage 380V x 50Hz
Drainage Trough Equipment Condition			5 Rated Current 6.7A
Float Switch All Float Switches are broken. Replace O (Automatic operation is not able to be done.)		Specification of Pump (D) 1 Type Centrifugal Pump Working Condition good	6 Installation Number 2units 7 Accessory
Calibration of electromagnetic flow meter is recommendable, if possible.		2 Capacity 100L/s Deterioration to be repaired 3 Out Put 135HP All pressure gauges and compound gauges are broken. Replace	7 Accessory
Distribution Reservoir		4 Rated Voltage 380V x 50Hz 5 Rated Current NA	Specification of Chlorine Storage System
1 Type Concrete Structure Concreate Condition Good		6 Installation Number 1 unit	1 Accessory Required Item
2 Number of Basin 3 Installation of water level meter shall be considered as advance Plan. 3 Capacity 4000m3 (To manage the water production.)		7 Accessory Pressure Gauge 1unit	Dvorbad Come 2units Installation of weight machine shall be considered as a future plan. Proserv Represerv 2units (In order to measure the consumption, it is required.)
		Compound Gauge lunit	Fiber & Henter 2units Chargorie Valve 1unit
		Apparatus Apparatus Image: Constrainty of the second	Vaccan Gauge Iunit machine Internet Vaccan Gauge Iunit
Sludge Tank		1 Vaccum Unit N/A	manifold 1set N/A
1 Type Concrete Structure Concreate Condition Good 2 Number of Basin 2		Vacuum Pump (55kW, 380V) 2units Required Item Vaccum Tank with gauge Iunit Calibration of ultrasonic flow meter is recommendable;if possible	
3 Capacity N/A		Piping 1set	Apparatus Name Quantity Deterioration to be remedied
		Vulves 1tet 1 2 Ultrasonic Flow Meter Zunits 1 3 Pipting 1tet 1	1 Piping (Injection/ Dosage 1set Some sensor for chlorin leakage detector may damaged. Check
		3 Piping list	2 Source-Neuroim 194 3 Y Markers (for childraine dossage line) 16et 6 Por-Size Manitoring Resoluted Charters Matter 1 Unit
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	Equipment Condition Check Sheet (1/7)	Equipment Condition Check Sheet (4/7)	Equipment Condition Check Sheet (5/7)
6	Objective Raw Water Pump System Equipment Condition Action Before SOP	Objective Alum Dosing System Equipment Condition Action Before SOP	Objective Back Wash System Equipment Condition Action Before SOP
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Equipment Condition Check Sheet (6/7)	Equipment Condition Check Sheet (7/7)	Equipment Condition Check Sheet (1/7)	Equipment Condition Check Sheet (2/7)
Objective Sludge Discharge Pump Equipment Condition Action	Objective Building Condition Equipment Condition Action	Before SOP	Objective Discharge Water Pump System Equipment Condition Action Before SOP
Sludge Discharge Pump Sludge Discharge Pump	Mixing Basin	Specification of Pump (A) 1 Type Centrifugal Pump Working Condition good	Specification of Pump (A) 1 Type Centrifugal Pump Working Condition good
Type [Confingul (Vinical Studi) Working Condition good Z Capacity 220L/sec Deterioration to be remedied J Out Pat 45kW All pressure gauge and compound gauge may be brokent Replace O	1 Type Concrete Structure Concreate Condition Bad 2 Number of Basin Ibasin Equipment Condition Good	1 Type Centrifugal Pamp Working Condition pood 2 Cupacity 13,2m/lmin x 12mH Detrioration to be repaired 14 3 Out Put 483 NA 14	2 Capacity 8m3/min x 60mH Deterioration to be repaired 3 Out Put 132kW N/A
Capacity 2201/sec Deterioration to be remedied Out Put 454W All pressure gauge and compound gauge may be broken Replace All areas Voltage 3800's x 50Hz	3 Equipment	4 Rated Voltage 380V x 50Hz	4 Rated Voltage 380V x 50Hz
4 Rated Voltage 580V x 30Hz 5 Rated Current N/A	Agitator lunit	5 Rated Current 91A 6 Installation Number 3units	5 Rated Current 228A 6 Installation Number Sunits
6 Installation Number 2units	Flocculation & Sedimentation Basin	7 Accessory	7 Accessory
1 Rate Votage 100 V. SNL 2 Sate Correct Merce 1 4 Rate Votage 1 7 Date State 1 1 Date State 1	Type Circular Settling Type Concreate Condition Bad Number of Basin Ibasin Equipment Condition Good	1 Band Carring PA. Note	Pressure Gauge Sunits Compound Gauge Sunits
Compound Gauge 2units Suction Valve 2units			
Dicharge Value 2 units Check Valve 2 units	Sludge Collector I unit Dranage Unit I unit	Apparatus Name Quantity Deterioration to be repaired	Apparatus Name Quantity Deterioration to be repaired
Overhead Crane Iunit		Ultrasonic Flowmeter 1 unit N/A Suction Valve (Manual) 5 units Required Item	Ultrasonic Flowmeter Iunit N/A Suction Valve (Manual) Sunits Required Item
	Sand Filter	Succión valve (Mantali) Suntos Reclarece reen Succión valve (Motorized) Sunits Calibration of ultrasonic flow meter is recommendable, if possible.	Suction Valve (Manual) Sunits Required Item Jischarge Valve (Motorized) Sunits autoansic flow meter (Plane IV) is recommendable, if possible.
Name Quantity Deterioration to be remedied	1 Type Gravity Flow Concreate Condition Bad (Water Leackage)	3 Discharge Valve (Motorized) Junits Cultorios of ulmonic flow meter is recommandable, if possible 4 Check Valve 5 Piping 1 Set	4 Check Valve Sumits On-site residual chlorine meter (Phase IV) needs calibration. Catousos 5 Safety Valve (Rupture Disk) Iunit
Name Quartity Decision to be remded Image: Constraint of the con	Number of Basin blasin Stand Condition Bad check Equipment Therease is an Mater family Research of stude are accumulated on surface of sand.	6 Overhead Crane 1set	6 On Site Monitoring Residual Chlorine Meter 1 unit aithration of ultrasonic flow meter (Confluence) is recommendable, if possible.
	Chaldrafe Level Menter Challon Required Relation	7 Electrode in raw water sump) 2 sets	7 Piping 1 set 0n-site residual chlorine meter (Confluence) needs calibration. Catheusus 0
	Calibration of ultrasonic level meter is recommendable if possible.		
	I Trated Water Keervoir I Type Concrete Structure Concreate Condition Bad Interface Structure Interface I		
	2 Number of Basin Ibasin 2 Connective N/A		
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	N/A		
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	2 Number of Basin 2		
Gharbia Governorate, Kafr El Zayat El Morashaha Surface Water Treatment Plant	Gharbia Governorate, Kafr El Zayat El Morashaha Surface Water Treatment Plant		
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22 	Sectil Length	Equipment Condition Check Sheet (3/7)	Equipment Condition Check Sheet (4/7)
မ် ယ်	Special Instruction	Equipment Condition Check Sheet (3/7) Objective Checka Daving System Equipment Condition Action	Equipment Condition Check Sheet (4/7)
ີ່ມ ບໍ່	1. Facility Condition	Objective Chlorine Dosing System Equipment Condition Action Before SOP	Objective Alum Dosing System Equipment Condition Action Before SOP
မ် မ်	 Facility Condition Mr. Abdulla who is responsible person of the Project, came to check the facility condition and promise to solve 	Objective Chlorine Dosing System Equipment Condition Action Specification of Chlorine Dosing Equipment (Pre) I I Type I 1 Type Unit Type Working Condition good I	Objective Ahm Doning System Equipment Condition Action Specification of Ahmm Subtlew Storage Tusk (A) Hofer Solar Hofer Solar Jury Seld Annumum Suffactory Hofer Solar Hofer Solar
မ် ယ်	1. Facility Condition	Objective Chlorine Dosing System Equipment Condition Action Before SOP Specification of Cherice Dosing Teglement (Pro) I SOP I SOP 1 Type Unit Type Working Condition good I 2 Capacoly High Deterioration to be remedied I 3 Justifiation Number Data. I vacuum grappi to broken Replace I	Objective Alum Dosing System Equipment Condition Action Specification of Adam Subtlew Storage Task (A) Hofe Solar Hofe Solar Hofe Solar For Solar Adaminum Suffactory Hofe Solar Hofe Solar Hofe Solar Hofe Solar
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نی کی Date : 22-Oct-2011	 Facility Condition Mr. Abdulla who is responsible person of the Project, came to check the facility condition and promise to solve following problems, because this plant is in need of sparse consumable parts and some major damage found in 	Objective Chalcine Dosing System Equipment Condition Action [Hotory Str] Specification of Charles Dosing Toppics Use Type Use Type Str 1 Type Use Type Working Condition pool 2 Capacity High Descriming to be remedied 3 Installands Number Data 1 Line	Objective Ahm Doning System Equipment Condition Action Specification of Ahmm Subtlew Storage Tusk (A) Hofer Solar Hofer Solar Jury Seld Annumum Suffactory Hofer Solar Hofer Solar
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لی نے Date : 22-Oct-3011 Site Description in Detail Survey (Facility & Equipment Condittion) Affiliation : GHPAWASCO	1. Facility Condition Mr. Abdulla whom, because this plant is in need of sparse' consumable parts and some major damage found in the facility. Water flow meter and residual elidorine meter which are installed by Nassail Company, don't work properly due to the facility. Just flow meter and residual elidorine meter which are installed by Nassail Company, don't work properly due to the fact of calibration. Junt moving pice has been blocked due to the scale by hydrolysis of aluminum sulfate. JChlorine leackage detector has not been activated due to the lack of calibration.	Objective Chalcine Dosing System Equipment Condition Action [Hotory Str] Specification of Charles Dosing Topping Usin Type Usin Type Str] 1 Type Usin Type Working Condition pool 2 Capacity High Descriming to be remained point 3 Installands Numb Data Linceman graps in booken Replace	Objective Ahm Doning System Equipment Condition Action Specification of Ahmm Subtletory Storage Tusk (A) Hofer Sole Hofer Sole For Sole Ahmmism Subtletory Hofer Sole Hofer Sole
لن لن Date : 22-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition)	 Facility Condition Mr. Abdulla who is responsible person of the Project, came to check the facility condition and promise to solve following problems, because this plant is in need of sparse consumable parts and some major damage found in the facility. Water flow meter and residual chlorine meter which are installed by Nassail Company, don't work properly due to the facility. Alten dowing pipe has been blocked due to the scale by hydrolysis of aluminum sulfate. Chlorine lackage detector has not been activated due to the lack of calibration. And etc., JET will assist them to solve these problems. 	Objective Chaine Dasing System Equipment Candition Action 3000 finding of Chaine Dasing System Equipment Candition Hold System Hold System 2 Dasing Dasing Processing Marking Conductors Processing Hold System 4 Accessing Dasing Dasing Hold System Hold System Hold System 4 Accessing Dasing Dasing Hold System Hold Sy	Objective Ahm Doning System Equipment Condition Action Specification of Ahmm Subtletory Storage Tusk (A) Hofer Sole Hofer Sole For Sole Ahmmism Subtletory Hofer Sole Hofer Sole
Date : 22-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condittion) Affiliation : GHPAWASCO Type of Facility : Surface Water Treatment Plant Facility Name : El Mahala El Kohra Attendance : Wr. Abdullah El Laihy, Mr. Samy Megahed,	1. Facility Condition Mr. Abdull who is responsible person of the Project, came to check the facility condition and promise to solve following problems, because this plant is in need of sparse' consumable parts and some major damage found in the facility. 1) duet fow moter and residual chlorine meter which are installed by Nassul Company, don't work properly 1) duet fow mote and residual chlorine meter which are installed by Nassul Company, don't work properly 2) Alum dosing pipe has been blocked due to the scale by hydrolysis of aluminum sulfate. 3) Chlorine leachage detector has not been activated due to the lack of calibration. 4) And etc., JET will assist them to solve these problems. 2. Installation of Ultrasonic Flow Meter	Objective Chaine Dasing System Equipment Candition Action 3000 finding of Chaine Dasing System Equipment Candition Hold System Hold System 2 Dasing Dasing Processing Marking Conductors Processing Hold System 4 Accessing Dasing Dasing Hold System Hold System Hold System 4 Accessing Dasing Dasing Hold System Hold Sy	Objective Ahm Doning System Equipment Condition Action Specification of Ahmm Subtletory Storage Tusk (A) Hofer Sole Hofer Sole For Sole Ahmmism Subtletory Hofer Sole Hofer Sole
Date : 22-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : GHPAWASCO Type of Facility : Sarice Water Treatment Plant Facility Name : El Mahala El Kohra Attendance : Mr. Abdullah El Laihby, Mr. Samy Megahed, Mr. Rezk El Feyl (GHAPWASCO)	1. Facility Condition Mr. Abdulla who is responsible person of the Project, came to check the facility condition and premise to solve following problems, because this plant is in need of spare' consumable parts and some major damage found in the facility. Water flow meter and residual chlorine meter which are installed by Nassail Company, don't work properly due to the facility. Water flow meter and residual chlorine meter which are installed by Nassail Company, don't work properly due to the facility. Autor doning pice has been blocked due to the scale by hydrolysis of aluminum sulfate. Chlorine leackage detector has not been activated due to the lack of calibration. And etc., JET will assist them to solve these problems. Linstallation of Ultrasonic Flow Meter Ultrasonic flow meter these been installed in this facility in order to measure the raw water and distribution	Objective Charten Daving System Equipment Condition Action Head mathematical Head System Action Head mathematical Head System Action Head System 10 10000 10000 10000 10000 10000 2 Construct and the Neuronaled 10000 10000 10000 3 Installation Number Junit 1 vacuum garge in broken Replete 1 4 Constant, and X-transmoled 100000 100000 100000 100000 1 Type Junit Vacuum garge in broken Replete 1 100000 100000 100000 100000 100000 1000000 1000000 1000000 1000000 1000000 1000000 1000000000000000000000000000000000000	Operative Ahm Doning System Equipment Condition Address Sected and Ahm Scholard Strang Tank (A) Imbut (A) Imbut (A) Imbut (A) 1 Type FRP Tank Working Condition good Imbut (A) 2 Copecity Hull Deterioration to be remoded Imbut (A) Imbut (A) 3 Nonlow of Tank Datals NA Imbut (A) Imbut (A) 4 Applint Datals NA Imbut (A) Imbut
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Minufia Governorate, El Mahala El Kobra Surface Water Treatment Plant

Minufia Governorate, El Mahala El Kobra Surface Water Treatment Plant

Equipment Condition Check Sheet (5/7)	Equipment Condition Check Sheet (6/7)	Special Instruction	Equipment Condition Check Sheet (1/4)
Objective Back Wash System Equipment Condition Action Before SOP Specification of Backwash Pump	Objective Drainage/ Sludge Discharge Pump Equipment Condition Action Before SOP Sludge Discharge Pump (Drainage Tank)	1. Facility Condition	Objective Well Pump System Equipment Condition Action Specification of Well Pump A (1)
Specification of Backwash Pump Working Condition 1 Type Submersible Pump 2 Capacity 10.13m3/min x 10mH Deterioration to be remedied	Type Submersible Pump Working Condition good Capacity 1.5m3/min x 15m Deterioration to be remedied	Due to the breakage of low water level detecting system for aeration tank, dry operation of feeding pumps occurs at time and endamage not only pump but another parts, such as pipeline and valves.	Type Centrifugal Pump Working Condition good Capacity 40 Lises x 50mH Deterioration to be repaired
2 Capacity 10.13m.hum.5.10ml? Detrivations to be remedied	1 Oce Par 2 SW N/A Rand Voltage SW X 50Hz SW X 50Hz SW X 50Hz	Plant operator want to install the valve to the effluent line from aeration tank in order for the maintenance.	2 Capacity 40 Lises 50mH Descination to be repaired 3 Out Phe 60HP Pressure gauge and compound gauge are not installed. 4 Rated Voltage 380Y 50Hz 5 Rated Current 84.248.5A
6 installation Number Junits 7 Accessory	6 Installation Number 2units	2. Installation of Ultrasonic Flow Meter	6 Installation Number 1 unit 7 Accessory
Pressure Gauge 3units Discharge Valve (Motorized) 3units	Pressure Gauge 2units Exchange Valve 2units	Ultrasonic type of flow meter is installed in only water distribution pipeline in order to measure instantaneo and integrating water amount. It is available to install the ultrasonic flow meter to the pipeline after confluence	N/A
Check Valve 3units Flow Meter I unit	Instruction 2005 Cock Valve 2005 Instruction 1 Instruction 1 Instruction 1	and megating water another it is standard to instant the mitadonic from neter to the pipeline are connected of well water. Installation point is shown in following picture. (There is no need to make a chamber for installation of flow meter.)	Specification of Well Pump A 12: 1 Type [Centrifugal Pump Working Condition good]
Specification of Surface Wash Pump 1 Type Solution: Working Condition good	Studge Reverse-Circulation Pump (Drainage Tank) Working Condition 1 Type Submervise Pump 2 Capacity 4m5kmin s: Type	3. Future Plan for the replacement of facility	2 Capacity 25 L/sec x 50mH Deterioration to be repaired 3 Out Put 37kW Pressure gauge and compound gauge are not installed. Installed.
2 Capacity 6.75m3/min x 22mH Deterioration to be remedied	3 Out Put 15kW N/A	Although the Mahalet Marhoom IMRP has a future plan to well pump system, this plan can conduct without	5 Rated Current 68.5/39.6A
3 Out Put 55kW NiA 4 Rated Voltage 380V x 50Hz 5 Rated Current NiA	4 Rated Voltage 380/V x 50Hz 5 Rated Current N/A 6 Installation Number 2units	shutting off water treatment process and any inhibition to SOP activity.	6 Instillation Number Junit 7 Accessory N/A Note)
6 Installation Number Zunits 7 Accessory	7 Accessory Pressure Gauge 2units	Pic.1 Installation point of Raw Water Flow Meter	Generator Pump have not been used due to the breakage.
Pressure Gauge Zunits Discharge Valve (Motorized) Zunits	Deskryp Vole 2mils Check Valve 2mils Check Valve 2mils		Specification of Well Pump B Working Condition 1 Type Submersible Pump
Check Valve 2units Flow Meter 2units			2. Capacity 40U/secx 50m Description by Prepared
Fire Meter 2 units 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Nation Unitary runny, Nation 2 Statematic Nation 2 Provide Condition pool 1 Caparity E-Mathematic Nation 3 Statematic Nation 4 E-Mathematic Nation 4 2 Out Put 3-NW N:A E-Mathematic Nation 4 E-Mathematic Nation 4 4 Rack Correct N:A E-Mathematic Nation 4 E-Mathematic Nation 4 5 Rack Correct N:A E-Mathematic Nation 4 E-Mathematic Nation 4	this illation Point of Raw US ar Flow Meter	Knite Voinge Solv X Soliz Required rem Installation Number Iunit Calibration of flow meter is recommendable, if possible. Accessory
1 Inlet Valve (Motorized) Sanits N/A	3 Out Put 3.7kW N/A 4 Rated Voltage 380V x 50Hz	Water Flow Meter	Electromagnetic flow Mete
2 Outlet Valve (Motorized) Sunits 3 Backwash Valve (Motorized) Sunits	5 Rated Current N/A 6 Installation Number Zunits		
Backwais Valve (Monizion) Sunits Borline With Weineless Strafters With Verbetzerich Waterief Daniange Valve (Monizioni) Sunits Daniange Valve (Monizioni) Sunits de Level Monizioni V Innit [lydiostant Programs Type)	Pressure Gauge 2units	Availability: Available	Apparatus Vance Quantity Deterioration to be repaired I Priming Pump unit Water Leakage from the fitting Repair
6 Level Meter for Reservoir lunit (Hydrostatic Pressure Type) 7 Electrode for Reservoir lunit	Check Valve 2units	Location: Before Aeration & Sedimentation Tank Pipe Dia. : 150mm (PVC)	Manual Pump I unit Required Item
8 Utility Pump Unit 1set	Apparatus	Chamber Size: Not Necessary	2 Pping 1set N/A 1 3 Valves 1set 1
10 Piping lset	Name Quantity Deterioration to be remedied		
Image: second			
Minufia Governorate, El Mahala El Kobra Surface Water Treatment Plant	Minufia Governorate, El Mahala El Kobra Surface Water Treatment Plant	Gharbia Governorate, Mahalet Marhoom Iron and Manganese Removal Plant	Gharbia Governorate, Mahalet Marhoom Iron and Manganese Removal Plant
S			
ົງ ມ			
4			
Equipment Condition Check Sheet (7/7)		Equipment Condition Check Sheet (2/4)	Equipment Condition Check Sheet (3/4)
Objective Building Condition Equipment Condition Action Before SOP Intake Sump	Date : 18-Oct-2011	Objective Aeration & Sedimentation System Equipment Condition Before SOP Aeration & Sedimentation Tunk	Objective Filtration System Equipment Condition Action Before SOP Specification of Filtration Tank
Intake Sump Concrete Structure Concrete Condition Good 1 Type Concrete Structure Concrete Condition Good Equipment Condition 2 Number of Basin Equipment Condition Good Equipment Condition		Accretion & Sedimentation Tank 1 Type Air Blowing Type Tank Condition N/A 2 Namber of tank Lumit Deterioration to be repaired	1 Type Pressure Tank Tank Condition good 2 Number of tank 2 units Deterioration to be renaized
3 Equipment Electrode (LW Detection) 2sets		N/A Required Item	Pressuer gauge (inlet) 1 unit N/A Pressuer gauge (ontet) 2 units
Mixing Basin 1 Tuna Concrete Structura Commute Configure Cond	Site Description in Detail Survey	Safety cage for ladder is required in safety aspects. Insulation	Specification of Feeding Pump
1 Type Concrete Structure Concreate Condition Good 2 Number of Basin Ibasin 5 Equipment 0 1000	(Facility & Equipment Condition)	Specification of Aeration Blower N/A 1 Type Root Type Working Condition N/A	Specification of Peening running Type Centrifugal Pump Working Condition N/A Zupacity 25L/s Deterioration to be repaired
N/A			
Conclusion & Scilimentation Rasis. Type Creatur Setting Type Concrust Condition Good Souther of Root Souther of Root Souther of Root Souther of Root	Affiliation : GHAPWASCO Type of Facility : Iron and Manganese Removal Plant	D Out PA D State Descentions to be required 4 Rand Voltage EXDV x 5014 5 Rand Current FL AL 6 Installation Number Ammen	4 Reade Voltage 3800'x 50Hz 3 operation handle for valves are not work properly. Repair ○ 5 Roade Current 41/23A 6 Installation Number Junits
3 Equipment	Facility Name : Mahalet Marhoom	5 Rad Current 19.1A 6 Intallation Number Intallation Number 7 Accessory Intallation Number 9 Intallation Number Intallation Number 9 Intallation Number Intallation Number 9 Intallation Number Intallation Number	7 Accessory Manual Valves (Saction) Junits Manual Valves (Oschorana) Junits
Sludge Collector 4units Dranage Unit 8units (Motorized Eccentric Valve)	Attendance : Mr. Samy Megahed, Mr. Rezk El Feqy, Mr. Nagy Yousay, Mr. Mahmoud Badr (GHAPWASCO)		Manual Valves (Santion) Juain: Manual Valves (Olicharge) Juain: Ball Check Valve Juain:
Sand Filter	Mr. Nagy Today, Mr. Anatona Isaa (Tara (Transa) Mr. Essam Ahmed El Said (Gaefraya) Mr. Tomohiro Shimizu, Mr. Kazuhiro Umeki, Mr. Ahamed Ragab (JET)	Apparatus Quantity Deterioration to be repaired	Specification of Air Scouring Blower
1 Type Gravity Flow Concreate Condition Good 2 Number of Basin 8basins Equipment Condition Good		Piping Iset Low water detecting system is not work. (Electrical Matter) Repair O Z Valves Iset Interview	1 Type Working Condition N/A 2 Capacity 32mH Deterioration to be repaired 3 Out Pat 4HP N/A
3 Equipment Electrode & Sets ((.W/ HW Detection)		3 Float Switch I set	3 Out Put 4 HP NA 4 Read Voltage 220' x 50Hz Required Hem 5 Rated Current 10.9A Installation of spare blower. hautation ○
(LW/HW Detection)			4 Bands Vallage 220V s 50Hz Regulards Bans 7 Read Current 10-0A Institution of approx Bonser 6 Institution Workshow 10-0A 6 Institution Neuronal 10-0A Institution of approx Bonser 7 Accessing
2 Number of Basin Ibasin Concrete Structure Concrete Condition Good			NA I
3 Equipment NA			Apparatus Name Quantity Deterioration to be repaired
Drainage Tank			1 Air Compressor for Pneumatic Valve 1 unit N/A
Type Concrete Structure Concreate Condition Good Souther of Basin Z Kumber of Basin Z Equipment Good			2.2kW, Accessory, Pressure Regulator 2 Inite Valve (Prozenatic) 2 Inite Valve (Prozenatic) 2 Units 1 Inite Valve (Prozenatic) 2 Units 4 (Constraintic) 4 (Constrainti
3 Expenses Plot Switches 2mins Plot Switches 2mins Plot			4 Backwash Value (Provenatic) Junits Calibration of flow meter is recommendable if possible
Studge Tank Concrete Structure 1 Type Concrete Structure 2 Number of Basin 2 2 Faujement Condition Good			S Ari Sconing Valer (Presenter) Solin Data Valer (Presenter) Solin Data Valer (Presenter) Pays Pays
Name I and Concrete Structure Concrete Condition Good 1 Figure of Main Experime Condition Good Experiment 2 Experiment Experiment Condition Good Experiment 2 Experiment Experiment Condition Good Experiment 3 Experiment Experiment Condition Good Experiment 1 Fige Concreate Condition Good Experiment 3 Equiprent Experiment Condition Good Experiment 3 Equiprent Experiment Condition Good Experiment 3 Equiprent Experiment Condition Good Experiment			Vares Let Ultrasonic Flow Meter Iunit
Floit Switches Lunits			
1 Type Concrete Structure Concreate Condition Good 1 Number of Basin 2 Equipment Condition Good			
3 Equipment Sludge Collector 2units			
Minufia Governorate, El Mahala El Kobra Surface Water Treatment Plant			
мощна Сочетновик, Ел малиш Ел Коота зитуасе water этейштели гиан	Gharbia Governovate, Mahalet Marhoom Iron and Manganese Removal Plant	Gharbia Governorate, Mahalet Marhoom Iron and Manganese Removal Plant	Gharbia Governorate, Mahalet Marhoom Iron and Manganese Removal Plant

<text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text>		Site Description in Detail Survey (Facility & Equipment Condittion)	Opening Astrine & Schematrines System Equipment Condition Mathematical System 1 Lyne Non- Hereiner System Non- Hereiner System 1 Lyne Non- Hereiner System Non- Hereiner System 1 Lyne Hereiner System Non- Hereiner System Hereiner System 1 Lyne Hereiner System Non- Hereiner System Hereiner System 1 Lyne Hereiner System Non- Hereiner System Hereiner System 2 Coperby Doubl Constrainer NA Hereiner System Hereiner System Hereiner System 3 Experimentation to regularity antery aspects Hereiner System Hereiner System Hereiner System 3 Experimentation to regularity antery aspects Hereiner System Hereiner System Hereiner System 3 Experimentation to System Hereiner System Hereiner System Hereiner System Hereiner System 4 Experimentation to System Hereiner System Hereiner System Hereiner System Her	Operator Fitures System Experiment Condition Metter 1 1 System Texts Texts post Post Post 1 1 System Texts Texts post P
$ \begin{array}{ $	<section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><text><text><text><text></text></text></text></text></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header>	Objection Well Pump System Equipment Condition Access Bard 1 Type Controling Twee Noting Condition Bord Bord	Objective Channel Dataling State Equipment Candidius State 1 Type Phyterholutes That Wating Conductor point For Phyterholutes That Wating Conductor point Phyterholutes That Phyterholutes That	<section-header><section-header><section-header><section-header><section-header><section-header><text><text><text></text></text></text></section-header></section-header></section-header></section-header></section-header></section-header>

Special Instruction

1. Facility Condition

At the present, iron and manganese removal process have been stopped due to the water leakage from the water feeding pipeline to the filters.

Due to the stoppage of the facility, well water is distributed without disinfection.

2. Installation of Ultrasonic Flow Meter

Installation of Untrasone row wheel Insertion type of flow meter is installed in only water distribution pipeline in order to measure instantaneous a integrating water amount. It is available to install the ultrasonic flow meter to the pipeline after confluence of well water. Installation point is shown in following picture. (There is no need to make a chamber for installation of flow meter.)

3. Water Ouality Analyzer

 S_2 .3-6

Digital colorimeter for Mn measurement and residual chlorine measurement kit are equiped.

Pic.1 Installation point of Raw Water Flow Meter



1 Raw Water Flow Meter Availability: Available Location: Before Aeration & Sedimentation Tank Pipe Dia. : Not Confirmed. Chamber Size: Not Necessary

Gharbia Governorate, El Gaefareya Iron and Manganese Removal Plant

1	Objective	Associan	e Calimon	tation System	Equipment Condition	1	Action	
				fation System	Equipment Condition		Before	SOF
сп	ation & Sedi	mentation 7	ank					
1	Туре			wing Type	Tank Condition N/A			
2	Number of t	ank	lunit		Deterioration to be repaired			
					N/A			
					Required Item			
					Safety cage for ladder is required in safety aspects.	Installation	0	
	cification of	Aeration B						
1	Туре		Root Ty	rpe	Working Condition N/A			
	Capacity		32mH		(Aeration blowers are not used.)			
	Out Put		7.5HP		Deterioration to be repaired			
	Rated Volta		220V x	50Hz	N/A			
	Rated Curre		19.1A			1		
	Installation 1	Number	2units			1		
	Accessory		_			1		
	Silencer		_					I
			_			1		
_			1					I
\p	paratus					1	L	L
_	D	Name		Quantity	Deterioration to be repaired			L
	Piping			lset	N/A			
2	Valves			lset				
								-
								I
								I
						-	<u> </u>	-
					1	I	L	I
_						<u> </u>	l	-
						-	<u> </u>	-
_						<u> </u>	l	-
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						-	-	-
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								L
					1	I	L	I
				1		1		
								L
					1	I	L	I
						1	L	L
					1	I	L	I

	Objective	Well Pump	System	Equipment Condition		Action	
	-		.,	Equipanean Contaction	1	Before	S
	ecification of We						
1	Type		ugal Pump	Working Condition good			
2	Capacity		c x 50mH	Deterioration to be repaired			
	Out Put	75HP		Pressure gauge and compound gauge are not installed.	Installation	0	
4	Rated Voltage	380V >	50Hz				
5	Rated Current	98A					
6	Installation Nun	iber lunit					
7	Accessory						
	N/A						
-							ŀ
	cification of We						
1	Type		ugal Pump	Working Condition good			
2	Capacity		c x 50mH	Deterioration to be repaired			
3	Out Put	55kW		Pressure gauge are broken.	Replace	0	Γ
4	Rated Voltage	380V >	50Hz	Compound Gauge is not installed.	Installation	Ó	Г
5	Rated Current	111A					L
6	Installation Nun			1	1	-	t
7	Accessory			+	1	-	⊢
/	Accessory Pressure Gauge	Iunit		11 - N	+	I	
_	Pressure Gauge	lunit		Note)	-	<u> </u>	_
-				Generator Pump have not been used due to the breakage.	-		⊢
	ecification of We	ll Pump B			1		F
1	Type		rsible Pump	Working Condition good			Г
2	Capacity	35L/se	2	Deterioration to be repaired			
3	Out Put	50HP		Pressure gauge is not installed.	Installation	0	
4	Rated Voltage	380V >	50Hz	t terms built a second		Ň	-
5	Installation Nun						-
6	Accessory				-		-
0	Mechanical flow	Mater					-
_	succitatical flow	meter			_		-
					-		-
	ecification of We						
1	Type		rsible Pump	Working Condition good	1	1	1
2	Capacity	35L/se	2	Deterioration to be repaired		1	Ľ
3	Out Put	50HP		Pressure gauge is not installed.	Installation	0	17
4	Rated Voltage	380V >	50Hz		1		Г
5	Installation Nun						L
6	Accessory				1	1	Г
	N/A			1	1	-	t
-					1	l	t
_							
_				1			⊢
Ap	paratus						
		lame	Quantity	Deterioration to be repaired	1	L	1
1	Priming Pump u	nit		N/A	1		
1.7	Priming Pump		lunit	Required Item	1	1 -	L T
	Priming Tank		lunit	Installation of spare priming pump.	Installation		
2	Piping		lset	(In case priming pump is damaged, water supply will stop.)			Г
3	Valves		Iset		1	1	Г
					-		
-	t		+	1	+		⊢
			1				Ľ
		Gharbia	Governorate,	El Gaefareya Iron and Manganese Removal Plant			

Equipment Condition Check Sheet (4/4) Action Before SOP Objective Chemical Dosing System Equipment Condition Specification of Calcium Hypochlorite Storage Tank ing Condition rioration to be remedied 2 Capacity 3 Number of Tank Required I Level Gau Insertion of Accessory Level Gauge Gauge ion of float to empl asize the riqui Marking of level indic Exectification of Calcium Hypochlorite Dosing Pump (Pre-Chlorination) Type Metering Pump (Working Condition Capacity 220L/h x 9Bar Deterioration to be remedied Installation Number lunit N/A N/A Required Item Installation of flow meter. Installation of spare unit A Accorrom Installation O N/A hlorite Dosing Pump (Post-Chlorination) cification of Calcium H 1 Type 2 Capacity 3 Installation Number Metering Pump Working Condition 170L/h x 10Bar Deterioration to be remedied lunit N/A Required Item Accessory N/A Installation O Installation of flow meter. Installation of spare unit Polyethylene Tank Working Condition good Sm3 Deterioration to be remedied Specification of Potassium Permai 1 Type F 2 Capacity 5 3 Number of Tank Repair 🔘 Required Item Accessory Level Gauge Level Gauge Insertion of float to emphasize the riquid less Marking of level indication. Specification of Potassium Peri 1 Type 2 Capacity 3 Installation 57 rmanganate Dosing Pump Chemical Pump Working Condition N/A Working Condition Deterioration to be remedied N/A (Under maintenance) Required Item Installation of flow meter. Installation of spare unit Installation () effication of Chemical Mixing Pump Type Centrifugal Pump Working Condition N/A Capacity 4.8m3/h x 27.2mH Deterioration to be remedied Installation Number I unit Specification of Chemi Type Capacity Installation Number Accessory paratus 1 Piping 2 Valves Quantity Deterioration to be repaired Gharbia Governorate, El Gaefareya Iron and Manganese Removal Plant

Fauinment Condition Check Sheet (3/4)

	Objective	Filt	ration Sy	stem	Equipment Condition		Action		
	-					l	Before	Before SOP	
pt		ion of Filtration Tank Pressure Tank		Tenh	Tank Condition good		l		
1	Type Number of ta	wh.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Tank	Tank Condition good Deterioration to be repaired			_	
4	Pressuer gau		lunit		N/A			-	
_	Pressuer gau		2units		N/A			_	
	Pressuer gau	ge (ouner)	zums					-	
-									
in.	cification of	Feeding Pump						-	
1	Type	recompromy		gal Pump	Working Condition N/A			-	
2	Capacity		90m3/h		Deterioration to be repaired				
	Out Put		30HP		Water leakage from the pipeline (1set)	Replace	0		
4	Rated Volta-	DC.	380V x	50Hz	Water leakage from the Valve spindle (2points)	Repair	Ő		
ŝ	Rated Curre		41A				~		
6	Installation N	lumber	3units						
7	Accessory								
	Manual Valv	es (Suction)	3units						
		es (Discharge)							
	Ball Check V		3units			1			
iρε	cification of	Air Scouring	Blower						
1	Type		Root Ty	pe	Working Condition N/A				
2	Capacity		32mH		Deterioration to be repaired				
3	Out Put		4HP		N/A				
4	Rated Volta	ge	220V x	50Hz	Required Item				
5	Rated Curre	nt	10.9A		Installation of spare blower.	Installation		0	
6	Installation N	lumber	lunit		(In case blower is damaged, proper back wash is not done.)				
7	Accessory								
	N/A								
۱p	aratus								
		Name		Quantity	Deterioration to be repaired				
1	Air Compress	or for Pneumat	ic Valve	lunit	N/A				
		sory; Pressure F	Regulator		Required Item				
	Inlet Valve (2units	Installation of spare compressor.	Installation		0	
3	Outlet Valve	(Pnuematic)		2units	(In case compressor is damaged, I&M revortal system will stop.)				
		alve (Pnuemati		2units	Calibration of flow meter is recommendable, if possible.				
5		Valve (Pnuerr	natic)	2units	I	1 -	1		
6	Drain Valve	(Pnuematic)		2units					
	Piping			lset					
8	Valves			lset					
9	Insertion Typ	te Flow Meter		lunit					
						l			
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Gharbia Governorate, El Gaefareya Iron and Manganese Removal Plant

INVENTORY FOR THE DETAIL SITE SURVEY (GHAPWASCO) (Surface Wawter Treatment Planr)

Model facility for the SOP shall be selected according to following criteria. 1) Facility and Equipment Condition To operate without any deterioation or damage in components of facility (To be Selected by rehabilitation cost and period) 2) Future Plan No extention plan to disturb SOP activities No training program conducted by other Projets

Item		Facility									
No.	Facility	System	Tanta El Geo		1	El Mahala El			Kafr El Zayat El	1	
1		Building	Equipment to be remedied Building Condition : good	Action	Q'ty	Equipment to be remedied Building Condition : good	Action	Q'ty	Equipment to be remedied Building Condition : good	Action	Q'ty
2	Watan Intala Davilita	Dulding	Building Condition : good			Building Condition : good			Building Condition : good		
2	Water Intake Facility	Bulding Raw Water Pump	a) Pressure Gauge	Replacement	4	Building Condition . good			a) Pressure Gauge	Replacement	3
		· · ·	b) Compound Gauge	Replacement	4				b) Compound Gauge	Replacement	3
		Flow Measurement	a) Ultrasonic Flow Meter	Calibration	1	a) Ultrasonic Flow Meter	Calibration	1	a) Ultrasonic Flow Meter	Repair	1
3	Mixing Basin	Bulding	Building Condition : good			Building Condition : good			Building Condition : Bad		
4	Flocculation & Sedimentation Facility	Bulding	Building Condition : Fairly good			Building Condition : good			Building Condition : Bad		
5	Sand Filter	Building	Building Condition : good			Building Condition : good			Building Condition : Bad		
		Filter Condition	Mud ball exist						Mud ball exist		
		Back Wash Pump	a) Float Switcha) Electromagnetic Flow Meter	Replacement Repair	10				a) Flow Meter	Installation	1
		Buen musi Fulip	b) Vaccum Pump	Repair	1				b) Pressure Gauges	Replacement	-
			c) Pressure Gauge	Replacement	2				c) Compound Gauge	Replacement	2
		Air Scouring Blower	d) Compound Gaugea) Flow Meter	Replacement Installation	2				a) Flow Meter	Installation	1
		-							b) Pressure Gauges	Installation	2
		Pipeline	 a) Control Valve (Motorized) b) Drawner Switch 		10						
		Flow Monitoring	 b) Pressure Switch a) Electromagnetic Flow Meter 	Calibration Calibration	1 10				a) Electromagnetic Flow Meter	Calibration	6
			(for Treated Water)						(for Treated Water)		
6	Water Reservoir	Building	Building Condition : good			Building Condition : good			Building Condition : good		
		Water Level Monitoring	a) Level Sensor	Installation	1						
7	Water Distribution Facility	Building	Building Condition : good			Building Condition : good			Building Condition : good		
		Discharge Pump	a) Pressure Gauge	Replacement	4				a) Pressure Gauge	Replacement	
		Flow Measurement	b) Compound Gaugea) Ultrasonic Flow Meter	Replacement Calibration	4	a) Ultrasonic Flow Meter (IV)	Calibration	1	b) Compound Gauge a) Ultrasonic Flow Meter	Replacement Calibration	7
		riow Measurement	a) Chasome Flow Meter	Canoration	2	 b) Ultrasonic Flow Meter (Confluence) 	Calibration	1	a) Chasome Flow Meter	Canoration	2
		Residual Chlorine Monitoring	a) Residual Chlorine Meter	Repair/Replace	1	a) Residual Chlorine Meter (IV) b) Residual Chlorine Meter (Confluence)	Calibration Calibration	1 1	a) Residual Chlorine Meter	Replacement	1
8	Chlorine Dosing Facility	Cylinder Storage System	a) Weight Machine	Installation	1 set	a) Pressure Regurator	Replacement	1	a) Weight Machine	Installation	1set
		Pre-Chlorine Dosing System	a) Dosing Unit (as Spare)	Installation	1	a) Vacuum Gauge	Replacement	1			
		Post Chlorination System	 a) Dosing Unit (as Spare) 	Installation	1						
		Booster Pump Gas Leakage Detector	a) Booster Pumpa) Sensor/ Transmitter Unit	Replacement Replacement	1 cot	a) Sensor/ Transmitter Unit	Calibration	1set	a) Sensor/ Transmitter Unit	Repair	laat
		•		Replacement	1 set	a) Sensor/ Hansmitter Onit	Canoration	ISCI	a) Sensor/ Transmitter Unit	керап	1set
9	Alum Dosing Facility	Receiving Tank	a) Level Gauge	Installation	1			-	a) Level Gauge	Installation	1
		Transfer Pump Storage Tank	a) Transfer Pump	Repair	1				a) Transfer Pump a) Level Gauge	Repair Installation	1
		Dosing Unit	a) Flow Meter	Repair	1	a) Pipiline	Replacement	1	a) Flow Meter	Installation	1
10	Sludge Facility	Building	Building Condition : good			N/A			Building Condition : good		
		Discharge Pump	a) Pressure Gauge	Replacement	2				a) Pressure Gauge	Replacement	
			b) Compound Gauge	Replacement	2				b) Compound Gauge	Replacement	2
11	Drainage Circulation Facility	Building Circulation Pump	N/A			Building Condition : good (Drainage Tank & Sludge Tank)			N/A		
		circulation r amp				(
12	Sludge Drying Bed	Building	N/A			N/A			N/A		
13	Sludge Thickener	Building	N/A			Building Condition : good			N/A		
14	Future Plan		 Replacement of distribution receiving system 4 or 5 years 		ver						
			27/4			T11. D. 1. 1	1.00				
15	Others		N/A			 Filter Back wash system is SWTP station. This plant add system. 			 Although the operation wor GHAPWASCO, maintenance private company. 		
Ev	aluation					· · ·			x		
	Rehabilitation Cost		0			0			×		
2	Time Period for rehabilitat	ion	0			(Lowest)		(Highest)		
						(Shortest	t)		(Longes	t)	
	Installation of Flow Meter Apprication for the SOP		N/A			N/A			Cancel		
	A Apprication for the SOP		- Due to the reason that the C sand filter is not good in com SWTP, It is available to impr through SOP activities.	parison with ot	her	 It is difficult to extend SOP SWTP in GHAPWASCO du back wash system. 			 It is difficult to conduct SO combine operation and main above reason. Facility conditions are wors candidates due to the luck of conducted by private compared of the second second and the s	P activities whiten ance work, of the set of	lue to r
									, providence in the second sec	-	
5	Evaluation		1			2			-		

INVENTORY FOR THE DETAIL SITE SURVEY (GHAPWASCO) (Iron and Manganese Removal Planr)

Facility

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Model facility for the SOP shall be selected according to following criteria. 1) Facility and Equipment Condition To operate without any deterioation or damage in components of facility (To be Selected by rehabilitation cost and period) 2) Future Plan No extention plan to disturb SOP activities No training program conducted by other Projets

Г

	Item		Facility								
No	Jo. Facility System		El Gaefareya		Manyal El Howaishat		Mahalet Marhoom				
	racinty	System	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty
1	Well Facility	Well Pump (Submersible 1)	a) Pressure Gauge	Installation	1	a) Pressure Gauge	Installation	1	a) Pressure Gauge	Installation	1
		Well Pump (Submersible 2)	a) Pressrue Gauge	Installation	1						
		Well Pump (Centrifugal)	a) Pressure Gauge	Repair/Installation	2	a) Pressure Gauge	Repair/Installation	2	a) Pressure Gauge	Repair/Installation	2
			b) Compound Gauge	Installation	2	b) Compound Gauge	Installation	2	b) Compound Gauge	Installation	2
			c) Priming Pump	Installation	1	c) Priming Pump	Installation	1			
			(as Spare)			(as Spare)					
		Pipeline							a) Pipeline (Water Leak)	Repair	1
		Flow Measurement				a) Mechanical Flow Meter	Repair	1	a) Ultrasonic Flow Meter	Calibration	1
									(Well B)		
2	A (1 0 0 1) (1 m	A .: TT 1		T + 11 -	1		T . 11 .	- 1		T . 11 .:	1
2	Aeration & Sedimentation Facility	Aeration Tank Water Level Detection System	a) Safety Cage for Ladder a) LW Detector	Installation Repair	1	a) Safety Cage for Laddera) LW Detector	Installation Repair	1	a) Safety Cage for Laddera) LW Detector	Installation Repair	1
	raciiity	water Lever Detection System	a) Lw Detector	Repair	1	a) LW Detector	Kepan	1	a) Lw Detector	Repair	1
4	Sand Filter	Water Feeding Pump	a) Pipeline (Water Leak)	Replace	1				a) Pipeline (Water Leak)	Repair	1
1.	Sund I mer	water rectang ramp	 b) Suction Valve (Water Leak) 	Repair	1				b) Valves	Repair	3
			 c) Discharge Valve (Water Leak) 	Repair	1				-,		-
		Air Scouring Blower	a) Blower	Installation	1	a) Blower	Installation	1	a) Blower	Installation	1
		U	(as Spare)			(as Spare)			(as Spare)		
1		Pnuematic Valves	a) Compressor	Installation	1	a) Compressor	Installation	1	a) Compressor	Installation	1
1			(as Spare)			(as Spare)			(as Spare)		
L											
7	Water Distribution Facility	Flow Measurement	a) Insersion Type Flow Meter	Calibration	1	 a) Insersion Type Flow Meter 	Calibration	1	a) Ultrasonic Flow Meter	Calibration	1
8	Chlorine Dosing Facility	Calcium Hypochlorite Storage Tank	a) Level Gauge	Repair	1	a) Level Gauge	Repair	1	a) Level Gauge	Repair	1
	0,	Pre-Chlorination System	a) Dosing Pump	Installation	1	a) Dosing Pump	Installation	1	a) Dosing Pump	Installation	1
		-	(as Spare)			(as Spare)			(as Spare)		
			b) Flow Meter	Installation	1	b) Flow Meter	Installation	1	b) Flow Meter	Installation	1
		Post-Chlorination System	a) Dosing Pump	Installation	1	a) Dosing Pump	Replace	1	a) Dosing Pump	Installation	1
			(as Spare)			b) Dosing Pump	Installation	1	(as Spare)		
			b) Flow Meter	Installation	1	(as Spare)			b) Flow Meter	Installation	1
						c) Flow Meter	Installation	1			
9	Potassium Permanganate	Potassium Storage Tank	a) Level Gauge	Installation	1	a) Level Gauge	Installation	1	a) Level Gauge	Installation	1
	Dosing Facility	Dosing System	a) Dosing Pump	Installation	1	a) Dosing Pump	Installation	1	a) Dosing Pump	Installation	1
		•••	(as Spare)			(as Spare)			(as Spare)		
			b) Flow Meter	Installation	1	b) Flow Meter	Installation	1	b) Flow Meter	Installation	1
10	Water Quality Analyzer					a) Residual Chlorine Measurement Kit		1	a) Residual Chlorine Measurement Kit		1
						b) Mn Measurement Kit		1	•) •••••••••••••••••••		1
						(Procurement)			(Procurement)		
1.1	E (DI		N/A			N/A			Enterning of small sustains (it		ith and
11	Future Plan		N/A			N/A			 Extension of well system (it any disturbance to SOP activ. 		vitnoui
L									any disturbance to SOP activ	iucs.)	
Ev	aluation										
	Rehabilitation Cost		0			×			0		
L			(Lowest))		(Highes	t)				
2	Time Period for rehabilitat	ion	0			×			0		
L						(Longes	·		(Shortest	:)	
			- It is expected that repair of	water feeding p	ipe	- It is expected that procure of		ing			
L			take long time.			pump takes long time, its cos	st will increase.				
3	3 Installation of Flow Meter		Raw water flow meter			Raw water flow meter			Raw water flow meter		
4	Apprication for the SOP		0			0			0		
L			- Site access is slightly far in	comparison wi	th	- Site access is slightly far in comparison with		th	 This facility is exclusive fac 		
1			Mahalet Marhoom.			Mahalet Marhoom.			manganese removal system operates properly. In		
L			 Combined water between w 			 Combined water between w 			addition, rehabilitation period		ecause
L			water by I&M removal proce		l to	water by I&M removal proce		l to	facility condition is comparatively good in		
L			the network as drinking water	r. (It shall be		the network as drinking wate	r. (It shall be		comparison with the other facilities.		
1			improved in health aspect.)			improved in health aspect.)					
⊢									-		
5	Water Quality Analyzer		N/A			- Procurement of residual ch	lorine meter and	i Mn	- Procurement of residual chl	orine meter and	i Mn
Ľ						measurement kit			measurement kit		
6	Evaluation		2			3			1		

<u>MCWW</u>

<text><text><text><text><text></text></text></text></text></text>	 Special Instruction 1. Future Plan for the replicement of facility All and an observe installation of SCADA system is also under construction without shutting off water treatment process. MCWW has a plan to clean and disinfect all tanks. This plan can apply to SOP training. C. Installation of Ultrasonic Flow Meter Ultrasonic flow meter have been installed in this facility in order to measure the raw water and distribution water amount. J. PIAD PI&D PI&D has been made and displayed. It was prepared by the Contractor in Germany. 	District Control Date, Solar Control Operativ Charlen Date, Solar Equipment Oraci Equipment Oraci Ender Ender	
Minufua Generatoraie. Shebeen El Kom El Gedeeda Surface Water Treament Plant	Minufu Governorate, Shebeen El Kon El Gelevala Surface Water Treatment Plant	Minifa Governorate, Shebern E Kon El Gelevala Surface Water Treament Plant	Minglu Governorate, Shebeen El Kom El Goleccla Surface Water Treatment Plant
S2.3			
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1 Type Gravity Flow Concreate Condition Good Number of Basin I Ubasins Equipment Condition Good 3 Equipment		6 Check Valve 6units 7 Sampling Pump (Treated Water) 2 units 8 Priping 1 Iset	3 Installation Number 2units All Vaccum gauges are broken. Replace 4 Accessory
Sand Filter	Mr. Ahmed Samier; Plant Manager (WTP)	4 Suction Valve (Manual) 6units 5 Discharge Valve (Motorized) 6units	1 Type Unit Type Working Condition good 2 Capacity 25kg/H Deterioration to be remedied
3 Equipment		8 Piping 1set	Vacume Gauge 2units
			1 Type Centrifugal Working Condition Good
Type Concrete Structure Concreate Condition Good Number of Basin 2 Equipment Condition Good			A Rated Voltage A Stated Current A Sta
4 Equipment Ultrasonic Lelel Meter 2units			7 Accessory
Fee-Chiene Dotribution Unit Iunit			1 Accessory Required Item
Distribution Water Reservoir			Overhead Crane 2units Installation of weight machine shall be considered as a future plan. Pressure Regurator 2units (In order to measure the consumption, it is required.)
2 Number of Basin 1 Equipment Condition Good			Changeover Valve lunit Vaccum Gauge lunit
4 Equipment			manifold 1set
			Name Quantity Deterioration to be remedied
Studge Tank Concrete Structure Concrete Struc			Piping (Injection) Dosage 1 set Some sensor for chlorin leakage detector may damaged. [Check] Valves (for Booster line) 1 set On-Site Monitoring Residual Chlorine Meter need repair. Repair] Valves (for chlorine dosage line) 1 set]
4 Equipment Ultrasonic Lelel Meter 2units			4 Gaseous Chlorine Neutralization System 1 set 5 Chlorine Leakage Detector set 6 Losine Mentioned Neutra Neutral 1 unit
Minufas Governovate, Shebeen El Kom El Gadeeda Surface Water Treatmont Plant S2	Minufia Governorate, Mahatet El Sadat El Satheya Surface Water Treatment Plant	Minufia Governorate, Mahatet El Sadat El Satheya Surface Water Treatment Plant	Minufla Governorate, Mahatet El Sadat El Satheya Surface Water Treatment Plant
3- 10			
	Eauipment Condition Check Sheet (1/7)	Equipment Condition Check Sheet (4/7)	Equipment Condition Check Sheet (5/7)
Special Instruction 1. Future Plan for the replacement of facility	Equipment Condition Check Sheet (1/7) Objective Rese Water Pamp System Equipment Condition Action [lictore]	Equipment Condition Check Sheet (4/7) Objective Alum Doning System Equipment Condition Autom Index SOF	Equipment Condition Check Sheet (5/7) Objective Back Weak System Expipment Condition Action Beckeng Store
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Equipment Condition Check Sheet (6/7)	Equipment Condition Check Sheet (7/7)	Equipment Condition Check Sheet (2/7)	Equipment Condition Check Sheet (3/7)
Objective Sludge Discharge Pump Equipment Condition Action Before SOP	Objective Building Condition Equipment Condition Action Before SOP	Objective Discharge Water Pump System Equipment Condition Action Before SOP	Objective Chlorine Dosing System Equipment Condition Action Before SOP
	Intake Sump		Specification of Chlorine Dosing Equipment (Pre)
3 Out Put 90kW All pressure gauge and compound gauge may be broken Replace	3 Equipment Indicator for level meter is not found.	Specification of Pump (A) Working Condition pool 1 Type Constringal Pump Working Condition good 2 Capacity MOLess e Monit Jone Jone 3 Jone Pum JSRW Jone Jone	2 Capacity 60kg/h Deterioration to be remedied
4 Rated Voltage 380V x 50Hz 5 Rated Current 16(997)3A 6	Ultrasonic Level Meter Iunit (Refer to Raw Water Pump System)	4 Rated Voltage 3300V x 50Hz	3 Installation Number 2units N/A 4 Accessory
6 Installation Number 3units	Mixing Basin	5 Rated Current 50 A/resistant box 6 Installation Number 4 units	
7 Accessory Pressure Gauge 3units	1 Type Concrete Structure Concreate Condition Good	Accessory Pressure Gauge 4 units Discharge work only	Pressure regulator 2 Specification of Booster Pump (Pre) 1 Type Centrifugal Working Condition Good
Compound Gauge Junits Staction Valve Sumits Instance Valve Junits Instance Valve Junits	2 Number of Basin I basin Equipment Condition Good 3 Equipment Electrode (HW Detection) Let	Anarca units of provincements of an original sector of a sector of the sector of	2 Capacity 9L/s x 65mH Deterioration to be remedied
Check Valve 3units		Specification of Pump (B)	4 Rated Voltage 186/V x 50Hz 5 Rated Current 17
Overhead Crane Iunit	I Type Circular Settling Type Concreate Condition Good	Section of Page (B) Weeking Condition point 1 (Type) Centralingal Page Weeking Condition point 2 (A) (A) (A) (A) (A) 3 (A) (A) (A) (A) (A) 4 (A) (A) (A) (A) (A) (A) 5 (A) (A) (A) (A) (A) (A) (A) 6 (A) (A) (A) (A) (A) (A) (A) (A) 7 Accessry (A) (A) <td>6 Installation Number 2units</td>	6 Installation Number 2units
Circuration Pump Type Centrifupil (Virical Shaft) Working Condition good	2 Number of Basin 4basins Equipment Condition Good	3 Out Put 200kW 4 Rated Voltage 380V x 50Hz	Specification of Chlorine Doxing Equipment (Post) 1 Type Unit Type Working Condition good
Clapacity 2001/Sec x 60mH Deterioration to be remedied Out Put 200kW All pressure gauge and compound gauge may be broken Replace	3 Equipment Salge Collector familia Damage Unit Aests Moning Unit Aests	5 Rated Current 280 A 6 Installation Number 2 units	1 Type Unit Type Working Condition good 2 Capacity 168 (PI Deterioration to be remedied 1 3 Installation Number Auris NA 1 4 pressure regulator 2 1 1
4 Rated Voltage 380V x 50Hz (1unit is under maintenance.)	Mixing Unit 4sets	7 Accessory Pressure Gauge 2 units	4 pressure regulator 2 Vaccume Gauge 2units
6 Installation Number 3 units	Fisse mixer winnes	Compound Gauge 2 units	
7 Accessory	Sand Filter Gravity Flow Concreate Condition Good 1 Type Gravity Flow Concreate Condition God	Appurtenance Quantity	Specification of boots: Panag Phaty Image Phaty 1 Type Commingat Working Condition Good (Not Used) 2 Capacity BLA:s 46:841 Distribution of the second
Pressure Gauge 3 units Compound Gauge 3 units Succion Valve 5 units	Type Gravity Flow Concrete Condition Good Number of Basin Requirement Condition Fouriement Fouriement Fouriement	Manual Gate Valve suction 2	2 Capacity 0.8.1 × 1.65H Deterioration to be remedied 3 Out Put 2.2.4W N/A 4 Rated Voltage ISBV × 50Hz
Docharge Value 3 units Check Valve 3 units	Ultrasonic Lelel Meter I6units	Electrical gate valve suction 4 Manual Gate Valve discharge 2	4 Rated Voltage 380V x 50Hz 5 Rated Current 4A
Overhead Crane I unit	Back Wash Water Sump	Electrical gate valve discharge 4 Check valve 6	6 Installation Number 2units 7 Accessory
Instanty Votor Dealth Image: Constraint of the constraint of th	1 Type Concrete Structure Concrete Condition Good 2 Number of Basin 2 Equipment Condition Good	Electical gate valves mention 4 Manual Gate Valve discharge 2 Electrical gate valve discharge 4 Cocks valve 6 Water flowmeter 1 Norden 1 N	Pressure Gauge
N/A	Treated Water Reservoir	Piping Iset Overhead Crane Iset	Specification of Chlorine Storage System 1 Accessory Required Item
	Type Concrete Structure Concrete Condition Good Number of Basin 3 (2lines/Basin) Equipment Condition Good	Vacum unit 2	1 Accessory Required Item Oventead Crase Iunit
	3 Capacity 5000m3		Double Construction Init Init House Accession Anits Init Init Heater Junits Init Init Init
	4 Equipment Ultrasonic Lelel Meter 6units		manifold Iset Gaseous Chlorine Neutralization System
	Distribution Water Reservoir		Chlorine Leakage Detector iset
	1 Type Concrete Structure Concrete Condition Good 2 Number of Basin 1 Equipment Condition Good		wight balance 3 set 1 is broken
	Sludge Tank I Type Concrete Structure Concreate Condition Good		
	Type Concrete Structure Concreate Condition Good Number of Basin 2 Equipment Condition Good		2 Valves (for Booster line) 1set 3 Valves (for chlorine dosage line) 1set
	Circulation Tank (Drainage Tank) 1 Type Concrete Structure Concreate Condition Good 2 Number of Basin 2 Equipment Condition Good		
	2 Number of Basin 2 Equipment Condition Good		
		Minufia Governorate, Mahalet Menouf Surface Water Treatment Plant	Minufia Governorate, Mahalet Menouf Surface Water Treatment Plant
Minufla Governorate, Mahatet El Sadat El Satheya Surface Water Treatment Plant	Minufia Governorate, Mahatet El Sadat El Satheya Surface Water Treatment Plant		
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دیا	Equipment Condition Check Sheet (1/7)	Eminment Condition Check Sheet (4/7)	Equipment Condition Check Sheet (57)
دیا	Equipment Condition Check Sheet (1/7) Objective Raw Watr Nump System Equipment Condition	Equipment Condition Check Sheet (4/7) Objective Alum Dusing System Equipment Condition	Equipment Condition Check Sheet (5/7) Objective Rock Wash System Equipment Condition Action
	Objective Raw Water Pump System Equipment Condition Action Before SOP Specification of Pump (A)	Objective Alum Dosing System Equipment Condition Action Before SOP	Objective Back Wash System Equipment Condition Action Before SOP
	Objective Raw Water Pump System Equipment Condition Action Before SOP Specification of Pump (A)	Objective Alumn Daning System Equipment Condition Action Referent System Specification of Alumn Solution/Strange Tank 1 Type Konvert Fank Working Condition product SP	Objective Back Wash System Equipment Condition Action Specification of Backwash Pump Before: SOP 1 Type: Confingat Working Condition good
	Objective Raw Water Pump System Equipment Condition Action Before SOP Specification of Pump (A)	Objective Alumn Daning System Equipment Condition Action Referent System Specification of Alumn Solution/Strange Tank 1 Type Konvert Fank Working Condition product SP	Objective Back Wash System Equipment Condition Action Specification of Backwash Pump Before: SOP 1 Type: Confingat Working Condition good
i⊊3 Date : 13-Oct-2011	Objective Raw Wear Pamp System Equipment Condition Action 1 Type — …	Objective Alumn Daning System Equipment Condition Action Referent System Specification of Alumn Solution/Strange Tank 1 Type Konvert Fank Working Condition product SP	Opening Back Wash System Equipment Condition Attom Refere Second Standard To Redwards Promo To Contribution Working Condition good 10 1 Dyne Contribution good 10 10 2 Copenty 417.11 Access 15041 10 10 10 10 3 Out Part 110.00 V N.A 10
Date : 13-Oct-2011 Site Description in Detail Survey	Openine Raw Water Yamp System Equipment Condition Action Sector during of Yamp (A) Contributed Parma North Sector Sector Parma Entered Storp 1 Dype Display to a Yamp (A) North Sector Parma Entered Storp 2 Copacity Display to a Yamp North Sector Parma Entered Storp 3 Out Par Signal Action To a Yamp (A) North Sector Parma Entered Storp 4 Exted Valueg Diff Vs Storp Equipment for any support (A) Entered Storp 4 Exted Valueg Diff Vs Storp Display to a Yamp (A) Entered Storp Entered Storp 4 Exted Valueg Diff Vs Storp Equival Action To any storp (I) and the Action of the Parma (I) and the	Objective Alumn Daning System Equipment Condition Action Referent System Specification of Alumn Solution/Strange Tank 1 Type Konvert Fank Working Condition product SP	Opening Back Wash System Equipment Condition Attom Refere Second Statution To Redwards Promo To Data Statution Sore To Data Statution 1 Data Statution Sore To Data Statution NA Sore To Data Statution Sore To Data Statution <t< td=""></t<>
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Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Openine Raw Water Yamp System Equipment Candition Action Sector during of Paray LAY Working Condition Refere SWP Refere SWP 1 Open Para Committing Paray Working Condition Refere SWP 2 Open Para SWP NA How Para How Para 3 Opa Para SWP NA How Para How Para 4 Rada Value SWP NA How Para How Para 4 Rada Value SWP Regarded Research International Internation Internatinterenational Internatinterena International Internatio	Objective Alum Dosing System Equipment Condition Addm Second and Alum Noticing Toxics Text System Feeder System Feeder System 1 Type Time Doservers task Noting Condition good Feeder System 2 Copesity Time Doserversites the trended Image: System Feeder System Feeder System 4 Account task Name Feeder System	Opening Back Wash System Equipment Condition Attem Before Second South and Backwash Prome Working Control and South Prome Before South South Prome Before
Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Openine Raw Water Yamp System Equipment Candition Action Sector during of Paray LAY Working Condition Refere SWP Refere SWP 1 Open Para Committing Paray Working Condition Refere SWP 2 Open Para SWP NA How Para How Para 3 Opa Para SWP NA How Para How Para 4 Rada Value SWP NA How Para How Para 4 Rada Value SWP Regarded Research International Internation Internatinterenational Internatinterena International Internatio	Objective Alum Dosing System Equipment Condition Addm Second and Alum Noticing Toxics Text System Feeder System Feeder System 1 Type Time Doservers task Noting Condition good Feeder System 2 Copesity Time Doserversites the trended Image: System Feeder System Feeder System 4 Account task Name Feeder System	Opening Bask Wash System Equipment Condition Attem Before Second/out and Rakewash Promp Contrigut Working Condition good In 1 Dype Contrigut Working Condition good In 2 Opening 417 Access 1540 Destination in the remained In In 3 Dark Pati 1103 W NA In
Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Opening Base Water hange System Experiment Condition Action 1 Projet Scantification of Dama (A) Interfere Interfe	Objective Alam Dong System Equipment Condition Altern Dong System Secret frank builder System Technic frank Electer System Electer System 1 Type Oneoreto Tala Vocking Condition god Electer System 2 Capacity Time 3 Becomode to the monolad Electer System Electer System 3 Nankor of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Electer System Electer System System Electer System System Electer System 5 Appart of Tala Electer System Electer System System Electer System System Electer System System 5 Appart of Tala Electer System System Electer System System Electer System System Electer	Opening Bask Wash System Equipment Condition Attem Before Second/out and Rakewash Promp Contrigut Working Condition good In 1 Dype Contrigut Working Condition good In 2 Opening 417 Access 1540 Destination in the remained In In 3 Dark Pati 1103 W NA In
Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Open Research Security Learning Action Security of Parago Feature Security Feature Security Feature Security 1 Open Security of Parago Feature Security Feature Security 2 Open Total Security NA Feature Security Feature Security 3 Out Parago Total Security NA Feature Security Feature Security 4 Eata Security Total Security Feature Security Featur	Objective Alam Dong System Equipment Condition Altern Dong System Secret frank builder System Technic frank Electer System Electer System 1 Type Oneoreto Tala Vocking Condition god Electer System 2 Capacity Time 3 Becomode to the monolad Electer System Electer System 3 Nankor of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Electer System Electer System System Electer System System Electer System 5 Appart of Tala Electer System Electer System System Electer System System Electer System System 5 Appart of Tala Electer System System Electer System System Electer System System Electer	Openets Date Wash System Equipment Condition Attem 1 Openets Controllegal State Statemark State 1 Type Controllegal Working Condition good Image: Statemark 2 Copenets Copenets State Statemark State Image: Statemark
Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Open Research Security Learning Action Security of Parago Feature Security Feature Security Feature Security 1 Open Security of Parago Feature Security Feature Security 2 Open Total Security NA Feature Security Feature Security 3 Out Parago Total Security NA Feature Security Feature Security 4 Eata Security Total Security Feature Security Featur	Objective Alam Dong System Equipment Condition Altern Dong System Secret frank builder System Technic frank Electer System Electer System 1 Type Oneoreto Tala Vocking Condition god Electer System 2 Capacity Time 3 Becomode to the monolad Electer System Electer System 3 Nankor of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas NA Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Batas Electer System Electer System Electer System 4 Appart of Tala Electer System Electer System System Electer System System Electer System 5 Appart of Tala Electer System Electer System System Electer System System Electer System System 5 Appart of Tala Electer System System Electer System System Electer System System Electer	Objective Back Wash System Equipment Condition Attem 1 Optimized Tackwash Parage Interface And Parage Interface And Parage Interface And Parage 2 Cognitive of Tackwash Parage Interface And Parage Interface And Parage Interface And Parage 2 Cognitive And Tackwash Parage Not Interface And Parage Interface And Parage 2 Cognitive And Tackwash Parage Not Interface And Parage Interface And Parage 3 Load Para Interface And Parage Not Interface And Parage Interface And Parage 4 Load Para Interface And Parage Not Interface And Parage Interface And Parage 5 Load Corean Not Interface And Parage Interface And Parage Interface And Parage 1 Receive Corean Not Interface And Parage Interface And Parage Interface And Parage 1 Receive Corean Not Interface And Parage Interface And Parage Interface And Parage 1 Receive Corean Not Interface And Parage Inte
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Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Open Result Water Yamp System Experiment Condition Action Scoreffered of Paray (A) Noning Condition first system Interest System 2 Open A Scoreffered on System Interest System Interest System 2 Open A State System Interest System Interest System 2 Open A State System State System Interest System 3 Open A State System State System Interest System 4 Open A State System Interest System Interest System 4 Interest System Final A Interest System Interest System 7 Accessor System Interest System Interest System Interest System 7 Accessor System Interest System Interest System Interest System 8 Open A Interest System Interest System Interest System Interest System 7 Accessor System Interest System System System System System System System Interest System Interest System 7	Objective Alam Donig System Experiment Condition Alient Test System Security from a than bidden's System Tasks Non-Security System Feedback Fee	Objective Back Wash System Equipment Condition Attem Interface 1 Optimized Tarkwash Parage Interface In
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Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Open Result Water Yamp System Experiment Condition Action Scoreffered or Paray (A) Non-finite Condition finite System Interest System 2 Open Arrows Score System finite System Interest System 2 Open Arrows State System finite System Interest System 2 Open Arrows State System finite System Interest System 2 Open Arrows State System State System Interest System Interest System 3 Data Parage State System State System Interest System Interes	Objective Alam Donig System Experiment Condition Alient Test System Security from a than bidden's System Tasks Non-Security System Feedback Fee	Opener Data Wash Syourn Equipment Condition Motion Bacter Start/Structure Takewash Prop Start/Structure Takewash Prop 2 Capating Contrigat Working Condition good Internet Start/Structure Takewash Prop 2 Capating Internet Start/
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Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Open Result Water Yamp System Experiment Condition Action Scoreffered or Paray (A) Non-finite Condition finite System Interest System 2 Open Arrows Score System finite System Interest System 2 Open Arrows State System finite System Interest System 2 Open Arrows State System finite System Interest System 2 Open Arrows State System State System Interest System Interest System 3 Data Parage State System State System Interest System Interes	Objective Alam Donig System Experiment Condition Alient Test System Security from a than bidden's System Tasks Non-Security System Feedback Fee	Opener Data Wash Syourn Equipment Condition Motion Bacter Start/Structure Takewash Prop Start/Structure Takewash Prop 2 Capating Contrigat Working Condition good Internet Start/Structure Takewash Prop 2 Capating Internet Start/
Date : 13-Oct-2011 Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : MCWW Type of Facility : Surface Water Treatment Plant Facility Name : Mahalet Menoof Attendance : Mc Khaled Mohamed, Mr. Mohamed Fathy, Mr. Mohamed Fawzy (MCWW)	Openint Raw Wart Pump System Expinant Cauditors Action 1 Dys Construction of Paray (A) Interference Interference 2 Openint Status Notation of Paray (A) Interference Interference 3 Data Para Status Notation of Paray (A) Interference Interference 3 Data Para Status Notation of Paray (A) Interference Interf	Objective Alum Dosing System Equipment Couldion Alter Interface 1 Dyse Concerts Tals Versing Condition poil Interface Display 1 Dyse Concerts Tals Versing Condition poil Interface Display 1 Dyse Concerts Tals Versing Condition poil Interface Display 1 Dyse Display Tals Display Display </td <td>Openior Data Wash System Equipator Condition Matter Startformation Takwash Para Working Condition good Interface Startformation 1 Dyn Contrigat Working Condition good Interface Startformation 2 Coparity 417 Acc: 1540 Directions in the resulted Interface Inter</td>	Openior Data Wash System Equipator Condition Matter Startformation Takwash Para Working Condition good Interface Startformation 1 Dyn Contrigat Working Condition good Interface Startformation 2 Coparity 417 Acc: 1540 Directions in the resulted Interface Inter
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Equipment Condition Check Sheet (6/7)	Equipment Condition Check Sheet (7/7)	Objective Well Pump System Equipment Condition Teaching System	Equipment Condition Check Sheet (2/3)
Objective Sludge Discharge Pump Equipment Condition Action Before SOP	Objective Building Condition Equipment Condition Action Before SOP		Objective BURMAN System Equipment Condition Action Before SOP
Sludge Discharge Pump		1 Type CP diesel Working Condition good	BURMAN system
1 Type Working Condition good 2 Capacity L/sec x mH Deterioration to be remedied 0 WP Put 55kW N/A	Mixing Basin I 1 Type Concrete Structure Concrete Condition 2 Number of Basin Ibusin Equipment Condition Good	3 Out Put 90 HP Pressure gauge asnd compound gauge is not installed. Installation	Type BURMAN Tank Condition good Number of tank Deterioration to be repaired
3 Our Part S5kW NA 4 Ratad Voltage 1800V x 50Hz (luni is under maintenance.) 5 Rated Current 111A	Plocentation & Sedimentation Basin	4 Installation Number 1 5 Accessory Manual Valve 2	Valve V unix 1 Description to be repared Valve 3 N/A (drainge , suction & discharge)
	2 Number of Basin 3 basins Equipment Condition Good 3 Equipment		
1 Accessory Junits	3 Equipment	Apparatus Name Quantity Deterioration to be repaired	Specification of Aeration Riower
Compound Gauge 3units Suction Valve 3units	c durifice 3 Sand Filter	Drainge Pump sh 1 & sh2 Z N/A Vacum Pump sh 1	1 Type blower Working Condition good 2 Out Pat 5.5 HP Deterioration to be repaired
Discharge Valve Bunits Electron Statement Stat	1 Type Gravity Flow Concreate Condition Good 2 Number of Basin 8 basins sand Condition Good		1 Type Bower Working (condition good 2 Out Pat 6.51 HP Deterioration to be repaired 3 3 Rated Voltage 380V N/A 4
	Equipment drange trough 8		4 Installation Number 1
Apparatus	Treated Water Reservoir		
Name Quantity Deterioration to be remedied 1 Overhead Crane Iunit	2 Number of Basin 2 Equipment Condition Good		Apparatus Name Quantity
	3 Capacity N/A 4 Equipment Level Meter 2units broken		1 Valves for feeding water to every well 5 2 Flow Meter 5
	Distribution Water Reservoir		
	1 Type Concrete Structure Concreate Condition Good 2 Number of Basin 1 Equipment Condition Good		
	3 Capacity 4200m3 4 Equipment		
	4 Equipment Level Meter 2units broken Studge Tank		
	Type Concrete Structure Concreate Condition Good Number of Basin 2		
			Value 1 NA - borger scient & discover - - - 1 - - - - 2 - - - - - 1 - - - - - - 2 - - - - - - - 1 Type - <
Minufia Governorate, Mahalet Menouf Surface Water Treatment Plant	Minufia Governorate, Mahalet Menouf Surface Water Treatment Plant	Minufia Governorate, Shemiates Iron and Manganese Removal Plant	Minufia Governorate, Shemiates Iron and Manganese Removal Plant
S2			
່ ບ່			
-12			
	Equipment Condition Check Sheet (1/3)	Equipment Condition Check Sheet (3/3)	
Date : 18-Oct-2011	Objective Well Pump System Equipment Condition Action Before SOP	Objective Chemical Dosing System Equipment Condition Action Before SOP	Date : 18-Oct-2011
	Specification of Well (3,5) Pump (1e, 3e) SH1		
	1 Type CP elservical Working Condition good	Specification Obstring Tank 1 Type Sylinder 2 Capacity 50 kg Deterioration to be remeded 3 Number of Tank 1 NA 4 Accessory NA 1 Begulator 1 1 1 Over flow Pressare 1 1 1 Doming Line 1 1 1	
	3 Out Put 100 HP Pressure gauge and compound gauges are not installed. Installed. Installed	3 Nutree of Tank 1 N/A 4 Accessory Regulator 1 Court Data Data	
	2 Eardy Vehyse SHW Presser page (non-page 3) is bodyn. 5 Eardy Core 20175-5. 5 Eardy Core 20175-5. 5 Eardy Core 20175-5. 6 EardBuilds Musher 2 7 Accesser. 1	Regulator 1 Over Flow Pressure 1	City Description in Detail Commen
Site Description in Detail Survey	7 Accessory Annual Valve 4	Veer row researce 1 Dooing Line 1 Specification of Chlorine Duoing Equipment Specification of Chlorine Duoing Equipment	Site Description in Detail Survey
(Facility & Equipment Condittion)	Manual Valve 4 Check Valve 2 Pressure Gauge 1	Specification of Chlorine Doxing Equipment 1 Type Injector Working Condition good	(Facility & Equipment Condittion)
Affiliation : MCWW		2 Installation Number 1 Deterioration to be remedied 3 Accessory N/A	Affiliation : MCWW
Type of Facility : Iron and Manganese Removal Facility	Specification of Well (3,5) Pump (2e) SHI 1 Type (P) electrical Working Condition D (Operative Well we Description to begin the description of t	Manuale Valve 1 for discharge	Type of Facility : Iron and Manganese Removal Facility
Facility Name : Shemiates	2 Capacity 2013 Determination to be replaned 3 Out Put 125 HP Pressure assure and compound assure is broken Replace	Apparatus	Facility Name : Kafr El Arab El Bahry
Attendance : Mr. Mohamed Fawzy, Mr. Mohamed Fathy (MCWW)	4 Rated Voltage 380V 5 Rated Current 196.4A	Name Quantity Deterioration to be repaired	Attendance : Mr. Mohamed Fawzy, Mr. Mohamed Fathy (MCWW)
	6 Installation Number 1		
	7 Accessory Manual Valve 2 Check Valve 1		
	Pressure Gauge 1 Compound Gauge 1		
	Specification of Well (3.5) Pump (1 d) SH1		
	1 Type CP diesel Working Condition good		
	4 Installation Number 1 5 Accessory 1		
	4 Isonalisino Number 0 5 Accessory 1 Manaul Valve 2 1 Cecke Valve 1 1		
	Specification of Well (4,6,8) Pump (4,6 c) SH2		
	Capacity 00Ls Determination to be repaired Our Put IDS HP Prevare gauges and compound gauges are not installed. Instance Rand Voltage 380V Rand Voltage 1832A Rand Voltage 1832A		
	1 OpenIP OtiCs Destination to its propertied 2 Op Pri/a 151 BP Province graphs and composed graphs are not tradited → 4 Eaced Voltage 180V Province graphs and composed graphs are not tradited → 5 Eaced Voltage 180V Province graphs → → 5 Eaced Voltage 182.X → → → 7 Accessory → → → → 7 Accessory ↓ → → → Mannu Volve 4 ↓ ↓ ↓ ↓		
	6 Installation Number 2 7 Accessory		
	Manual Valve 4 Check Valve 2		
	Check Valve 2 Specification of Well (4.6,5) Pump (5 c) SH2		
	I Type CP electrical working condition good Cractity 90U/s Deterioration to be remained		
	Out Put 100 HP Pressure gauge and compound gauge is not installed. Instation A Rated Voltage 380V		
	L Gand Vehipp SHV Private gauge and compound gauge is not mission winners Deated Vehipp SHV Stand Vehipp SHV Stan		
	Locard Velage (1007) Pressure gauge and compound gauge is not mixed. Stand Velage (1007) Accessory		
Minufus Generoware, Shenisare Iwa and Manganese Renoval Plant	A Market Vedage (1989) Freederse page state compound gauge is not mission (1980) State Vedage (1980) State Ve		Minufus Genermonist, Kaft 13 Arab 51 Bahrs Ion and Manganese Renoral Plant

Equipment Condition Check Sheet (1/3)	Equipment Condition Check Sheet (2/3)	Special Instruction	Equipment Condition Check Sheet (1/8)
Objective Well Pump System Equipment Condition Action Before SOP	Objective BURMAN System Equipment Condition Action Before SOP	1. Facility Condition	Objective Well Pump System Equipment Condition Action Before SOP
Specification of Well (4) Pump (1) SH1	BURMAN system	This facility was handed over on 1st Oct, 2011, and at a present, operated and managed by MCWW	Specification of Well Pump A (1) Working Condition good 1 Type Submersible Pump Working Condition good 2 Capacity 25L/sec Deterioration to be repaired
2 Capacity 35L/s Deterioration to be repaired	1 Type BURMAN Tank Condition good 2 2 Number of tank 1 Deterioration to be repaired	2. Installation of Ultrasonic Flow Meter	Out Part Out Out Out Out
3 Out Pat 50 iP Pressure gauge and compound gauge is not installed. Installed.<	3 Accessery NNA V Valve 3 V faring , suction & discharge) V	Ultrasonic flow meter have been installed in this facility in order to measure the raw water and distribution water amount.	5 Rated Current N/A 6 Installation Number 1 unit
6 Accessory Mmml valve 2 check valve 1		3. Water Quality Analysis	7 Accessory N/A
	1 Type blower Working Condition good	 water Quanty Analysis Although this facility has laboratory and analyzing simple water quality measurement, chemist is employee 	
1 Type CP electrical Working Condition good	2. Our Pat 4. SHP Deterioration to be repaired 3. Rated Voltage 380V N/A 4. Installation Number	of private company.	Apparatus Name Quantity Deterioration to be repaired
2. Capacity 35LA Detectoration to be repaired 3. Our Put 40 HP Pressure gauge and compound is not installed. Installed. 4. Rated Voltage 380V	4 Interfactor (Numero 1 Apparentes Apparentes		1 Piping N/A 2 Valves Iunit Required Item
5 Installation Number 1	Apparatus Quantity		3 Electromagnetic Flow Meter Itanit Calibration of electromagnetic flow meter is recommendable. Caloration 4 Sampling Pump 2 2anits Calibration of pH meter is recommendable, if possible. 5 Oo-Sate Modificating pH Meter Itanit Calibration of turbidity meter is recommendable. [pumble.]
Manual valve 2	Name Quantity 1 Valves for feeding water to every well 2 2 Flow Meter 2		A samping rump i cannot c
Specification of Well (4) Pump (3) SH1			/ N-Site Moethering Resonant Chernie Meter Turnit
1 Type CP Eelectrical Working Condition good 2 Capacity 144 m3/h Deterioration to be renaired			
Out Put 75 HP Pressure gaugeis broken. Replace 4 Voltage 380V Compound gauge is not installed. Instation			
5 Installation Number 1 6 Accessory 1 Manual valve 2			
check valve 1			
Specification of Well (6.) Pump (1) SH2			
1 Type CP electrical Working Condition good			
4 Rated Voltage 380V Pressure games to totalled Institution			
5 Installation Number 2 6 Related current 82.5/47.6A			
7 Accessory Manual valve 4			
Check Valve 2 Computed Gauge 2			
Specification of Well (6) Pump (2 d) SH2 Working Condition didn't work dues is no butary 1 Type [CP diese] they use a 100k/Vagenerator			
2 Capacity 35 L/S 3 Out Put 60 HP			
4 Installation Number 2 5 Accessory			
Manual Valve 4			
Apparatas Mame Quantity Deterioration to be repaired Manual Vacuum Dumo, ab2 4			
Manual Vacuum Pump sh2 A Motorized Vacuum Pump sh1 Required Irem Motorized Vacuum Pump sh1 Required Irem motorized vacuum Pump sh Required Irem motorized vacuum Pump sh			
Minufia Governorate, Kafr El Arab El Bahry Iron and Manganese Removal Plant	Minufia Governorate, Kafr El Arab El Bahry Iron and Manganese Removal Plant		
		Minufia Governorate, Gezy Iron and Manganese Removal Plant	Minufia Governorate, Gezy Iron and Manganese Removal Plant
S2			
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22.3-13			
		Equipment Condition Check Sheet (2/8)	Equipment Condition Check Sheet (3/8)
دین تی Equipment Condition Check Sheet (3/3)	Date : 19-0et-2011	Objective Discharge Water Pump System Equipment Condition Action Before SOP	Objective Aeration System Equipment Condition Action Before SOP
Equipment Condition Check Sheet (3/3) Objective Chemical Doing System Expansion Condition Street Sequification of Cherica Storeg Task	Date : 19-Qet-2011	Objective Discharge Water Pump System Equipment Condition Action Before SOP Specification of Pump (A)	Objective Actainon Action Specification of Acration Bareer Exclusion of Acration Bareer Ecfored SOP 1 Type Package Type Working Condition good
Equipment Condition Check Sheet (3/3) Equipment Condition Check Sheet (3/3) Objective Chemical Doing System Equipment Condition <u>Heriton Step</u> Septiment Condition prod	Date : 19-0et-2011	Objective Discharge Water Pamp System Equipment Condition Action Specification of Pamp (A) 1 <th>Objective Acration System Equipment Condition Action Before System Specification of Arriton Blower Before System Before System System Before System System 1 Type Package Type Working Condition pool 1 2 Capacity LiBar Deterioration to be remedied 1 1 3 Dur Par N/A N/A 1 1</th>	Objective Acration System Equipment Condition Action Before System Specification of Arriton Blower Before System Before System System Before System System 1 Type Package Type Working Condition pool 1 2 Capacity LiBar Deterioration to be remedied 1 1 3 Dur Par N/A N/A 1 1
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	Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : GHAPWASCO Type of Facility : Iron and Manganese Removal Plant Facility Name : Gezy Attendance : Mr. Khalid Mohamed Kazamel, Mr. Mohamed Fawzy, Mr. Mohamed Tahy (MCTW) Mr. Mohamed Tahy (MCTW) Mr. Tompion Subinizy, Mr. Kazahuli Reh (MRP) Mr. Tompion Subinizy, Mr. Kazahuli Curki, Mr. Anamed Rauah	Objective Discharge Water Pomp System Equipment Condition Action 2000 The Condition of Yama A. Environment Condition Environment Condition Environment Condition 1 Discretive Environment Condition Environment Condition Environment Condition 2 Detective Environment Condition Environment Condition Environment Condition 3 Detective Environment Condition Environment Condition Environment Condition 4 Enated Voltage Weining Condition Environment Condition Environment Condition 5 Environment Condition Environment Condition Environment Condition Environment Condition 6 Environment Condition Environment Condition Environment Condition Environment Condition 7 Environment Condition Environment Condition of Condition Condition Condition Condition Environment Condition Environment Condition 8 Environment Condition Condi	Objective Actuality System Equipment Condition Actual Backet System 2 Conduct A tradie Description
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	Site Description in Detail Survey (Facility & Equipment Condition) Affiliation : GHAPWASCO Type of Facility : Iron and Manganese Removal Plant Facility Name : Gezy Attendance : Mr. Khalid Mohamed Kazamel, Mr. Mohamed Fawzy, Mr. Mohamed Tahy (MCWW) Mr. Mohamed Tahy (MCWW) Mr. Tompion Subinizy, Mr. Kazahuli Reh (MRP)	Objective Discharge Water Pomp System Equipment Condition Action 2000 The Condition of Yama A. Environment Condition Environment Condition Environment Condition 1 Discretive Environment Condition Environment Condition Environment Condition 2 Determine Environment Condition Environment Condition Environment Condition 3 Determine Environment Condition Environment Condition Environment Condition 4 Enated Voltage Weining Condition Environment Condition Environment Condition 5 Environment Condition Environment Condition Environment Condition Environment Condition 1 Environment Condition Environment Condition Environment Condition Environment Condition 1 Environment Condition Environment Condition Environment Condition Environment Condition 1 Environment Condition Environment Condition Condition Condition Condition Environment Condition Environment Condition 1 Environment Condition Cond	Objective Actuality System Equipment Condition Actual Backer System 2 Conduct A tradice Bears (1997) Working Condition and (1997) For an an an and (1997) For an an an and (1997) For an
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Minufia Governorate, Gezy Iron and Manganese Removal Plant

Equipment Condition Check Sheet (4/8)	Equipment Condition Check Sheet (5/8)	Equipment Condition Check Sheet (8/8)
Objective Filter Back Wash System Equipment Condition Action Before SOP SOP SOP SOP	Objective Chlorine Dosing System Equipment Condition Action Before SOP	Objective Building Condition Equipment Condition Before SOP
Specification of Backwash Pump 1 Type Centrifuzal Working Condition good	Specification of Chlorine Dosing Equipment (Pre) 1 Type Separate Type Working Condition good	Aeration Basin
2 Capacity 160m3/h x 9mH Deterioration to be remedied 3 Out Put 10HP N/A	2 Capacity 500g/H Deterioration to be remedied 3 Installation Number Iunit N/A	I Type Concrete Structure Condition Good Number of Basin Ibasin
A Rated Voltage 1800 x 5014z Required Item S Rated Current 27A Pressure gauges and compound gauges are not installed. Combining C Californian of electromagnetic flow meter is recommendable (voltation) Californian of Californian of electromagnetic flow meter is recommendable (voltation)	4 Accessory Required Item	Mixing Basin
6 Installation Number 2 Calibration of electromagnetic flow meter is recommendable Calibration 7 Accessory Succion Valve (Manual) 2 units	Specification of Chlorine Dosing Equipment (Post)	Mixing Busin Concrete Structure Concrete Condition Image: Condition Cool 1 Type Concrete Condition Good Image: Condition Cool Image: Co
Dickarge Valve [Punematic] 2minis Check Valve 2minis	1 Dys Seguete Type Working Condition mod 2 Copacity 4000 H Determined to be remoded - 3 Installation Number Installation Number NA - 4 Accessory Required Item - -	Rapid Mixer lunit
Electromagnetic Flow Meter 1 unit	4 Accessory Required Item Vaccume Gauge Iunit Installation of spare unit Installation of contraction of the spare unit Installation of spare unit Installati	Sedimentation Basin
	Specification of Booster Pump	Sedimentation Basin Image: Concrete Structure Concrete Structure Concrete Condition Good Image: Concrete Structure Concre
Specification of Air Scouring Blower	Type Centrifugal Working Condition Good (Not Used) Capacity N/A Deterioration to be remedied	3 Equipment Init Init Init Init Init Init Init In
1 Type Package Type Working Condition good 2 2 Capacity 1.1Bar Deterioration to be remedied 3 3 Que Pat N/A 4	3 Our Put 1.43kW N/A 4 Rated Voltage 220V x 50Hz Required Item 5 Rated Current 6.47A Pressure gauges are not installed.	Sand Filter
A Rated Voltage 380V x 50Hz Required Item S Rated Current N/A Installation of flow meter shall be considered Itaulusia	6 Installation Number 2units	1 Type Gravity Flow Concreate Condition Good 2 Number of Basin 2basins Equipment Condition
6 Installation Number 2units (In order to measure the flow rate, it is required.) 7 Accessory	NA Specification of Chlorine Storage System	3 Equipment Calibration of ultrasonic level meter shall be considered. Calibration Ultrasonic Lelel Meter 2units
Acoustic Panel 2units Pressure Gauge 2units	1 Accessory Required Item	
Filter Gauge 2 units Silencer 2 units	Overhead Cone Inati Induction of experiments with the consolution of stars plan. Pressure Separator 2 anime (in order to measure the cosmoplice, it is registered.) Gas Fifter & Henter Santin Register Collocation of deletion folds the considered. Register Change Over System Inati	Treated Water Reservoir I Type Concrete Structure Condition Good Descrete Structure Condition
Apparatus	Gas Filter & Heater 2 Dunits Repair Calibration of chlorine leak detector shall be considered. Repair Change Over System Gaseous Chlorine Neutralization System	2 Number of Basin 2basin 1 Capacity NA
Name Oceantity Datariantion to be remedied		
Outlet Valve (Pnuematic) 2units Calibration of electromagnetic flow meter is recommendable. Cathration Backwash Valve (Pnuematic) 2units All Pnuematic assuates are not to mpair. Repair	Apparatus	State: Concrete Structure Concrete Structure 1 Type Concrete Structure Concrete Structure 2 Number of Rusin 1 Concrete Structure
4 Air Scouring Valve (Pnuematic) 2units 5 Drainage Valve (Manual) 2units	Chorine Lenkage Detention [loc] Chorine Lenkage Detention [loc] Automatical processing of the second procesing of the second processing of th	3 Capacity N/A
6 Pressure Sensor (Treated x2) 2units 7 Electromagnetic Flow Meter Innit 8 Art Supply Unit for Promitic Values	2 Valves (for Booter line) 1 set 3 Valves (for chlorine dosage line) 1 set	Prainage Tank I Type Concrete Structure Concrete Condition Good
a) Compressor 2units		2 Number of Basin Ibasin Equipment Condition
b) Air Dryer 2units		4 Equipment Calibration of ultratonic level meter shall be considered. Calorata O
		Sludge Thickner
		Shadge Thickner Construct Structure 1 Type Construct Structure Cancreate Condition Good 2 Number of Busin
		Dring Red Concrete Structure 1 Type Concrete Structure 2 Number of Basin Housins
		2 Number of Basin Abasins
Minufia Governorate, Gezy Iron and Manganese Removal Plant	Minufia Governorate, Gezy Iron and Manganese Removal Plant	Minufia Governontte, Gezy Iron and Manganese Removal Plant
S2.		
4		
Equipment Condition Check Sheet (6/8)	Equipment Condition Check Sheet (7/8)	
Objective Potassium Permangunate Dosing System Equipment Condition Action Before SOP	Objective Sludge Discharge/ Drainage Pump Equipment Condition Action Before SOP SOP SOP SOP	
Specification of Potassiam Permanganate Subation/ Storage Tank	Sludge Discharge Pump	
I Type: Concrete Tank Working Gondition good Z Capacity 330L Deterionation to be remedied Number of Tank Insks N/A	1 Type Screw Pump Working Condition good 2 Capacity 5m3/h x 20m Deterioration to be remedied 3 Our Put 1.1kW N/A	
4 Accessory Required Item Agitator (0.75kW) 2units Calibration of ultrasonic level meter shall be considered. Calibration	2 Capasity Solit A. Sim Determination to remoded 10 for Port 11.1W N/A 4 Read Voltage 300 Yr 3.501z Required from 4 Read Voltage 300 Yr 3.501z Required from 5 Read Correct 3.4A Presser gauges are not installed. Audions 6 Installation Number 2 Junn 7 Accessivy	
Ultrasonic Level Meter 2units Utrasonic Level Meter 1 unit	6 Installation Number 2units 7 Accessory	
Specification of Potassium Permanganate Dosing Pump	Discharge Valve Zumits	
I Type Metering Working Condition good 2 Capacity 204. h x 32m Deterioration to be remedied	Check Valve 20018 Overhead Crane Ionit	
3 Out 7 vin 0.25XW N/A 4 Rated Voltage 220V x 50Hz 5 Installation Number 2 units	Drainage Pump	
6 Accessory	Type Submersible Pump Working Condition good Z Capacity N/A Deterioration to be remedied J Que Put 5-SHP N/A	
Accumulator Iunit Back Pressure Valve 2units	4 Rated Voltage 380V x 50Hz Required Item 5 Rated Current N/A Pressure gauges are not installed.	
Apparatus	6 Installation Number 2units 7 Accessory	
Dumit Quantity Descriptions to be remoded Image: Control of the start of t	Check Valve 2units	
Z Manual Varves Iset Cleaning of now meter shain to consider. Cleaning (Inside of flow meter is stained by chemical.)	Apparatus	
	Name Quantity Deterioration to be remedied Electromagnetic Flow Meter Iunit N/A	
	Calibration of electromagnetic flow meter is recommendable. Calibration	
Image: Section of the section of t	Image Gevenous. Gr:; Irm and Mangases Removal Plant	

INVENTORY FOR THE DETAIL SITE SURVEY (MCWW) (Surface Wawter Treatment Planr)

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Model facility for the SOP shall be selected according to following criteria. 1) Facility and Equipment Condition To operate without any deterioation or damage in components of facility (To be Selected by rehabilitation cost and period) 2) Future Plan No extention plan to disturb SOP activities No training program conducted by other Projets

	Iten	n										
No.	Facility	System	Shebeen El Kom F			Mahalet Menouf El			Mahalet El Sadat			
	-	-	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty	
1	Intake Reservoir	Building	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
2	Watan Intalas Engilitas	Dullin -	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
2	Water Intake Facility	Bulding Raw Water Pump	a) Discharge Valve	Donair	2	a) Raw Water Pumps	Repair	4	Building Condition : good a) Pressure Gauge	Replacement	6	
		Kaw water Pump	(Motorized Actuator)	Repair	2	 a) Raw water Pumps b) Compound Gauge 	Replacement	2	 b) Compound Gauge 	Replacement		
			(motorized / tetuator)			b) Compound Gauge	Replacement	2	 c) Discharge Valve 	Repair	6	
									(Motorized Actuatro)			
									d) Pressure Sensor	Calibration	1	
		Flow Measurement	a) Ultrasonic Flow Meter	Calibration	1				a) Ultrasonic Flow Meter	Calibration	1	
									b) Electromagnetic Flow Meter	Calibration	1	
		Water Level Monitoring							a) Ultrasonic Level Meter	Calibration	1	
3	Mixing Basin	Bulding	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
2	initial buom	buluing										
4	Flocculation & Sedimentation Facility	Bulding	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
5	Sand Filter	Building	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
		Filter Condition	-			Mud ball exist			Fairly good			
		Back Wash Pump	a) Flow Meter	Installation	1	a) Flow Meter	Installation	1	a) Flow Meter	Installation	1	
			b) Pressure Sensor	Calibration	1							
		Air Scouring Blower	a) Flow Meter	Installation	1	a) Flow Meter	Installation	1	a) Flow Meter	Installation	1	
		Pipeline	a) Pressure Sensor	Calibration	10				 a) Flow Meter (Treated Water) 	Calibration	16	
6	Water Reservoir	Building	Building Condition : good			Building Condition : Fairly good		-	Building Condition : good			
5		Water Level Monitoring	good			a) Ultrasonic Level Sensor	Replace	1	- many condition . good			
						., children bensor	phaee	.				
7	Water Distribution Facility		Building Condition : good			Building Condition : Fairly good			Building Condition : good			
		Discharge Pump	a) Pressure Gauge	Replacement	1	a) Compound Gauge	Replacement	4	a) Pressure Gauge	Replacement		
									b) Compound Gauge	Replacement		
		Flow Measurement	a) Ultrasonic Flow Meter	Calibration	1	a) Ultrasonic Flow Meter	Replace	1	c) Pressure Sensor a) Ultrasonic Flow Meter	Calibration Calibration	1	
		Residual Chlorine Monitoring	a) Residual Chlorine Meter		1	a) Residual Chlorine Meter		1	a) Residual Chlorine Meter	Repair	1	
		Water Level Monitoring				a) Ultrasonic Level Sensor		1				
						(Distribution Sump)	_					
8	Chlorine Dosing Facility	Cylinder Storage System	 a) Weight Machine 	Installation	1set	 a) Weight Machine 	Repair	1	a) Weight Machine	Installation		
		Pre-Chlorine Dosing System							a) Vaccum Gauge b) Pressure Gauge (Booster Pump)	Repair Installation	1 2	
		Post Chlorination System							a) Vaccum Gauge	Repair	2	
		r ost emornadon bystem							 b) Pressure Gauge (Booster Pump) 	Installation	2	
		Gas Leakage Detector							a) Sensor/ Transmitter Unit		1set	
0	Alum Davina Eavility	Sterrer Terle							a) Lauri Causa	Densis	2	
9	Alum Dosing Facility	Storage Tank Dosing Pump							a) Level Gaugea) Liquid Leakage	Repair Repair	3	
		Dosnig i unip							a) Elquid Ecakage	repair		
10	Sludge Facility	Building	Building Condition : good			Building Condition : Fairly good			Building Condition : good			
		Discharge Pump							a) Pressure Gauge	Replacement	3	
									b) Compound Gauge	Replacement	3	
11		Building	N/A			N/A			Building Condition : good			
11	Drainage Circulation Facility	Circulation Pump	IN/A			IN/A			a) Pressure Gauge	Replacement	3	
		Circulation Fump							 b) Compound Gauge 	Replacement	3	
									.,	1		
12	Sludge Drying Bed	Building	N/A			N/A			Building Condition : good			
13	Future Plan		- Installation of reverse-circulation system for			- Installation of reverse-circulation system for			N/A			
			drainage recovery (it will be		ny	drainage recovery (it will be		ny				
			disturbance to SOP activities			disturbance to SOP activities	.)					
			 Disinfection of all tanks and doene as a part of SOP) 	i basins (it will	be							
			 Installation of SCADA syst 	em (It is heing	done							
			without any disturbance to fa									
F-	aluation											
	Rehabilitation Cost		0			×			0			
	Relabilitation Cost		(Lowest)			(Highest	t)		Ŭ			
						- Since raw water pump cond	litions are not s	0	- Although a lot of equipment	it need the		
						well, in order for these pumps to repair, cost will			rehabilitation, Cost and rehabilitation period will			
			A 1			be high.			not increase due to minor dat	mage.		
2	Time Period for rehabilitat	ion	© (Shortest)			× (Longest) - It is expected that repair of pumps take long time.			0			
3	Installation of Flow Meter		N/A			time. N/A (Repair is required)			N/A			
	Apprication for the SOP		N/A			N/A (Kepair is required)			N/A			
1	- FF		-			- Due to the bad condition of building and			- Due to the reason that the O&M activities of			
			 Staff members understand water treatment process and operate the system by their discretion, 			equipment, It is difficult to apply SOP activities.			sand filter is not so well in comparison with			
									Shebeen El Kom SWTP, It is			
			since management system is almost established as central facility in MCWW. Therefore the SOP activities may apply to other facilities which want						their activities through SOP activities.			
									- Site access is slightly far in comparison with			
			to improve current O&M condition.						Shebeen El Kom El Gedeeda SWTP.			
			-		_			_			_	
	Evaluation		2			3			1			

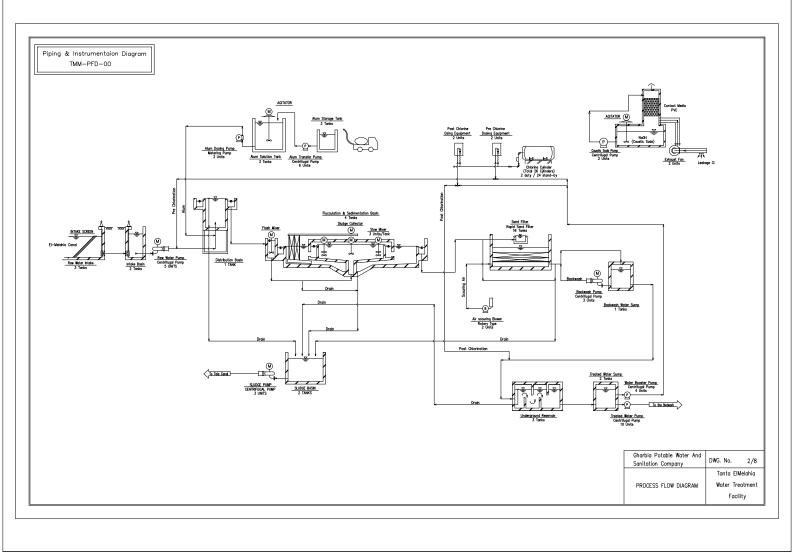
INVENTORY FOR THE DETAIL SITE SURVEY (MCWW) (Iron and Manganese Removal Planr)

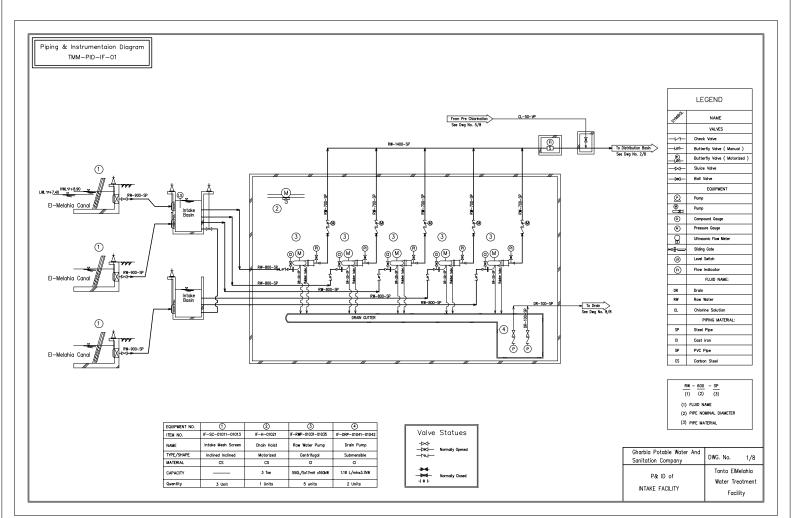
Model facility for the SOP shall be selected according to following criteria. 1) Facility and Equipment Condition To operate without any deterioation or damage in components of facility (To be Selected by rehabilitation cost and period) 2) Future Plan No extention plan to disturb SOP activities No training program conducted by other Projets

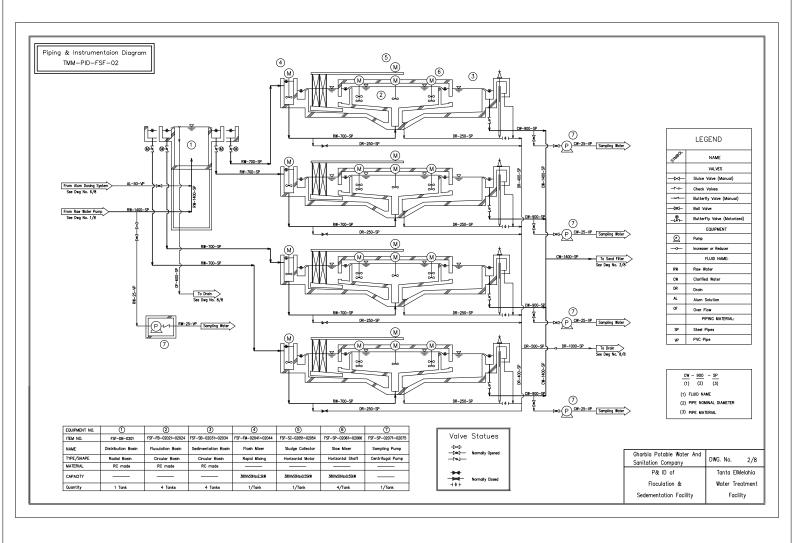
	Iten	n	Facility								
No.	Facility	System	Shemiate	T		Kafr El A	1		Gezy		1
1	-	-	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty	Equipment to be remedied	Action	Q'ty
1	Well Facility	Well Pump (Submersible 1)	a) Pressure Gaugeb) Compound Gauge	Installation/ Replace Installation/ Replace	8 8	a) Pressure Gaugeb) Compound Gauge	Installation/ Replace Installation/ Replace	5 5	a) Pressure Gauge	Installation	1
			b) Compound Gauge	instantation/ Replace	0	c) Vacuum Pump (Motor)	Repair	1			
		Flow Measurement							a) Electromagnetic Flow Meter	Calibration	1
2	BURMAN System								N/A		
3	Aeration Facility	Building	N/A			N/A			Building Condition : good		
		Flow Measurement							a) Flow Meter	Installation	1
									(Aeration Blower)		
4	Mixing & Sedimentation Facility	Building	N/A			N/A			Building Condition : good		
4	inting to be an internation i activity	Dunung	NA .			IVA			Bunding Condition . good		
5	Sand Filter	Building	N/A			N/A			Building Condition : good		
		Backwach Pump							a) Pressure Gaugeb) Compound Gauge	Installation Installation	2 2
									 c) Electromagnetic Flow Meter 		
		Air Scouring Blower							a) Flow Meter	Installation	
		Pipeline							a) Pressure Sensor	Calibration	2
									b) Electromagnetic Flow Meter	Calibration	2
									(Treated Water) c) Pnuematic Actuator	Repair	8
		Level Monitoring							a) Ultrasonic Level Meter	Calibration	2
6	Water Reservoir	Building	N/A			N/A			Building Condition : good		
7	Water Distribution Facility	Discharge Pump	N/A			N/A			a) Pressure Gauge	Installation	2
									b) Compound Gauge	Installation	2
		Flow Measurement							a) Electromagnetic Flow Meter	Calibration	1
8	Chlorine Dosing Facility	Pre-Chlorination System							a) Dosing Unit	Installation	1
0	emornie Dosnig I denity	rie-Chlornlation System							(as Spare)	mstanation	•
		Post-Chlorination System							a) Dosing Unit	Installation	1
		D D							(as Spare)		
		Booster Pump Cylinder Storage System							a) Pressure Gaugea) Weight Machine	Installation Installation	2
		Gas Leakage System							a) Sensor/ Transmitter Unit	Calibration	1
		8.,							.,		
9		Potossium Storogo Tank	N/A		-	N/A			a) Ultrasonic Level Meter	Calibration	1
9		Potassium Storage Tank Dosing System	IN/A			IN/A			a) Flow Meter	Cleaning	1
		Bosing Bystem							b) Pipeline	Repair	1
					-				· •	<u>^</u>	
10	Drainage Circulation Facility	Building	N/A			N/A			Building Condition : good	T (11 (-
		Sludge Discharge Pump Drainage Pump							a) Pressure Gauge a) Pressure Gauge	Installation Installation	
		Flow Measurement							a) Electromagnetic Flow Meter	Calibration	
		Level Monitoring							a) Ultrasonic Level Meter	Calibration	1
		B 11	NT/ A			NT/ A	-		DUE O ES		
11	Sludge Drying Bed	Building	N/A			N/A			Building Condition : good		
12	Sludge Thickener	Building	N/A			N/A			Building Condition : good		
	-	-									
13	Water Quality Analyzer		a) Residual Chlorine Measurement Kit		1	a) Residual Chlorine Measurement Kit	E	1	a) pH Meter (Raw Water)	Calibration	1
			b) Mn Measurement Kit (Procurement)		1	b) Mn Measurement Kit (Procurement)		1	b) Tu Meter (Raw Water)c) Residual Chlorine Meter	Calibration Calibration	1
			(i ioculeinent)			(i iocurcinent)			 d) pH Meter (Treated Water) 	Calibration	1
									e) Tu Meter (Treated Water)	Calibration	1
1.	Entre Dien		N/A	1		N/A			N/A	1	1
11	Future Plan		N/A			N/A			N/A		
Eva	aluation										
	Rehabilitation Cost		Ø			0			×		
	P. D. 10 11.1.		(Lowest) (Shortest)			0			(Highest)		
2	Fime Period for rehabilitat	ion							× (Longest)		
3	Installation of Flow Meter		Raw water flow meter			Raw water flow meter			N/A		
4	Apprication for the SOP		×			×			0		
			- It is difficelt to apply SOP due to the reason that			- It is difficelt to apply SOP due to the reason that					
			the iron and manganese remo			the iron and manganese remo			traditional system of iron and		
			changed from BURMAN sys			changed from BURMAN sys			process. This facility is opera by MCWW from 1 Oct 2011		amed
			system with the use of Aerator and Sand Filter near the future by the major trouble, such as inhibition of water injection by the attachment of oxidized substances to the well screen.			system with the use of Aerator and Sand Filter near the future by the major trouble, such as inhibition of water injection by the attachment of oxidized substances to the well screen.					
\vdash									- This facility has laboratory	and analyzing	simple
			D			Droouromont of residual -hlasing material			 This facility has laboratory and analyzing simple water quality measurement. But chemist is 		
5	Water Quality Analyzer		 Procurement of residual chlorine meter and Mn measurement kit 			- Procurement of residual chlorine meter and Mn			employee of private company. (MCWW promised		
			measurement kıt			measurement kit			to call chemist during training from Central Laboratory.) 1		
	Evaluation							_			

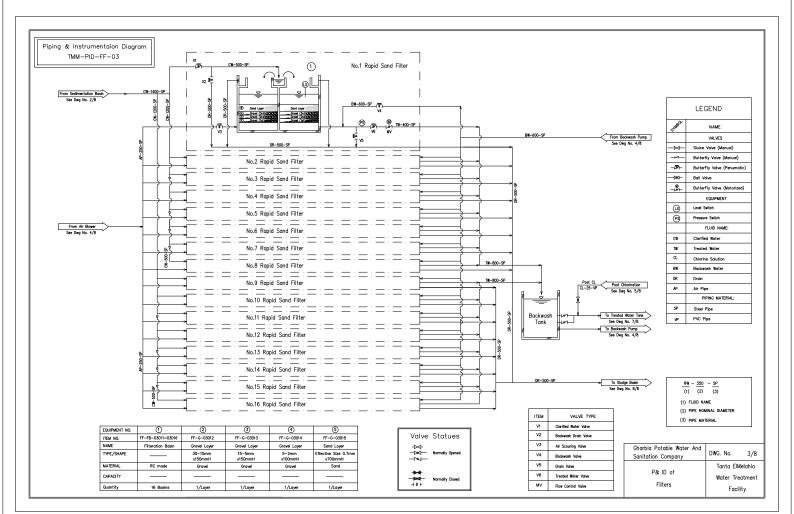
<u>S2.4 パイプ計装図</u>

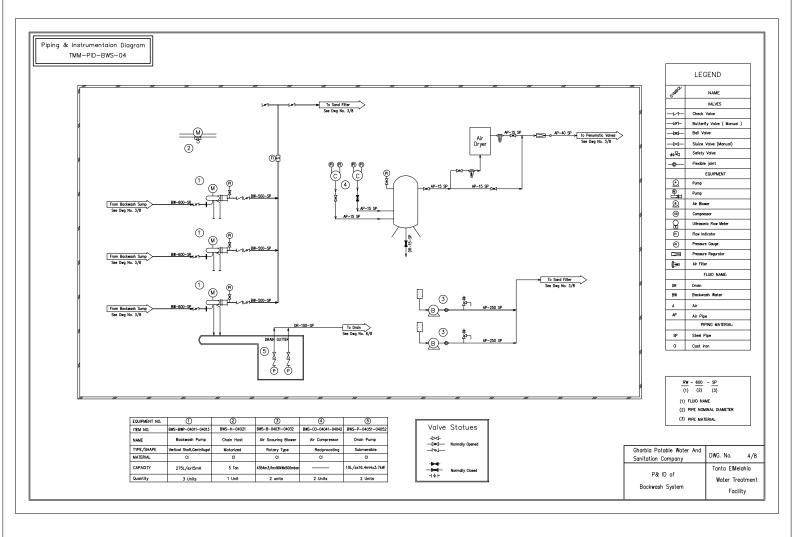
GHAPWASCO

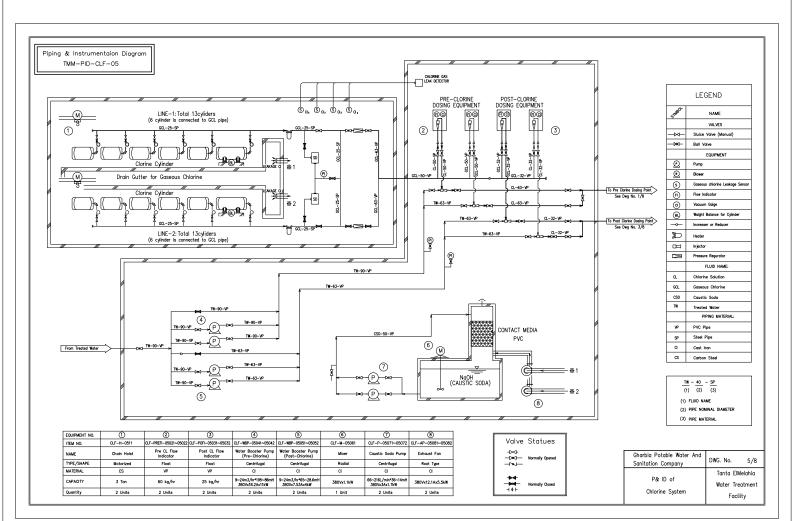


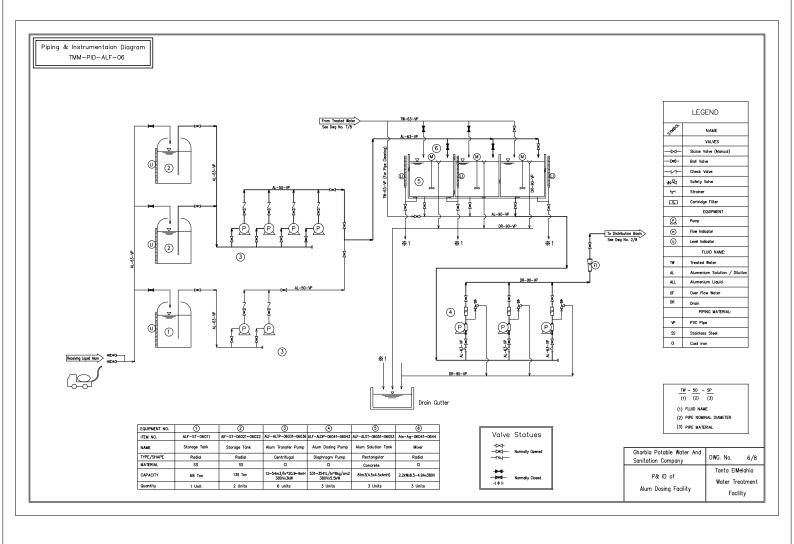


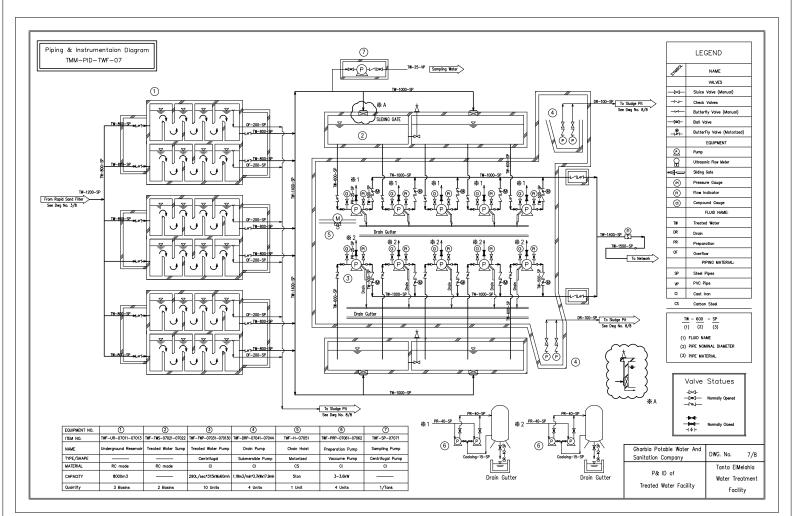


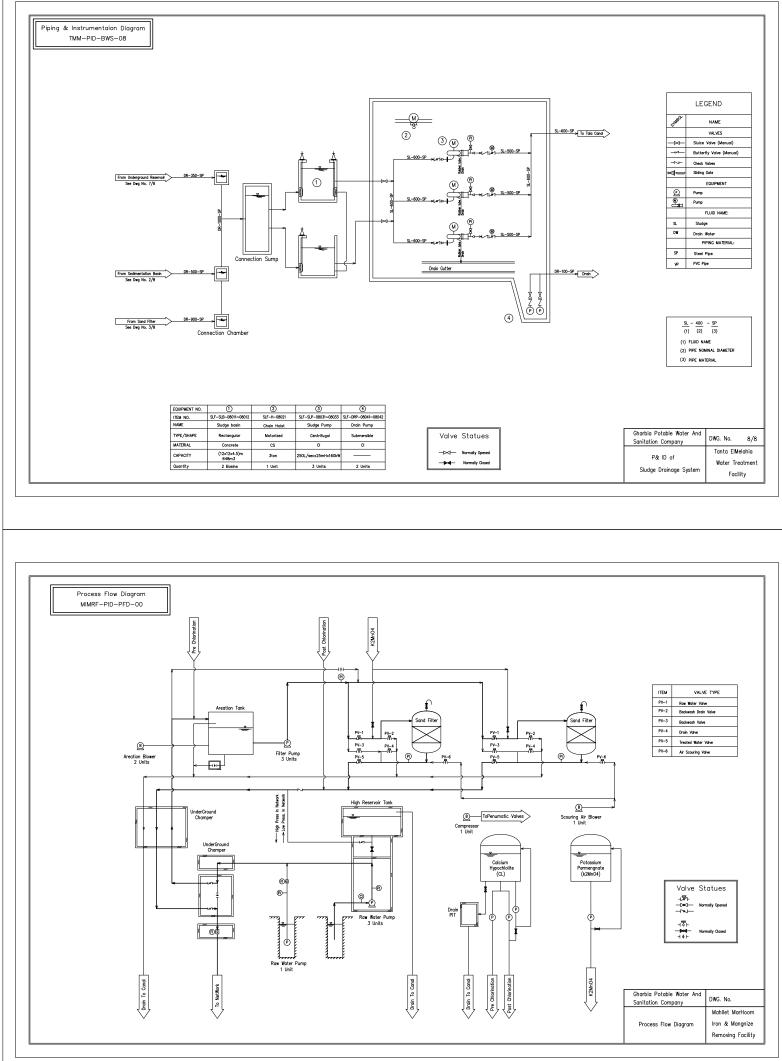


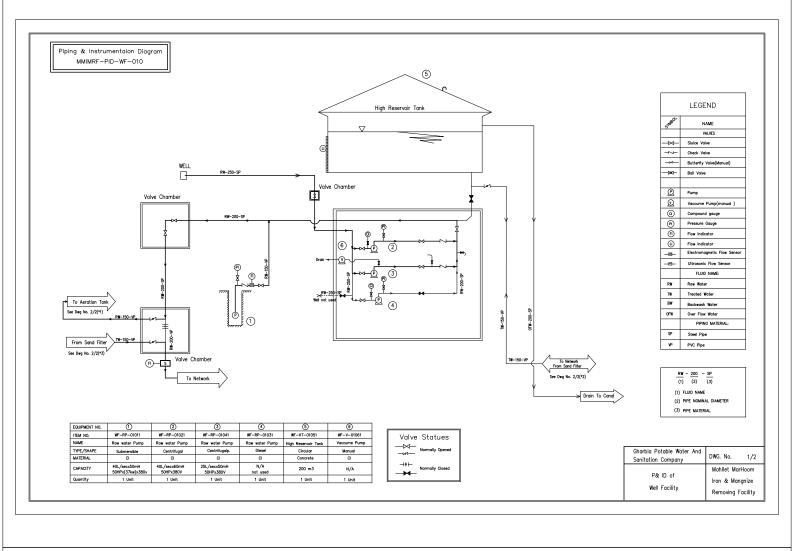


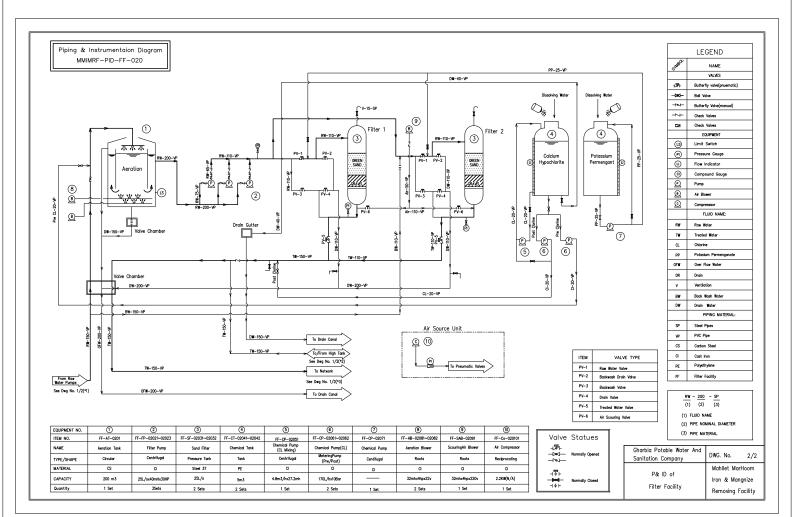


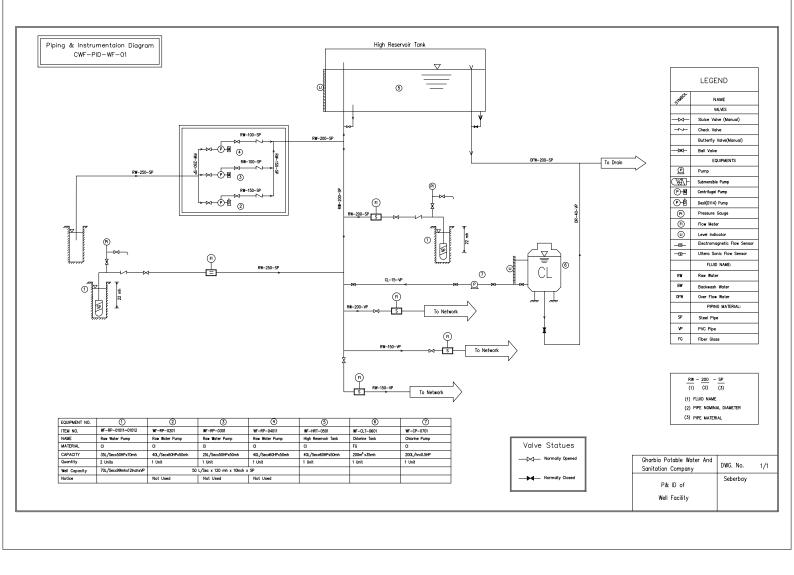












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