

Em Wat a&oelpu/v uppm t ky  
armi t;Eš v nlywji t;Eš hlykyi t;Eš o r t;yl  
( o , šaqmi t;Eš;Eš t;on h 4m<sup>3</sup>/h unit )



## rmwum

rwq upum;

t a&ay: t ajct aersm; wlf a&Eš hywubonh phitelrl  
(WATER MANAGEMENT IN EMERGENCY SITUATIONS)

a&vlt ycsuf ( Water Demand )

a&ay;El lonft v m; t v m ( Water Supply Potential )

aomu&a0i ſzeſzl:jci f ( Drinking Water Supply )

o&ay;a0zeſzl:jci f ( Washing Water Supply )

aqmu&ly&;vlyi efrsm; t w&ay;a0zeſzl:jci f  
( Water Supply for construction )

a&jywjci f o&r [ kw&r&hw&jci f ( Water Shortage or lack of water )

a&oelpi h&;vlyul &elvt yonft ajct aersm;

(SITUATIONS WHERE WATER PURIFICATION IS NEEDED )

oelpi &e&bnobm0a&\ t &nft aof ( RAW WATER QUALITY )

t a&ay: t ajct aersm; wlf oelpi h&u&olt o&jy&jci f

Use of purified water in emergency situations

a&oelpi pu&rsm; Eš h&oelpi h&;Eš hywubonh up&rsm;

( Water Purification Units and Treatment Solutions )

EMWAT a&oelpi pu&ul v u&w&wy&i yEš h t o&jy&h&rsm;

(Practical Installation and use of EMWA UNIT )

pu&wy&i &mw&ft "u&saom&rsm; ( Main principle for installtion )

pu&wy&i wn&qmu&e&v&mbi&rw&om ae&ma&&cs, ſci f

( Choosing a proper site for installation )

a&&, El &eft w&fy&i ſci f

( Preparing the water intake )

a&pw&yl ( Suction pipe )

'E, pu&zi h&wi ſci f ( Pump with diesel engine )

t e, p&e&wy&i ſci f (Set-up of Flocculaion chamber )

a&ppy&lt, u&wy&i ſci f ( Installation of the filter unit )

a&pw&wi ſci f ( Pumping )

t e, ſz&p&e&aq: x n&ſci f ( Flocculation )

pp&kw&ſci f ( Filtration )

u&v&i ſzi ſy&ſci f ( Chlorination )

jye&v n&aq; a&um&ſci f ( Back Washing )

v u&w&a&ay; a0&mw&l wy&i fr&rsm; p&oy&l

( Practical Set-up of a water distribution )

a&py&arm&vm armi f Eš ſci f Eš h&jy&ſci f x e&ot&ſci f

( Practical Operation and Maintenance of the motor pump )

a&ppy&lt ( Filter unit ) u&vlyi e&t w&ft q&i bi &e&fy&i ſci f x m&ſci f?

o&ft&q&n&x m&ſci f Eš h&&h&ro&lb&x m&ſci f; w&Eš hywubon&rsm;

(Preparing the Filter unit For Preparedness, storage and non-use in longer intervals)

## rwǎq uǐ (INTRODUCTION)

rnǒnǐt ajct aerštwǐ jzǐpǎp vǐxbnǐusef,rma&;Eš hǐ zǐvǐa&; (welfare) wǐtt wǐuǐ  
½ef,uebe&onǐqǐvǐǐ fǐ vǐxǐkt m;ax mufǐyǐlǐhǐ&rnǐt csuǐrsm;ü aomubǐa&jzela0ay;&efǐn t "ü  
aomcsuǐrsm;ü aomubǐa&jzela0ay;&efǐn t "ü aomcsuǐjzǐpǎvon/ ta&;ay:t ajct aeršm;ü  
rǐlǐmcPǐjzǐpǐwwǐrǐn a&ay;a0Eǐlǐrǐ oǐlǐr[ lwǐ a&&Eǐlǐrǐ av smenǐf;usqǐi f;ofǐ;jcǐ f;yi jzǐpǎn/  
a&jywbǐn;jcǐ f;uǐlǐ qǐvǐlygon/ ab; 'luǐñDǐtyef,Eǐypu&mae&mrsm;rS uǐ f;vǐwǐ&molǐ a&ǐajymǐ f;ofǐ;  
lǐu&onǐaemubǐ a&vǐlǐvǐhǐay;a0rǐrǐjyEǐlǐaomǐlǐumi hǐjzǐpǎvon/ xǐlǐaǐumi hǐqǐlǐ&ǐ;aom t ajc  
t aeršt m;vǐlǐü rǐvǐzela0aom pepǐrsm;uǐlǐ rvǐlyEǐlǐbǐjzǐhǐjyevǐnǐxǐax mǐf (wnǐaqmu) aep0ü  
aomǐvǐnǐfaumi f? vǐuǐ&ǐ&ay;a0rǐpepǐrsm; wǐlwǐuǐaumi f;reǐat mǐf vǐlyǐuǐlǐaeqǐüaomǐ  
vǐnǐfaumi f? a&oeǐxǐlwǐlyǐjǐfǐrǐn t a&;t Buǐqǐǐaom vǐwǐvǐmaqǐmǐ&ǐuǐay;&rnǐt vǐlyǐ  
jzǐpǎvon/ a&ay;a0rǐpepǐ ywǐDeǐf;usi beǐlǐSǐfa&;usef,rma&;ynmay;jcǐ f;rsm;Eš hǐ t ajccǐlyǐn m  
usef,rma&; aqǐmǐ&ǐuǐrǐay;vǐlyǐfǐef,rsm;wǐlǐuǐlǐ pǐpǐnǐfayǐ f;pyǐlǐ t aumi f;xǐnǐazmǐ&eft wǐuǐ  
vǐlyǐfǐef;&yǐrsm;uǐlǐ cs0ǐuyǐ&mwǐlǐf awǐ&onǐrǐn vǐwǐp0ǐcsi f; \ usef,rma&;Eš hǐ &yǐbǐ&ǐom;wǐlǐ  
usef,rma&;t ajct aeršm;yi jzǐpǎvon/ pǐvǐuǐpǐmtǐlyǐft aeǐjzǐhǐt "üx m;onǐrǐn a&oeǐxǐlwǐlyǐ  
a&;Eš hǐ jzeǐjzǐl;a&;yi jzǐpǎvon/ oǐlǐ&mwǐlǐf a&pǐrǐtelcǐrǐ (Water management) t allǐumi f;uǐlǐ oǐlǐuǐ&ef  
t wǐuǐlǐrwǐqǐuǐay;jcǐ f? a&oeǐjzǐpǐmat mǐf aqǐmǐ&ǐuǐvǐlyǐuǐlǐjǐfǐrsm;Eš hǐ ywǐoubǐnǐt axǐax G  
uǐpǐrsm;? Em Wat Kit 4000 a&oeǐxǐlwǐlyǐrǐpepǐlǐ vǐuǐawǐxǐlwǐlyǐrǐEš hǐ ywǐoubǐrǐaom t csuǐ  
vǐuǐrsm;? Em Wat Unit ypǐnǐf;rm;jzǐpǐnǐhǐtjcm;aom puǐtrǐstǐtpm; Model rsm; pǐnǐwǐlǐuǐlyǐ  
pǐpǐmtǐlyǐwǐlǐfǐ&Sǐf;vǐi f;wǐjyxm;ygǐon/

## vǐuǐpǐmtǐlyǐwǐlǐfǐat muǐazmǐjyǐgrsm;yg0ǐlyǐgon/

t a&;ay:t ajct aewǐlǐfǐa&Eš hǐywǐoubǐnǐhǐpǐrǐtelcǐrǐ  
a&oeǐpǐhǐa&;enǐfynm&yǐrsm;  
a&oeǐpǐhǐa&;Eš hǐywǐoubǐnǐt axǐaxǐaom t allǐumi f;t &mrsm;  
Em Wat Unit a&oeǐpuǐuǐlǐvǐuǐawǐ&, ǐ0, f, lǐ t oǐlǐjyǐfǐf  
a&ay;a0jzelaǐjǐfǐ t pǐt p0ǐwpǐ&yǐuǐlǐvǐuǐawǐlaz:xǐwǐjǐfǐf/  
a&pǐwǐpuǐarmǐwmt m; vǐuǐawǐuǐlǐwǐǐ ft oǐlǐcjǐfǐ/  
a&oeǐpǐhǐa&;pǐrǐtsuǐwpǐ&yǐft & vǐlyǐfǐt aumi f;xǐnǐaz:&mwǐlǐf uǐeǐsrnǐpǐ&wǐpǐrsm;  
wǐlǐtsuǐjǐfǐ  
t a&;Buǐǐonǐhǐvǐypmrsm;Eš hǐ&, x m;&rnǐhǐt ax mǐuǐt x m;t jzǐpǐt oǐlǐjyǐlǐ&ef,rsm;wǐlǐjzǐpǐnǐ/  
pǐpǐmtǐlyǐuǐlǐ tǐfǐsǐeǐǐ mǐvǐuǐpǐmtǐlyǐ[ k ac:ygǐon/ oǐlǐaomǐfǐfǐsǐeǐǐ mrsm;om t oǐlǐjyǐlǐ&ef  
r[ lwǐyǐg/ vǐuǐawǐvǐlyǐfǐef;cǐfǐuǐlǐf;xǐwǐlǐbǐlǐ&ef ] oǐlǐenǐf;vǐuǐpǐ } pǐmtǐlyǐvǐwǐlǐ? ǐi f;wǐlǐfǐ - puǐuǐlǐ  
wyǐqǐfǐwnǐaqmǐuǐlyǐ a&oeǐpǐjǐfǐfǐuǐlǐ t pǐt p0ǐjzǐhǐaqǐmǐ&ǐuǐ&ü t a&;t Buǐqǐlǐ t csuǐt vǐuǐf  
rsm;omyg0ǐlyǐgon/ puǐwǐpǐwǐlǐfǐpǐmtǐlyǐwpǐftǐlyǐyǐg&lyǐgon/ pǐvǐuǐpǐmtǐlyǐwǐlǐfǐa&oeǐpǐhǐa&;Eš hǐ  
ywǐouǐfǐ yǐfǐbǐ&ǐem;vǐnEǐlǐMuǐ&eft wǐuǐlǐ t ajccǐlbwǐlǐf t csuǐt vǐuǐrsm;uǐlǐ &&Muǐapǐ&ef Buǐlǐpm;  
wǐjyxm;ygǐon/ a&vǐlǐt yǐvǐsuǐ&ǐbrsm;t wǐuǐlǐ a&aumi f;a&oeǐlǐrsm; xǐlwǐlyǐ&eEš hǐ jzeǐjzǐl;a0ǐhǐa&;  
wǐlǐfǐpǐrǐtelcǐrǐlǐwǐlǐvǐnǐf;yg0ǐlyǐgon/  
azmǐjyǐgyǐvǐlyǐfǐef;&yǐrsm;Eš hǐ ywǐouǐfǐ a0zeǐbǐlǐoyǐcsuǐrsm;? jyǐlyǐjyǐfǐqǐjǐfǐfǐrsm; oǐlǐr[ lwǐ  
pǐvǐDǐfpm;pǐmaumi f;onǐhǐt BuǐlǐDmPǐrsm;ay;lǐurnǐqǐlyǐgu Buǐlǐqǐlǐt yǐlyǐgon/ t Buǐlyǐcsuǐrsm;Eš hǐwǐuǐG  
uǐlǐawǐmrsm;t m; aus;Zǐjyǐlǐ qubǐǐ ǐapvǐlyǐgon/

## t a&;ay:t ajct aeršm;wǐlǐfǐa&Eš hǐywǐoubǐnǐhǐpǐrǐtelcǐrǐ

(Water Management in Emergency Situations)

a&Eš hǐywǐoubǐnǐhǐpǐrǐtelcǐrǐwǐlǐfǐt a&;ygaom vǐrǐñǐeǐcsuǐt cǐlǐuǐlǐaz:jyxm;ygǐon/ 'luǐ  
onǐf pceǐrsm;? , m, pceǐrsm;? jyevǐnǐjyǐlyǐfǐwnǐaqmǐubǐnǐhǐa&mrsm;? t opǐxǐyǐrǐlǐ aqǐmuǐlyǐ  
aeonǐhǐ vǐlyǐfǐef;cǐfǐrsm;pǐnǐwǐlǐwǐlǐfǐ a&&ǐ&ǐ;t wǐuǐlǐ t wnǐwǐuǐpǐ0ǐaqǐmǐ&ǐuǐrǐhǐo;onǐh

tcselumvtywif vluemlu&rnhi tcsuifsm; jzplygon/ t"luxm;onhi tcsuifin a&aOis  
 jzefjzL;a&jzpf a&yLuacgifsm; wyqifum a&ay;onhi tqilyi jzplygon/

**a&vlt ycsuf ( Water Demand )**

vloplwpa, muhsitwuf a&oelrni rnr0 &&tmi vlyay;rnqbnwif  
 usefma&tajtaesm; rnbntaetxm;&aeon! aexllae&onhi tqiltwe; rnbll&ae  
 on(Esi)=ift&yb'o& a&&Eibiri tajtaewltay:wif rwnlygon/ olijzpaomallumi h  
 a&Esiywouf aumi;pnphitelb;ci qbntrn-tE&m, luiti aumi;reion& &&Ei &m  
 ae&mr&bor0 tm;vluu okm;atmi vly&rn/ vllf;vllf;u tustaus;Z;rbaOcpm;Ei fatmi f  
 ppOEi &rn/ t&yb'oOef;usiul xclur&pb? a&olp&mwifvnt; oifwi favsmufywlonh  
 twif;twmtxbmolpbilygon/  
 ae&ma'orm;pbwif a&&Ei iri tvltavmu&bn/ ollmwif ollp&mu rwr&ay/  
 a&jywlon;ji; (ollp&rnwji;f)allumi h ppfru jzplyh;luavon/ wp&Esi hvp&ntcsi fsm; i  
 y#yuzpji;f? rbm;pk twif;pdw' lu&mu&ji;f; ponfllvnt; jzplwlluygon/  
 &y&hwpck ollr[ lwf a'owpckwif aexlluoorm; a&vlt ycsuf rnr&bnqbntrn  
 &y&h"avlit ay:wifvntaumi? tavlit usi h p&luism; tay:wifvntaumi? aeae&onlit ajc  
 taey:wifvntaumi; rwnaeon/ rnblyiq&apumrl tzltpnf;bu&rm;? tpl&tz&rm;Esi h  
 ulvor\*avlt aeji h vlp&Dwif tentq&vlt yonh a&yrmPrn rnrqzpa&umi; aq&ae&iclu  
 avon/

**pzl, m;plcsel ( SPHERE STANDARD )**

a&vlt ycsuf plcselwif tentq&yrmPuil ptcef;wif azmjyxm;onrin - vlp&Dlonf  
 wpa&v& a&aumi;ta&oel tentq& 15 vlvw vlt yonif[ k q&avon/ eif yrmPwif  
 aomub& vlp&N usefma&t wuf ollrnb&Esi h aq;allum&ef vlt yonh a&yrmPponfll  
 ygOifavon/ eif vlt ycsuif tcselit wif;twm wpcwif tentq&vlt ycsuf jzpa&von/  
 rbm;pk wppbnf , m, lomvntaumi? t&rlwpaqmi jzi lomvntaumi? yif twnf wus  
 pwif aeonEsi h wplyli euf (tu, li aus;vu&awm&h wif q&v& i) r&zb&csi b& o&D&ism; pluf  
 tao;pm;ar&jrLa&; ( wpt&rb&xmi ) &rn jzpon/ xlt ajtaew& a&rm;pb yb&rn  
 jzpon/  
 rnblyi jzpa& ab;' lu&mu&ji;f;Esi h uyba&\*gjzpjci;f; ponhit m; jzi h tv&cl, Of; Mulywnf onh  
 taetxm; r&bu&v&? tr&wlu, i jzpb i jzpx luonrin - vlp&D twuf wpa&v& a&oel  
 4 vlvwx ulrenf;xm;ay;&rn jzpon/ ollaomf pa&yrmPxuyif rsm; rsm; &Ei fatmi lawnh  
 wwEi bor0 tjrelq&ppO&rn/ ollr&om aexll&pm;aomufism; tajtaewllwuf vmi  
 a&m\*gjzplyh;Ei irvnt; usqif&rn;rn jzpon/

**a&vlt ycsuf**

- a&vlt yonlv&ba& = P
  - vlvpa, mu a&vlt ycsuul plcselwpc owir&w&subonf S jzponiq&v&? vlvpa, mu  
 wp&uf a&vlt ycsulonf S jzponiq&v&? vlvpa, mu wp&uf a&vlt ycsulonf S vlvw  
 jzpon/
  - wp&u&playgi f a&vlt ycsuf = Q
- $$Q = P * S$$

Oyrm  
 $Q = 7000 * 15$  wif vlvpa, mu wp&u&v& 15 vlvwvlt yif? vl - 7000twuf  
 a&vlt ycsuif wp&u&v& 105000 vlvw jzprn/

a&&&&pnitelb&mwif tajc&v&euf& mtzpi toly&onhi entvrtin - vu&f  
 tajtae& &hom - a&vlt ycsuEsi h a&ay;Ei iri taetxm;u ll w&csu jci jzpi , i t&ulyif ef  
 jzpa&rmu&eft wuf taxmuft xm; tzpi apmi lun&rn jzpon/

**a&ay;Eli bonit v m; t v m ( Water Supply Potential )**

a&ay;aOrpepUll pirtelc&erfi - aepO&a&x&way;Eli boni jzpEli hcsull wUtsuf (cel&ef) &n&jzpon/ &&Eli boni entynmyll f&qll &m t ao;plvft csuft v uirsm;t ay:wlf t ajcyl& cel&efwUtsu&n&jzpon/ a&ay;aOrpepUll f t csuft v uirsm;ph ygoi fav on/

- (u) a&&&Eli &mae&m ( t&i&t&jrpf )
- (c) a&oe&x&w&v&ly&Eli rrt i ft m;? yrmP
- (\*) a&o, f, l&la&qmi Eli ri
- (C) a&ol&v&ni Eli rrt i ft m;
- (i) a&j&zel&h&O&Eli rrt i ft m; / wll&jzpon/

t x u y g t c s u i r s m ; t m ; v u l l r e l u e p h n e f ; & n j z p o n / o l l r s o m , i f w u l l v l t y o v l l a y g i f p y l w z u f t j y n l t o t o l c s E l l r n f j z p o n / a y : v o l x i & n ; o n r i n t c s u l w p c l o n f t m ; e n f a e o n l p f t m ; t e r h q l l j z p a e o n l q l v o i f p e p l w p c l v l \ a & a y ; E l i r l t v m ; t v m u l l t u e l t o w j z p a p r n f ( o l r [ l w f ) a v s m e n f a p v t r n f j z p o n /

**(u) a&&&&t&i&t&jrpf (Water Source)**

a&&&&mae&m onf jr&jz&Eli bon/ a&ue&bu& lake olr [ lwf a&ue&f pond ? a&w&lf? a&p&allumi f channel rsm;jzponh acsmi&ajrmi&f&sm;vn& jzp&Eli bon/ a&&&&Eli boni ae&m&sm;r&ni - aepO&&Eli bonf olr [ lwf aemi&v&n&a&&&n&w&lf&Eli bonf pon&w&ull&cel&ef&Mun&ly&grn/ rsm;ph&aom taw&ot&Bu&lr&sm;t&q&lv&oi&f - a&&&&&m ae&m&wp&cl&S &on&h&u&ll t&jcm;a&ol&on&h olrsm;es h r&a&ool&p&aj&ci&f jz&p&avon/ t&ol&jy&f&ef v&lt&y&on&h a&y&rm&P&ES h ay;a&O&r&nh a&y&rm&P rsm;ull a&oc&sm&ph cel&ef&w&U&tsu&lr&sm; pwi&on&h t&ce&f&p&oi&f yif - t&jcm;wp&zu&f &y&ob&h&om;rsm;? t&m&P&myll ft z&ot&pn&f&sm;ES h&aj&ym&q&h&Eli f&cl&u&on&q&ly&gu jz&pay:v&m&Eli boni jyo& em&sm;ull ent&y&g; apv&tr&n&jzpon/

p v u p p m t l y u l l t a u m i f q l l t o l c s E l l & e f t w u f a w f a c : B u l q w U t s u e n f r s m ; u l l a v l m r n l q l y g u t i f \* l v m E l i f i n t a l l u m i f t & m w p c l u l l e r e m t j z p f a t m u l y g t w l l f a w & r n f j z p o n /

**Coragem, Angoda U&M\*si? t i f \* l v m E l i f i H**

a&&&&&m t&i&t&jr&ir&ni a&p&allumi f&Bu&w&pc&jz&pf ( a&&on&it&ce&f&sm;w&lf ) v&h&v&mu&ph &Eli bonit aet x m ; j z p o n / t a w o t B u l r s m ; t & q l v o i f t a l l u m i f t r s t r s t a l l u m i h & l z e & l t g w o f r & h l l u m i f a w l & a v o n / p o l l a & j y w j c i f r s t o n f C o r a g e m & h a y ; a & ; u @ u c u b l u y w n f ; v S o n h t c e f r s m ; y i j z p o n / x l t j y i f a & a y ; a O a & ; p h t s u & h o m V i a n a & l t m P m y l l r s m ; t m ; C o r a g e m w l f t r e w u , f v l t y o n h a & y r m P E S h y w b u l i j y n j y n p p h t a l l u m i f l u m ; w i j y x m ; o n r i n a o c s m l l v m ; q b n i u l l u n & r n / , c l a z ; j y o n h t a l l u m i f u l l u n i a e m i w o f t j c m ; a o m t & y a ' o r s m ; w l f t & y o m ; v l x k t w u f a &&&&& ; p i p O b o n i t c g y l r l u s , j y e l p h v l y u l l f o i b o n j z p a l u m i f p j y , k i u l l o i b e f p m , & r n i j z p l y g o n /

**(c) a&oe&x&w&Eli boni pft; t myrmP (Water Treatment Capacity)**

& l z e & l t g w o f a & u l l a o m u f a & o e l p l c e f t q i l r s t x d o e l p i f x l w v l y & e f t a l l u m i f a y : w w l y g o n / a & o e l p i j c i f u l l a E s a o m o h & p p i S l o w s a n d F i l t e r s r s m ; j z i h p p E l i b o n / t x i j y l v l y i x m ; a o m t y l l f r s m ; w l f z d t m ; o l l i p p E l i b o n / ( S p e c i a l p r e s s u r e u n i t s ) a & o l y r a e m u l y g u o l l r [ l w f a e m u l l u n i t t u r b i d i t y t q i l e r h e y g u u v l i f i j z i h o e l p i f a y ; j c i f u l b m v l y i f o n / a p p l n r n i r o p p E l i b o n i q l b n i u l l - w l u t s u l i v n f a u m i f ? w l l f w m l u n i v n f a u m i f o E l i y g o n / v l y i e f c o i ( u o f x ) w l f t o l j y f e f t w u l r i n a & p p l w p c j z i h a & r n i f p p x l w E l i b o n i u l l p e p l w u s t a l l u m i f l u m ; ? t p & i b l b n l q l y g u a p p l w p c n p f t m ; y r m P u l l t a u m i f q l l c e l r e f E l i r n f j z p o n / r n b l l y i j z p a p u m r l a p p l n x l w v l y E l i r i p o f t m ; E S h n i f a & o e l p u f t r e a t m e n t p l a n t u l l ' l z i f a z : x m ; o n l q l v o i f , i f o l l p h k m ; o n l t a l l u m i f u l b k m ; & r n / o l l r s o m a e m u l y l l f w l l w u l r l r n b l l & E l i b o n i q l b n i t v m ; t v m r s m ; u l l o & r n f j z p o n /

Angda Eilifil Coragem wif aqmi & uylul Oyrmx; i Munirngluf - a&ubelpi & ent2-entf, oixm; allumit; awl&on/

(1) Burm; aompwuebu)x wif ob&ppwpcul wylqixm; jci/ pwueN a&Oif qeltrn - 45000 vlv&bn/

(2) 'E, lb a&plwpuES h armif; ES ixm; aom zdtm; ay; peplo&ppf Em Wat Unit type wpcwylqixm; i ob&ppES h umA&ba&ppf active carbon filter 2 r&vluu tolljyxm; on/

(1) omreb&ppf ( Slow sand Filter ) ull pwuebu)x wif wylqixm; i Oiqelbnha&xlxnrn - 45 uArilmjzpon/ aif&u&ersulehji f& d mri 30 pw&ef; rlv&bn/ a&ppN xlvlyEil rri taawm (oibvsmEef) Optimum Filter Speed jzpli wplem&lvuf 7cm rS 12cm txjzpaomallumi ha&xlvlyrri wplem&lvuf 2.1 rS 3.6 uArilmjzpon/ pob&ppjzpaom slow sand Filters rsm; rri aepOf - 24em&jzi h &ubw&ygwvrm; pn tvlylvlyEil bn/ wplem&lvuf a&uArilm 2.1 rS .6txdxlvlyEil bn/ polppxlvEil baomallumi h oelpi lyb a&xlvly Eil rri 50 rS 86 uAaytxjzpon/ tu, fi &&&m; aom omrebomOa&wif o? te, itr& &Epf ponwlvrm; pn ygvmygu a&pponEef; u&vsmcs&ygrn/ a&ppf Filter ull aq; allumjci fES h ywouf vup&mtlywif Mun&Eil ygon/

a&ppf Filter \ Burm; us, jyelom rsulehji wif microorganisms rsm; jzpay; yhn; rsm; ojzi h, ifwlu a&wlygaom t&E& m, &Eom ylrri; rsm; ES h ZD&lyf organisms rsm; ull oelpi baomallumi & aifrsulehji full &Eprsm; z, &h; onrst y aq; allumjci f; rjykoifay/

yl(1) / Coragem & a&oelxlvly&ES h o&vni ha& vlyif&ae&mjzpon/ pwuef 2-ck wif wpcrn roelpi &ao; aoma& 45 uArilmvulvnfaumit? wpcrn oelpi lyb a& 45 uArilmvulvnfaumit ob&vni ixm; Eil bono/ omreb&ppf Slow sand Filter ygaom pwuef nmburilm-300 cel tuhw& &bn/ tv, lw&Eom a&plwvionit ylf, pump house wif a&ppf zdtm; ay; puf pressure filter unit &bn/ b, lb, &E taqmuft O&wif &hx&ll a&yllw&jz&bnhpu&bn/

(2) zdtm; oif a&ppon&pep the pressure filter system wif 'E, lb&ba&plwpuu tolljyKon/ a&ull ob&ppES h "gw&ajymi f; vjci f; jzpay; aponh umA&ba&ppf ( active carbon filter ) wlu jzwb&ef; o&h; apygon/ ob&ppu tolljy&jci f; tallumit; rri a&aemulstent&h; apif uv&i f; a&mpy&ef oibvsmionh tajctaeoll a&mu&ejzpon/ umA&ba&pponf a&\ ta&mi ES h t&omull ajymi f; v&pygon/ xlt ajctaeoll a&m\* yllt m; v&ES h a&m\* gjzpa&wv&om ZD&lyf rsm; t m; vluu uv&i f; "gwlu aoalluy&sup&aprnjzpon/

Coragem & a&ppN ylb&Eil f; ull wplem&lvuf a& 4m<sup>3</sup>/h olr [ lwf a&vlvm -4000 ull oelpi Eil ap&ef jylvlyx m; ygon/ tolljyKonpurri Em Wat Unit 4000 jzpli tolljyKonh 'E, lb&lpurri Comardini jzpon/ obmOa&\ aemulstht ay; wif rwnfi aepOlyif a&ppu tolluraygi f; rsm; pn a&usif aq; allum&rn/ a&ulpplybif uv&i f; "gw&jzi h yllowonh t&cg& bwlv&D, m; ylrri; ES h ZD&lyf organisms rsm; ull aoalluy&sup&eft wuf a&ub&vni luf xlvf tent&q& repl - 30xm; &rn/ aepOf xlvlyEil bn h yrmPrri pulvnt&bay; wif rwnlygon/ ylr&ft m; jzi h Em Wat Unit ublaom purst; ull wpa&lvuf vnyw&cel 4 em& rS 10em& dt x d armifav& &bn/ pulupO&qu&rjywf Mun&ppaq; ae&er&ir l vlt y&avon/ pol armif; ES h vnyw&lvuf oelpi lybaoma& wpa&lvuf 16m<sup>3</sup> rS 40m<sup>3</sup> &ayrn/ aif rri a&vlvmaygi f; 16000 rS 40000 jzpa&von/ entynmyll f; q& & m 1/2 axmi r&lvuf wpa&lvuf 24-em&D pulvni &on/ oljzpa&omji m; vnt axmuluyllray; aeonh tzdt&pn&t ay; wif lum; awmi f; q&lv&ubnh t aet x m; oll a&mu&ayv&trn/

t&cyiq&Baomf Coragem wif &Eonh a&pprsm; ES h a&oelxlvlyrliu pepf 2-ck&ES h vnyw&lygu wpa&lvuf a&oel 160m<sup>3</sup> olr [ lwf vlvmaygi f; - 160000 xlvlyEil rri jzpon/

(\* a&o, f, lylaqmi Eil rri ift m; ( Water Transport Capacity )

a&yllaqmi jci f;wif vlylaqmi &ersm;rfn obmOa&ull a&ppfsm;&&mo ll yll&ES h oelpi llyb aom a&u;zejzl;&rn&e&msm;o ll ylljci f; jzpvon/ a&ull um;buDrsm;ES h olr [ kw yluvl f; jzi h ay; yll&E ll bon/ ylluzi h ay; ylljci f;wif a&plwpuft m; jzi h w&e; ylljci f; olr [ kw ajrq&it m; jzi h p&qi f; enf;sm;ull o ll&E ll ygon/ yll&ES h ay; yll&E ll rft ift m;ull yll&N tcsi f; ( diameter ) ? t&S&ES h zdt m; u&h;cm;rl pressure difference q&bn&rfn a&yllon&e&m entry point wll t&erft jri lu&h;cm;rlay; wif rwnlygon/ xllt jyi f a&ylluft wif& a&ES h yll&wly&wft m; qll&h;rl ( Friction Loss ) allumi h jzpvay; onh zdt m; qll&h;rl ( pressure loss ) wllt ay; wif vnt; rwnlv su&ly&ebon/

tajct aewp&ckwif yll&wpc&N p&f;t m;ull wll&u&su&erfn - t i f si &e ll m ynm&yq ll & m tajc&ct csu&fsm; jzi h p&of;pm; wll&u&q&ayrn/ ylluzi h ay; yll&eft wll&f ow&f&sw&az; x&w&x m; onh Z, m; rsm; ES h wll&u&su&enf;sm;ull t o ll jyi&rn&jzpvon/

Coragem wif vlylu ll&aqmi &lylyll p&erlent jzpf llun&rn&qlygu -

tcsi f; 90 rlv&rn&w&h&om yll&v&vif; yll&u&bu& 2 acsmif; wyqif&x m; i a&p&allumi f; channel wif&wpp? a&o&epi pu&h&om &h&t&e ll ( t&erlyll f; ) wif&wpp&bn/ a&oi&bn&e&m&ES h a&x&ubon&h ae&msm; \ t&erft jri lu ll wif&wllun& 14-r&lv&mu&h;cm; allumi f; aw&on/ qll&oh; on&rfn wp&e&mon&f u&e; jri lyll f; usi wp&e&mr&fn aj&erlyll f; u&jci f; jzpvon/ p&t&et&x m; r&fn x&h;cm; v&son/ awmi&f&e; f; jri&w& &h&om a&ull t&erlyll f; & ylluft wif& &h&u&oit av; c&e; jzi h q&f; b&h; jci f; allumi jzpvon/ p&wif yll&x&b ll av&oi&v&u&f vly& &e; onh siphon \ jzpp&oi&u ll jy&o& em&sm; p&h jzpv&v&h&rn/ & i f; ull operation manual wif&z&w&E ll ygon/

t&x&u&az&mjy&g pep&w&f x&w&vly&E ll r&p&f;t m;ull wllun&erfn cut&avon/ o ll jzpf aom&allumi h a&&&E ll bonh yrm&Prsm;ull u&of&qi f; wif&wllun&h&r&om yll& aumi f; r&e; p&ic&e; ll&E ll r&rn&jzpvon/ , ckt&ajct&ae&u ll un&lv&u&f t&erlyll f; a&e&mu a&yll&v&ll&f;sm; r&fn a&v&w&m - 4000 yll&w&E ll bon/ yll&w&pc&ksi f; u a&pp&w&pc&ksi f; ull jz&w&v&w&e; jci f; jzpvon/ a&yll&v&ll&f; on&f aumi f; p&h&t vly&vly&e&on&qlygu? p&ajrq&it m; pep&on&f 24 em&p&v ll a&yll&E ll r&rn&jzpf? wp&u&f wif&yll&v&ll&f; 2&ct wll&f a&yll&v&w&rl - 190m<sup>3</sup> jzpv&ayrn/ & i f; r&fn v&lv&may&gi f; 190000 jzpvon/

o&epi lly&jzpv&a&om&ull a&jz&e&h&O&rn&e&msm;o ll ylluzi h ay; yll&rn&qlygu t&x&u&az&mjy&g wll&u&su&f&sm; t&wll&f yif jzpv&h&rn/ & z&e& & h; gyif a&v&h&om ae&msm;o ll a&u&m; jzi h ay; yllon&h en&f&w&pc&b&om&allumi f; aw& & ygon/ a&jz&e&h&O&rn&e&mo ll a&mu&h&t&mi&b&h; & o&jzi h v&g& l&ub&om Flexible en&f&v&rf&jzpv&gon/ o ll jzpv&a&om&v&n&f? a&u&u&m; jzi h o, f, b&on&ent&rfn p&w&ft u&e&f us rsm; i vly&f&e; t&u&e; & ES h x&h&mu&erfn aumi&f&a&om p&h&e&ll&h& vll& ygon/ t&wn&w&us a&e&ll&f a&ell&u&on&h v&e&yll&u&f&sm;o ll a&p&p&o&ay; yll&rn&qlygu&f& ajrq&it m; ( t&erlyll f; o ll&v&w&jci f; ) olr [ kw a&plw&pu&f&sm; t o ll jyi&jci f; r&fn t o i&h&v&sm&qly&jzpv&rn/

**Coragem wif vlylu ll&aqmi &lyll (&rn&f&e; &e)**

o&epi lly&jzpv&a&om&ull ae&m 2-c&ob ll yllay; avon/ aj&erlyll f; wif& &h&om ae&mw&f a&wll&f 3-c&ax&mi&f&um a&yll&u&ac&gi f; 6-c&k wyqif&x m; on/ &h&x&w&f&um; a&wll&f 4-c&ax&mi&f&um a&yll&u&f ac&gi f; 6&ck&p&w&yqif&x m; on/ &h&u ll a&yll&mw&f 63 rlv&rn&v&m&tcsi f; &h&om ylluzi h ay; &h& & h&av&ni f u&e&w&f ol&v&ni&f&x m; on/ x&h&e&mr&ae&f a&yll&u&ac&gi f; ^a&wll&f&sm; &&mo ll ajrq&it m; jzi h a&yll&avon/ ( t&jri&f& t&er&h&ll&t vll&t av&su&h&u&sqif&jci f; jzpvon/ ) a&plw&pu&N t&allumi f; t& &msm;? a&yll&u&N t&v&sm; pon&w&ll&rn a&yll&rn&e&om w&pc&ksi f; o ll r&rn&f&ot ift m; jzi h yll&E ll r&rn&u ll wll&u&su&f&e; t&ajc&ct&sm; jzpv&avon/ r&nb&ly& jzpv&ap&um&rl a&yll&v&w& &e&msm;o ll r&nb&ll o, f, l yll&aqmi&E ll bonh t ift m; & b&ni pon&w&u ll u&of&qi f; wif&wll&e&f v&g& l&ubon&h tajct ae& &allumi f; aw& &ayon/

**(C) a&o&h&v&ni&f&ry&mp (Storage Capacity)**

a&ay; a&Oa&; pep&w&pc&kwif u&f&y&m; jcm; em; aom a&o&h&v&ni&f&on&h t&qi&f&sm; &E ll ygon/

(1) a&&& & m&e&mu&yif&ol&v&ni&f&ci f; / ( t& & i f; t&jrp& ) /

( Storage at the water source )

(2) obmOa&u&x&e; f; o&f& & e&ES h jylly& & e&f ol&v&ni&f&ci f; /

( Storage of raw water for settlement and treatment )

(3) uv& i f; jzi h o&epi lly&eft wll&f ol&v&ni&f&ci f; / ( Storage for Chlorination )





ust mi f p b 0 f x m ; & e f v l t y a v o n / a & a y ; a 0 j z e l c s E l l p b f f o n f 1 / 2 k y D w k y l l f q l l & m u e l o w c s u f r s m ; E s h p h t e l c h y l l f q l l & m t a l l u m i f ; & y f r s m ; a y : w l f r l w n f v s u & b n f

**Coragem w l f a & a y ; a 0 y l u l l 0 y r m x m ; f l u n t r n f**

a & y l u l a c g i f r s m ; ? a & w l l b a x m i & m a e & m r s m ; w l f r s m ; a o m t m ; j z i h a c g i f r s m ; u z d t m ; e n f a l l u m i f a w l & o n f p i f r n - a & a v t n i l u e E s h a & y l u l a c g i f w l l t e r f t j r i h u t h j c m ; r e b a o m a l l u m i h j z p a v o n f y l h e f t m ; j z i h u t h j c m ; r h n w p h l w m x u e n f a v o n f z d t m ; e n f a o m a l l u m i h y l u l a c g i f r s a & x l u & e l t c u l t c & b j z i h a & t m ; e n f l y l a j y n & e l t c s e l l u m a v o n f t e u b a m i f a & y l u l a c g i f j z p a o m S c a n W a t e r r s H i - F l o y l u l a c g i f r s m ; r h n z d t m ; e n f a o m t c g w l f y i f p b e r d a & s y l u l a c g i f r s m ; j z p a o m T a l f o a c g i f r s m ; x u l 3 q r l a & z d t m ; a u m i f a v o n f

**o i n & n r e f e ; c s u f r n** - p p l a y g i f v D b a & - 7000 & a e c s e l w l l v l w p a , m u c s i f t m ; a & - 15 v l w m p l a y ; a 0 & e f j z p b o n f t u , l i , i f 15 v l w m a y ; a 0 & e f 3 - r e p l u m o n f q l y g p l l / ( 3 - r e p l w l f v l w p a , m u f r s w p a , m u b a j y m i f j c i f u l y g x n l w l u l y l j z p b o n f )

**a & c l e f v h o m t c s e f r n**

7000 \_ 3 r e p l = 21000 r e p l / o l r [ l w l y l u l a c g i f w p c l w l l o m q l v l o i f 350 e m & d l l u m a y r n f

Coragem w l f v u l t a j c t a e t & a o m u b a & a y ; a o m a & w l l f ( 7 ) c l e f ? a & w l l l w p c b d w l f a & y l u l a c g i f 6 - c l e b n f o l j z p a o m a l l u m i h a & y l u l a c g i f p p l a y g i f 42 - c l e a e o n f p o l l z l p n f w y l q i f x m ; o j z i h o i f t w l u v l t y o n f r n -

350 e m & d ; y l u l a c g i f 42 - c l = 8.3 e m & d

- y l u l a c g i f w p c b l r s a & a y ; & e l l u m c s e b o n f 8.3 e m & d j z p l a y r n f

az m j y y g j z p p 0 f u l l l u n t v o i f C o r a g e m w l f a e x l l b o r s m ; t w l u f a e p 0 a o m u b a & v l t y c s u f u l l p u l e f , u f z i h j z e l c s a 0 i s y g u 8 - e m & d l u m r n f [ k t a j z x l u y g o n f a e a m i j z i h v i f v i f c s i f c s i f v l y r n q l v l o i f c e l l h e f a j c t m ; j z i h a e l b o u w l f 14 e m & d v l y E l l b o j z i h t c s e b a y g r s m ; v l a v m u f o n f [ k , l q i & y g o n f r n b l l y i f j z p a p u m r l t u , l i o m v D b a & 1 / 2 k w l w & u l w l v m r n q l v l o i f r n b l j z p b n ; E l l b o n t u l l a w e & a w m i r n f j z p b n f

**a o m u b a & a 0 i j z e l z l j c i f DRINKING WATER SUPPLY**

a & u l r b m ; p l r s m ; t m ; j z e l z l ; a y ; o n f i t v l y w l f w c g w & l l u a o m u b a & u l b m a 0 i j z e l z l ; & a v o n f p e p t m ; v l x l w l f p o l j z e l z l ; j c i f u l l a q m i & l u l y l r n - a & a y ; & m p c e f , w a t e r s t a t i o n o l l r b m ; p k w p c c s i f u v m a & m u l u i a e p 0 a o m u b a & c l w r f , b o n t e n f j z p l y g o n f v l x l t m ; j z e l c b n h a r n a o m u b a & o m j z p b o n f [ k q l v l y g o n f r n b l l y i f j z p a p u m r l a & o e l p i j c i f v l y l i e f u l l v l a v m u p b n r v l y E l l b o n h t c g r s m ; w l f ( o l r [ l w l ) a & o e l p i & m w l f t q r w e l p & d v f p u b u b r m ; o n f i t c g - a o m u b a & p b 0 a 0 i j c i f u l l t j c m ; a & v l t y c s u f r s m ; r s o b j c m ; c l x l w l f a q m i & l u f a y ; & r n j z p b n f

t u , l i a & a y ; a 0 & m w l f a o m u b a & E s h o l l a & u l l c f c m ; v l u r n q l v l o i f a & E s h y w b o u b o n h p h t e l c h u l l p e p l w u s p h t c s u b c s i a q m i & l u l r n j z p b n f v l x l u l l a u m i f p h o i l w e f a y ; & e E s h a & & & ; v l y l i e f r s m ; a e p 0 a q m i & l u l o n f i t a y : w l f a u m i f p h b u b l u y l e f v n f v l t y l y g o n f a o m u b a & j z e l z l ; & m w l f t x t y l b h z m l j y l v l y f x m ; a o m a & y l u l a c g i f r s m ; t o l j y l y g o n f & y b e t h o m ; r s m ; t a e j z i l v n f u s e f r m a & ; E s h n l h w b o n h o e l s f p h u l l l w G b a q m i & l u e n f r s m ; t w l l f o w k m ; v l y l u l l u & r n j z p l y g o n f

a & y l l ? y v y p w p l y l r s m ; u l l t j c m ; a o m a & y l r s m ; E s h c f c m ; x m ; & r n f a & a y ; a 0 a & ; p c e f r s m ; o l l S c a n W a t e r r s x l w l a y ; x m ; a o m y l r s m ; r s y l p h 2 r d j z p a v o n f a c g u f c s t i & o n h j e r r y c a n r s m ; j z p f o n f U - B A G r n o l l a & t w l u j z p l i U - C A N r n a o m u b a & t w l u j z p b n f j y i l q i f x e f o r t a & ; t z l t a e j z i l u m ; t a j c t a e t & y l y l u l t r s m ; u e m ; v n l u & l v m ; ? v l u l a v s m n b a x G v l u l e m v l y l u l l f l u & l v m ; q l b n f r s m ; u l l l u n & r n j z p l y g o n f

aomub&ay;aO&mwif rnb&aomt ajct aer&wif rql a&ay;&mae&mu Bu&Muyx def,orf  
 &rnjzpbon/ &yob&thom;trsm;u&lvnf Munvi&S fvi&fonh ñ&Elum;csufrsm;jzi h ajmq&S f;yy  
 ay;&ygrn/ ta&Bu&lonh tcsulwpcrhn aomub&x n&aomy&ponwllul aq;allumjci fES h  
 aomub&u&oe&S f;pb&x m;jci f;ponul t r&fax mi p&trsm;t qi&w&f v u&aw&v u&lemu&ef jzpbon/  
 a&wn&x m;&eft w&uf yll ponw&u&lvnf jynp&lv&v mu&pbh jzel&zl;ay;x m;&rn&jzpbon/ a&r&h  
 uv&f&i fES h "gw&jy&My&yg u a&w&f v&lv mu&u&v&f&i f;"gw&h&ern&jzply& t r&w&f t o&ljy&aeonh  
 a&y&? t t&p&h&om x n&ob&p&my&pin& Container rsm;u&lt v&lt av&smu&ly&low&f disinfect v&h&rn&jzpf  
 on/ a&u&lv&f&i f&x n&f "gw&jy&lapum yllow&Ba&Lumi f&u&ly&b&h&orsm;od&t mi f&S f;jyx m;&  
 rn/ od&m;&ef&v&bnh ta&Bu&aom tcsur&h - uv&f&i f;"gw&a&mpy&f&x n&ob&f&x m;aom a&u&ll  
 o&llw&w&eft w&uf t&usi&v&mat mi f t&cs&es&f&t r&lap mi&w&w&on/ q&lv&bn&h - tpy&ll f&w&f  
 uv&f&i f&jzi h jy&ly&f&x m;aoma&u&ll ro&lv&u&ojzi h ro&lv&? o&epi&jy&ly&f&x m;jci f r&h&om ob&mo  
 a&u&ll jye&f o&llua&oma&Lumi& a&r&sw&q i h&E&il&aoma&m\*gt&E&m, f&rs m;ES h& i&f&ll&E&il&av&on/  
 v&lv&pa, muft w&uf a&ep&O&aomub&v&lt y&csur&h - t&enf&q&ll 3v&lv&mr&S 5v&lv&mt x&d jzply&gon/

**o&la&ay;aOjzel&zl;jci f (WASHING WATER SUPPLY)**

t&x u&w&f azmjy&x m;ou&lb&ll a&ay;aOjci f&u&ll 2-y&ll f&c&jm;E&il&on/ aomub&ES h  
 aq;allum&e&ob&la& (t r&ob&ll)c&jm;jci f&jzpbon/ p&ae&mw&f (o&la&)[&ompum;t o&ll t&E&ef&rn  
 aomu&e&ES h csu&jy&kw&ef&st y t r&fax mi p&kt w&f t j&cm;ae&mrsm;w&f o&ll&ef&v&lt y&aoma&u&ll q&lv&ll  
 ygon/ a&u&lv&lt y&on&h csu&jy&kw&ef&ll&cl&ly&ef&ue&ponw&ll o&el&be&S f&S f&ES h Mun&aumi f?  
 1/2&aumi f&jz&p&ap&ef t O&wft p&m;rsm;av&on&z&w&e&es h w&plu&ll& a&oe&be&S f&use&f&ma&w&llt w&uf jzply&  
 on/

azmjy&ga&t o&ll&cs&h&om; t w&uf a&v&lt y&csu&fu&ll w&w&lu&su&cell&ef&csu&f&y&ef&rn cu&lygon/  
 t&aw&lt&bu&lt&q&lv&ll&f a&az&gaz&go&lv&av? av&on&z&w&v&aq;allumjci f&rs m;u&ll t&cs&e&le&cl&f&rs m;rsm;  
 v&ly&lu&av&jzpbon/ r&sw&om;&rn&h&rn v&lv&pa, mu&csi f&ES h r&ob&m;pk use&f&ma&t ajct&ae&aumi f&ef  
 t w&uf a&cs&ljci f&rn t v&eft a&Bu&v&av&on/ a&cs&lj&ep&onw&llt w&uf w&pa&e&v&ll&f v&lv&pa, mu&f  
 v&lt y&on&h&a&y&rm&Pr&h t&enf&q&ll 10 v&lv&m jzply&gon/

a&oe&pi&on&h v&ly&f&ef&rn t ajct&ae&Lumi h jyn&lv&lv&v mu&pbh rx&lw&E&il&bl t u&eft ow&ES h  
 jz&p&aeonh t&cg&st&w&f - aq;allum? av&on&z&w&? a&cs&lj&ef&w&llt w&uf t&n&ft&a&og&en&f&aom a&u&ll  
 jze&la&O&E&il&on/ t r&eft m;jzi h o&la&t&ae&jzi h&aem&u&sr&en&f&y&g;&rn&jzply&? "gw&ly&pin&f&rs m;aysm&O&f&rl  
 r&ll n&pn&h&f&r&e&bn&la& Chemical Pollutants rygon&la&jz&p&rn/ a&p&r&ll o&el&bern&q&lv&ll&f  
 ay&gay&rs m;sm;o&ljci f&jzi h use&f&ma&aumi f&on&f&ll&on&it&q i&w&f f&h&e&ef&jz&p&E&il&lygon/

**Coragem w&f v&ly&u&ll&ly&h -**

ajre&f&ly&ll&f&w&ll&h&om ob&mo&a& (a&ue&f&h&)&jzi&ll a&ue&w&f a&ay;aOa&;t x&t&p&cef&z&ll&um  
 o&la&jzel&zl;ay;ygon/ a&ay;aOa&;p&cef 3-ck ( 3 Water stations ) w&ll&f a&yl&u&ac&g i f& 6&cl&x m;ay;i  
 aq;allum&av&on&z&w&ef v&lt y&on&f&rs m;u&lv&nf p&pb&O&ay;x m;on/ o&ll&z&p&aom&v&nf aq;allum  
 av&on&z&w&ae&lu&on&f&rs m;u&ll (aomub&f&rs m;pb&v&lt y&on&f&t&cg) o&la&av&sm&ob&ll&u&ll&v&m;q&lv&bn&fu&lv&wmh  
 Bu&Muy&ygon/ acsmi f& (a&p&h&allumi f& Channel) x&w&ll&f& &&ll&v&m;q&lv&bn&fu&ll&Mun&h&rn&h jzpbon/

**aqmu&v&ly&a&;v&ly&f&ef&rs m;t w&uf a&ay;aOjzel&zl;jci f ( WATER SUPPLY FOR CONSTRUCTION)**

t&rf, ma&qmu&v&ly&ae&lu&on&h&ae&mrsm;w&ll&f aqmu&v&ly&q&lv&ly&f&ef&rs m;t w&uf y&ef&h&t v&ly&w&ll&f  
 a&t&ajr&muft&rs m;v&lt y&lygon/ ãi&f&a&on&f t&n&ft&a&og&en&ob&ll&E&rn&q&lv&bnh v&lt y&csur&f&ly&/  
 a&v&lv&br&E&il&on&q&lv&bn&it&csu&om t "u&jzpbon/ &h&ze&ll&g&w&f aqmu&v&ly&a&;ae&mrsm;o&ll a&u&ll  
 a&o, lum;Bu&ll tankers rsm;jzi&ay;y&llon/ a' o&cl&h&e&mw&w&f&ajray&ü &ll&zi&f&h&cm;aom u&ef&ll&ll&w&f  
 yv&y&p&wp&ll&u&Bu&ll&rs m;jzi h u&ef&u&ll a&av&h&ni&ue&f&rs m;w&ll&f r&ll&a&cl&f v&nf&aumi f? acsmi&f&a&cy&f&x n&h  
 x m;jci f&jzi&lv&nf&aumi f& a&av&h&ni&f&x m;i& &ygon/ ãi&f&a&rs m;rn&h aqmu&v&ly&a&;v&ly&f&ef&w&ll&om  
 o&ll&ef&z&pf t j&cm;rn&on&la&e&mw&ll&f&S t o&ll&rjy&ll&ow&cl&m;&rn/ a&on&f r&nb&ll&t&rst&t&pm;  
 jz&p&allumi f& or&x m;v&ll&f use&f&ma&t w&uf t&E&m, jz&p&ap&E&il&lygon/

**Coragem w&f v&ly&u&ll&ly&ll**

a&ay;a0&ef o, baqmiritt wlu f UNHCR rS tractor wppbay;xm;i aemuwfi mOWifi a&abmuqmygon/ a&&onhit cgrsm;ef h yllaqmi fay;Eil lonhit cgrsm;wfi a&uill aqmuwlyfa&; vlyfi ef;ae&mrsm;oll o, yllay;on/ vlyfi ef;pOft qilrsm; a&;q&xm;onirih aqmuwlyfa&;vlyfi ef; rsm;t wlu&a&o, flylonhit cgvifi abmuqmuil aocsmphijeyv nfaq;allumxm;rxm; aocsmat mi f llun&on/ oelpi fxm;aoma&rx nird aq;xm;jci f jzplon/ aq;allum&mwfi oelpi flydom;a&uill oll i abmuqmoelat mi flylow&eft wlu f uv&i f yll x nlygon/

**a&jywjcif;ollr[ lw&a&r&h&wmjcif; WATER SHORTAGE OR LACK OF WATER**

a&ay;a0onh pepftm;vllwfi jzplwwlonirih a&&&Eil hit ueft owES h Limited jzplon; jci f; ollr[ lwf enty;g;on; jci f; rsm; jzplon/ a&vllOr&h&wmjcif; rsm; vnt; jzplwwlygon/ p olljzpl&onirih purlyll f; qll &mrsm; allumi h jzpEil lon/ yllaqmi fa&; yll f? ylluzi fa&ylljcif; t yll f? ollr[ lwf a&oelpi lonlyfi ef; t yll f; ES h t jcm; aomt allumi f; rsm; allumi lvn f; jzpEil lon/ Oyrm - obmOa&&&mae&mwfi a&ulecrf; on; jci f; r; jzplon/ xlllaom tajctaer sm; Buil&v Gif a&&&&m ae&mrsm; ü jywawmuirnh vuPmrsm; awl&ygu t v si ft jrefa&;, baqmi &lu&ef h t a&; t Buil&qlljzplygon/

a&jywawmujcif; tull t av;xm;\*1/2lyll phit&eljcif; jzi h t v si ft jrefa&;, baqmi &lu&ef vllt ylygon/ t lrbjzi h Oipm; ay; aqmi &lu&rnririh aomu&ajzplon/ a&uill baqmi f; olavni fi oll&mwfi owlv uv&v frolloifay? tallumi f; rih a&jywlonhit cg rnrilumllumjywrnfull cell&ef; &cut&omallumi h jzplygon/

**t a&; ay: aqmi &lu&csuif; rsm;**

a&jywlon; oniuil vlxktm; o&ap&rn/ a&avni f uefsm; wfi avmavmq, f use&e onh a&rnrir&lon? aomu&vllt ycsuif rnrir&lon qllbnrsm; uill o&t mi fly&rn/ aqmuwlyfa&;? aq; allumrsm;? plulyfa&; ponwllwfi a&olljcif; uill &yfxm; &rn/ a&ay;a0&mwfi rrlwv jzpat mi p pO&rn/ rnbm; plwll f; a&ay;a0jci f; v u f& &fl yrmPnlvnh f; jzpl&ap&rn/ uefsm; wfi olavni fxm; onh obmOa&? te, fxll&ap&ef olavni fxm; onh&rsm;? qn&ay; &ef olavni fxm; onh&rsm;? qn&ay; &ef olavni fxm; onh& ponwllull aomu&t jzploll oelpi fay; &rn/ &Eil lonh a&ulylyi belpi fi? aomu&lrull x&ef; orf; cstyull lum? a&ay;a0&mwfi owES h a0jcrf; um rrlwv jzpl&ap&rn/ t jcm; a&&&Eil &mae&m (t i f; t jrp) rsm; x yll &h&rn/ vu&h&v ni fxm; aoma&rsm; aomu&oll rulehit jcm; a&&Eil baoma&mrsm; rS a&uill avni &ef pOft pm; yg/

**Coragem wll f aqmi &lu&lyull Oyrmxm; llunlygu -**

a&avni Eil lrl t ueft owES h jzplaei rsm; v&ay/ t lrlwef; avni fxm; Eil lonh yrmPrnh wp&upm? Efp&upmav mu&on jzplon/ rnbolyi jzpl&umrl aomu&p pOlx kwflyfa&; &rn/ qlv Gif at mu fygen f; twll f; wlu&csu llun Eil lygon/

- vOla& - 7000
- aomu&vllt ycsuif - vlvpa, muwlp&uf - 4 vlvvm
- a&olavni Eil lonlyrmP - 160m3 ollr[ lwf - 160000 vlvvm
- aomu&ay; Eil lrn&uaygi f; - 160000^4^7000 = 5.7 - &uf

t a&; ay: tajctaer&wll f a&ay;a0ruill vlvpa, muwlp&uif Gif 3vlvvmoll avsmay; Eil f on/ ollaomlumv wll cPomjzpl&rn/ p ollp pOv Gif a&ay; Eil lonh &uaygi f; uill 7-&uif&B-&uf txd wllay; Eil lrn jzplon/ a&jywjcif; p twll f; twmtxd jzplay; jci f; r&trih t v&elqll&h; onh t a&; ay: tajctaer& jzplf aomu&om &Eil lawmirnqllbnh taetxm; jzpl&avon/ p oll aom tajctaer&wll f ta&;, baqmi &lonh t c&eluv llumc&elull avsmics&ejref&el&ap&ef Buil&yrfi &onlen f; v r f; t m; vlljzi h vlyull llum&ygrn/

a&jywawmujcif; ES h ywouf rnbollrnyll p pOif ta&;, baqmi &lu&lrnqllbnh t llur f; zif; phit&esull rnbol&e&ma'owll a&jywlon jzpl&ap wwEil loru t jref&ha&; qll

az:xw&ygrn/ a&jywawmubh;&ef jzpElirnh taetxm;? vuPmrsm;ull ay:vlix i&n;ph  
awljri&ygu tcshtenti, fav;rlyitubrcbl ta&;, hqmi&u&rnjzplygon/

a&oeipi h&; vlyull &ef vlt yonht ajct aersm;  
( SITUATION WHERE WATER PURIFICATION IS NEEDED )

t a&;ay: t ajct aersm;ull t qiqitjcm;f jyxm;ygon/ vbm;csi f  
pmemaxmufxm;ulh&eft wlu f yll (2)wli f jyxm;ygon/ vlx v uawlaexll u&onht ajc  
t ae? &modwalamih jzponht cuft cponjzi h ufy;v su&bn/



bupllyax t pth' lu&mu fci f



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ylyi fajcmuabolon h&e&mrsm;



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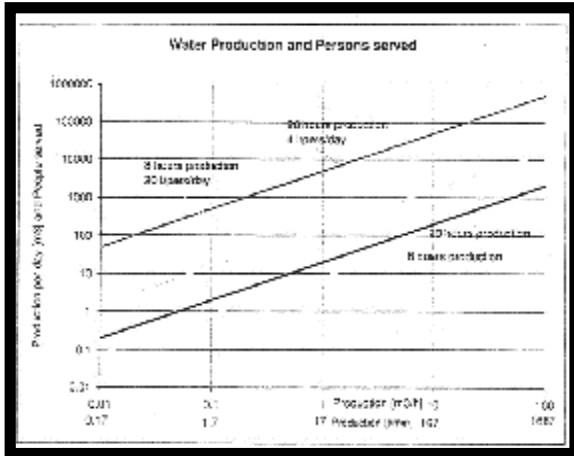


aus;v u&w&mrsm;

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ojzih o&onlpin f u&d m? puponwllvnt, ufy;jcm;em;ygon/

½ax mi lit rñt; rñt; ES h v smx m; csuft rñt; rñt; ull rñt; qx m; vsu? a&oelpi h&; t wluful at mutazmfyyg  
 t csufrsm; ull t ajcylf t ajzx kwEli fgv rñrñ/  
 wp&ux kwlvlyEln h&oelrmp ES h ay; aOEli lonh vDba&/.  
 a&oelpi h kwlvly&mwif t&nit aoeES ES hit a&t wurnoniu Oðpm; ay; rñ/  
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&ylo&ñom;? vx kt m; a&ay; aO&mü (u fym; jcm; em; aom ywDef; usi f t ajct aet rñt; rñt) wli f  
 to hcsEli &elit wli f a&aomub h rES h yw bouon hit aLumi f; t&m t csuft vult csUES h v rñ; ñE f  
 csufrsm; ull o&&ef ½ñom; &S fvi f on hit mutazmfyygZ, m; jzi h wi f yrñf jzplygon/ , i f wli f-  
 wpem&lv ði h& m3 (wpluArñvm) Eef; jzi h pplygi f&rñrñ x kwlvlyEli Lumi f? wprñepwli f x kwlvlyf  
 aomv lvvm? wpaelx kwlvlyf rlyrmP (ES ð) a&ay; aOvluEli lonh vDba&u lv n f aumi f wi f yx m;  
 on/



y(4) / / wpem&lx kwlvlyEli lonh a&yrmP  
 ES h aepOlx kwlvlyf rñmcsE f  
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av mlt& ploi f csufrsm; ull unlyg/  
 a&oelpi pufrsm; t rñt; rñt&mwif  
 ði f wli x kwlvlyEli rñrsm; rñ - 10 vlvvm (0.01m³/h)  
 rñ wpem&lv ði f 100ç000 vlvvmt x ð jzplon/  
 t csufrñ p yrmP x u f avon/

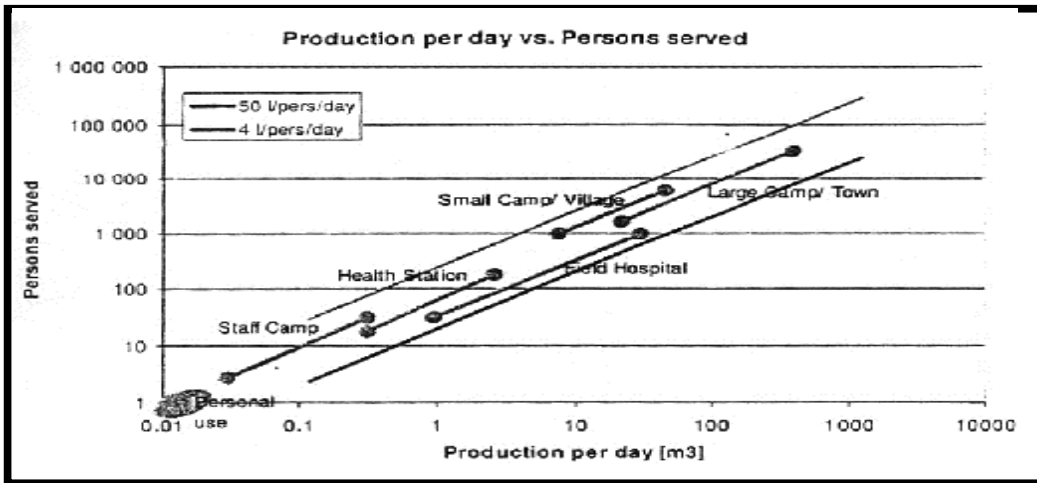
wpaelvm x kwlvlyf rñmcsE em&ñrsm; t u l t jym; jym; &ñ? a&ay; aO&rñh vDba&rñv n f  
 u f ym; ygon/ wpaeh&ay; aO&rñh vDba&t en f i, ðm&ñv ði 100ç000 av muft x ð y; &  
 on rsm; v n f &ñwlygon/

v lwpðt wli f yu wli v l t yon h a&yrmP

ukvor\*ES h urñh use f rma& t zñ (UN & WHO) wli v rñ; ñE rñt &rñ - pñcE pñE f t &  
 v lwpá, muft wli f wpaelv ði f a& 15 vlvvm v l t yon f k qk m; ygon/ o l jzpaomlv n f  
 t awli t Bu rñrsm; t&qk v ði f x t jcm; pñcubon hit ajct aerst; wli f v lwpá, mu f v ði f 4 vlvvmom  
 ay; E li ði f t aet x; u l y f a use y c ð on rsm; &ñvon/ o l aomlv n f x l u b l aom t jzprñt  
 v n f t a&ay; jzpaLumi f &S f v i f pñem; v n f x m; ygrñ/ a&yñ ^wñay; jci f jzpa jrmu h t mi f t wli f  
 qk v ði f rñon ten f v rñ ES h y jzpa p vlyful h a q mi &u &rñ/ t aLumi rñ ay; aOvlu h aom  
 a&yrmP ten f t rsm; rñ vx kt wli f a&m\*gb, jzplyñ; apEli rñ ES h e ð py pñ q u p y b o u q h h a e o m  
 allumi jzplygon/

p v up p m t ly f t a e j z i h t " l u x m ; o n r ñ o e l p i h a ( a & o e l ) u l t o h t r s m ; q h j z p l o n h  
 t z ð r s m ; \ t a j c t a e t & y & y o l l a v l v m j c i f j z p l i , i f a v l v m c s u f r s m ; w l i r ñ l i , f r s m ; & ð v l w p ð c i f \  
 a & v l t y c s u f r s m ; y g o i f y g o n / y l y Z , m ; ( 5 ) w l i v n f w p e m & l v ð i f a & 1 u A r ñ v m x k w l v l y r i u l l  
 j y x m ; o n / p y l y Z , m ; w l i f t v ç l w u a w l j r i & o n r ñ r ñ o n h a e m t & y f u @ w l i f a & o e l p i f  
 x l w a y ; E l i r i r ñ r ñ v l t y a e a l u m i f y i j z p l o n /

O y r m t m ; j z i l q l v ð i ? u ð f x & ð , m , h a q ; ½ñ Field hospital w p c k w l i f a & v l t y r i r ñ w p e m & l v ð i f  
 a & 1 u A r ñ v m r s 1 0 u A r ñ v m t x j z p l i ð i f r ñ - a q ; ½ñ D e x r f r s m ; E S h v l e m - 5 0 r s 1 0 0 t w l i f w l l  
 a & v l t y c s u f j z p a v o n /



ylyZ, m;(5)/ / p ylyZ, m;onf y(4)ult ajccht jzpl aemuctk m;avon/ v lom;csi f;pmem  
 ax mux m;i t uif n bay;&mwof x t jcm;onft ajct aerst rsm;ü jzplay: onh a&om p h Eef; rsm; u l  
 az: jyx m; y l jzplygon/

oelpi & e& b n h o b m O a& \ t & n f t a o f  
 ( RAW WATER QUALITY )

v l o m ; c s i f ; p m e m a x m u x m ; a & ; t z l t p n f r s m ; t a e j z i h v l y & a n ; a q m i & u & e f t w l u f x t j c m ;  
 o n h t a & ; a y : t a j c t a e r s m ; a y : a y g u l m o n f t c g w o f j y l y i b a y ; & e f a w d & o n h a & r h n o b m O  
 y w O e f ; u s i r & a o m a & o m j z p l o n / a i f r h n p u l z l r s m ; r s t n p f t a l u ; r s m ; E s h t j c m ; a o m  
 r s m ; j y m ; v b n h t n p f t a l u ; a y g i t p l w l l y g O i j c i f r & e k t " d y j , & a v o n / p o l q b k m ; a o m v n f  
 t j y n f t 0 r r e y g / t b , k a l u m i t q l a o m i v e c h a o m E p i r s m ; u B u d r m ; v a o m l r h B u d r s m ; E s h  
 p u r i x b e t u m ; a o m a e & m a ' o r s m ; ü y l t q l l & a o m j y o e m r s m ; j z p c h a o m a l l u m i j z p l o n /  
 r n b l y i j z p a p ? o l o y l l u n & e f t w l u r h n o b m O y w O e f ; u s i l w l & a o m a & w l i v u P m o l l & y & f  
 , i t w l u l l o e l p i b a t m i f j y l y i b e f t a & ; B u d a v o n /

- 1/ a&aemufustl jri lrm;jci f ( organic and inorganic )
- 2/ qm;"gwlygO i f l jri lrm;jci f
- 3/ rsm;jym;aom obmO"gwlyg i f rsm; jzplonh pef ( arsenic ) ? owl"gwlrsm; ( heavy metals) Es h z v l t w l u l l " g w l y g i f ( fluoride ) rsm; ygO i b e j c i t w l l j z p l y g o n /

a&oelpi b a ; v l y l u l l & m w o f t r s m ; q l l B u l a w d & o n h q l l & a n ; a o m j y o e m r s a & a e m u f u s t l  
 j r i l r m ; j c i f ( t v e b a e m u j c i f ) y i j z p l y g o n / a & o e l p i b a t m i f v l y l u l l & o n h v l y l i e f t m ; v l w o f t j c m ;  
 a o m Z D 1 / 2 y E s h a m \* g j z p a p o n h a y s m O i t y p i n f r s m ; u l l z , b x l w j c i f r j y E l l i r d a & u l l u n a t m i f t & i f  
 v l y & y g o n / o l l z p a o m a l l u m i h a p p j c i f e n t v r f t r e t r e t r h n a & o e l p i j c i f v l y l i e f r s m ; w o f  
 t a & ; B u d v a y o n / t y l l i f a ' o r s m ; w o f j r p i r s m ; r & a o m j r p a & a e m u f u s t l t w l l t w m r s m ; - N T U  
 , l e p f - 1 0 0 0 x u r s m ; a v o n / t " d y l l r h n a & u l a z g u l x o f i j r i b j c i f o n f 1 p i l w l h w m x u e n t a v  
 o n / u v l i f c h l o r i d e " g w l r x n i r d w l l a & u l k l a z g u l i j r i & o n f r h n t e n t q l l N T U , l e p f 4 0  
 p i l w l h w m & & r n /

a & w l l i q m ; " g w l y g O i f l j r i l r m ; a o m a e & m a ' o r s m ; ü a & o e l p i b a ; v l y l u l l & m w o f t q i t e n f  
 i , t u l o m v l y E l l l u o n / a j z & s f o n e n t e r h n p r i d i l y d E l a p a o m e n t j z p l o n / o s m o s i s a n d r e v e r s e  
 o s m o s i s j z p l o n / p e n t \ t u s t a u s ; Z t r h n o w l l " g w l r s m ; p h E s h t j c m ; a o m a y s m O i f y p i n f r s m ; u l l  
 j z p p O f t a w m t w o f z , & h n ; j c i f j z p l y g o n / q m ; " g w l r s m ; a o m a & u l l a y g i f c l l v n f & y g o n /  
 t a & ; a y : t a j c t a e r s m ; a y : a y g u l w w o n h a e & m a ' o r s m ; p h & f ? , i f a ' o r s m ; & d o b m O a & r s m ; w o f  
 p e f ( t m p e p ) ? Z v l t w l l u E s h t j c m ; o w l l " g w l w l r s m ; p h n y g O i f a v o n / ( a r s e n i c , f l u o r i d e a n d h e a v y  
 m e t a l s . ) a & w l l b a & m a E h y g O i f v s u & b n h a z : j y y g t r , r s m ; a l l u m i h t a & ; a y : t a j c t a e r s m ; w o f  
 x l u b l o b m O a & u l r o l l b l - a & h i & r n j z p l o n /  
t a & ; a y : t a j c t a e r s m ; w o f o e l p i l y d a & u l l t o l l y l j c i f  
 ( Use of purified water in emergency situations )

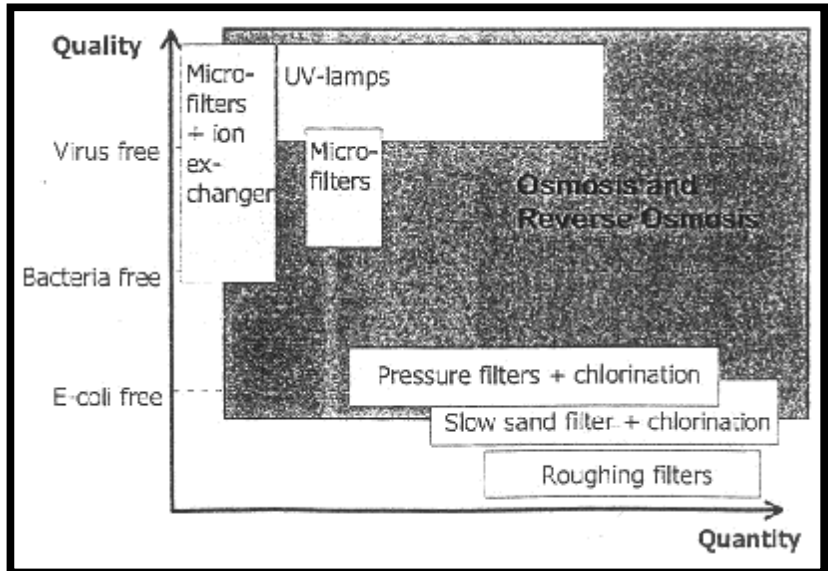
t a&ay: t ajct aersm;ES h t a&ay:aqmi &u r l t ult n bay; jci frsm; u l l O p w n i r v l y u l l & m w l f v l w l t w l u y x r O p m; a y; t a e j z i h v l y & r n r i n a & & & & j z p l y g o n / O e x r f r s m; ? u l n b y l l v s u f & h o m o r s m; E s h ' l u a & m u b l v x l t w l u y g a & & & & ; o n i t a & ; B u l q l j z p l o n / v b o m; w p a, m u f t w l u f a & v l t y o n i q & m w l f - a o m u e l o e l s f a & ; ? a q ; a l l u m a & ; E s h c s u j y k w a & ; w l t w l u f j z p l y g o n / t a & ; a y: t a j c t a e w l f a & v l t y c s u l l j z n i q n t ; & m w l f v l y b e u a q m i & l u y l r i n - a o m u a & w p r s t w n f u l o m a o m u l i & o n l i t q i l t x d j y l y i & e b u l t p m; j c i f j z p l y g o n / t v e l x t j c m; o n i t a j c t a e r s t r s m; w l ? r n b o l y i j z p a p u m r l a o m u a & E s b l a & u l l o b j c m; c l j z e l z l; E l l & e f t w l u f t a j z & n r n f j z p l y g o n /

Bulaw l o n h t a j c t a e y l r s m; p h w l w l f a o m u a & j z e l a o j c i f u l l t e n f i, b m t u e l t o w j z i h x e f c s y a y; a o i a q ; a l l u m & e a & j z e l z l; j c i f E s h c f c m; x m; & r n j z p l o n / r n b o l y i f j z p a p u m r l a z: j y c h o m t a j c t a e r s t r s m; t w l u f O e x r f r s m; u l a & m & y & t h u l y g o i f w e f a y; j c i f E s h y n m j z e l z l; j c i f w l p p O a q m i & l u b e f v l t y a y o n / a p m i l u n t a v l v m j c i f E s h B u l M u y l u s y u j c i f w l w l l v n t p e p l u s & r n j z p l i a & j z e l a o & m w l f v l t y c s u l r s m; j z p a o m a & a v i i u e l w l l u d a & y l u b a c f i w y & m w l f ( a & w l l ) E s h o l a o m a & y l u r s m; p o n t w l u l v n t E p i q w l o i f w l l & r n f j z p l o n /

a&oelpi puirsm; ES ha&oelpi ha& ES hyw bou lon u p r s m; t a j z & n j c i f  
( Water Purification Units and Treatment Solutions )

aqmi & l u b e l v l y i e f a e m u l v p q i r i n - v u l t o l j y a e o n h e n f y n m & y l r s m; r n b o l r n y l b n i u l l u n & e j z p l i ? v l o m; c s i f p m e m a x m u l x m; o n h t z l t p n t r s m; \ v l y i e f r s m; w l f t o l j y l x m; o n h a & o e l p i p u i r s m; u l v n t a v l v m l u n t & e j z p l o n / a v l v m & m u c o f u y e n t t r s t r s t & m w l f t " l u e n t 2 - r s t r i n u v l i f o n i y l o w o n t e n f E s h t j c m; e n f r s m; r i n U V l a m p u s ( c & r t v e a & m i j c n r i t ) ? O z o n e E s h i o n e x c h a n g e b a s e d t e c h n i q u e s r s m; j z p l y g o n / a & u l p p l j c i f j z i h a & m \* g y l r i n s m; z, l x l w o n h e n f y n m u l l c l w i j y c s u l r s m; w l f ] t E p l w a & p p l ) M i c r o F i l t e r s [ k a c: q b l l E e f r n j z p l y g o n / = i f a & p p l w l l y g a o m t a r s v i n m e m b r a n e & l t a y g u l r s m; r i n t v e l a o; r i n; i a & m \* g y l r i n; P a t h o g e n i c B a c t e r i a r s m; x u a o; i, l a v o n / t & G l r i n ( 0.04 Microns ) j z p l o n /

e n f y n m y l l f q l l & m w l l \ t r s m; p l o n i v l y i e f p o f t q i l t r s t r s t u l y m; p h t o l l c s v s u f t n f t a o f r w h a o m o b m O a & r s m; u l y l y i & m w l f a l l u e y a v m u a o m t a j z u l & e f v l y u l l l v s u & l u o n / v l y i e f a q m i & l u a e l u o n l t r s m; p l r i n o b m O a & w l l y g o i o n h t e, l r s m; r s Z D & l y r s m; E s h Z D & l y r [ l w o n l w l u l l z, & n; & e f t w l u a & p p l e l v l y g o n / a & p p l, l o n e n f y n m t c d l w l t x t o j z i l t E p l w a & p p l M i c r o F i l t e r s r s m; o l l u & m w l l v n t o w l t r e f t r i n; r s m; y l l o w a q; r s m; t j y i f a & m \* g j z p a p w w a o m Z D & l y r s m; u l y g z, & n; y p l y g o n / o l j z p a o m l v n t x l b l z, & n; y p E l l & e l r i n o b m O a & w l l y g o i l v s u & l b n h t j c m; a o m & l y f A l r s m; u Z D & l y r [ l w a o m y p i n f r s m; w l f w G l u y a e r l t a y: w l l v n t; r i w n b e y g o n /



yl(6)/ / t o l t r s m ; q l a o m a & o e l p i b o n h v l y i e f t q i l r s m ; w l f a & y r m P E S l a & \ t & n f t a o f q u p y j c i f u l l j y a o m y l l

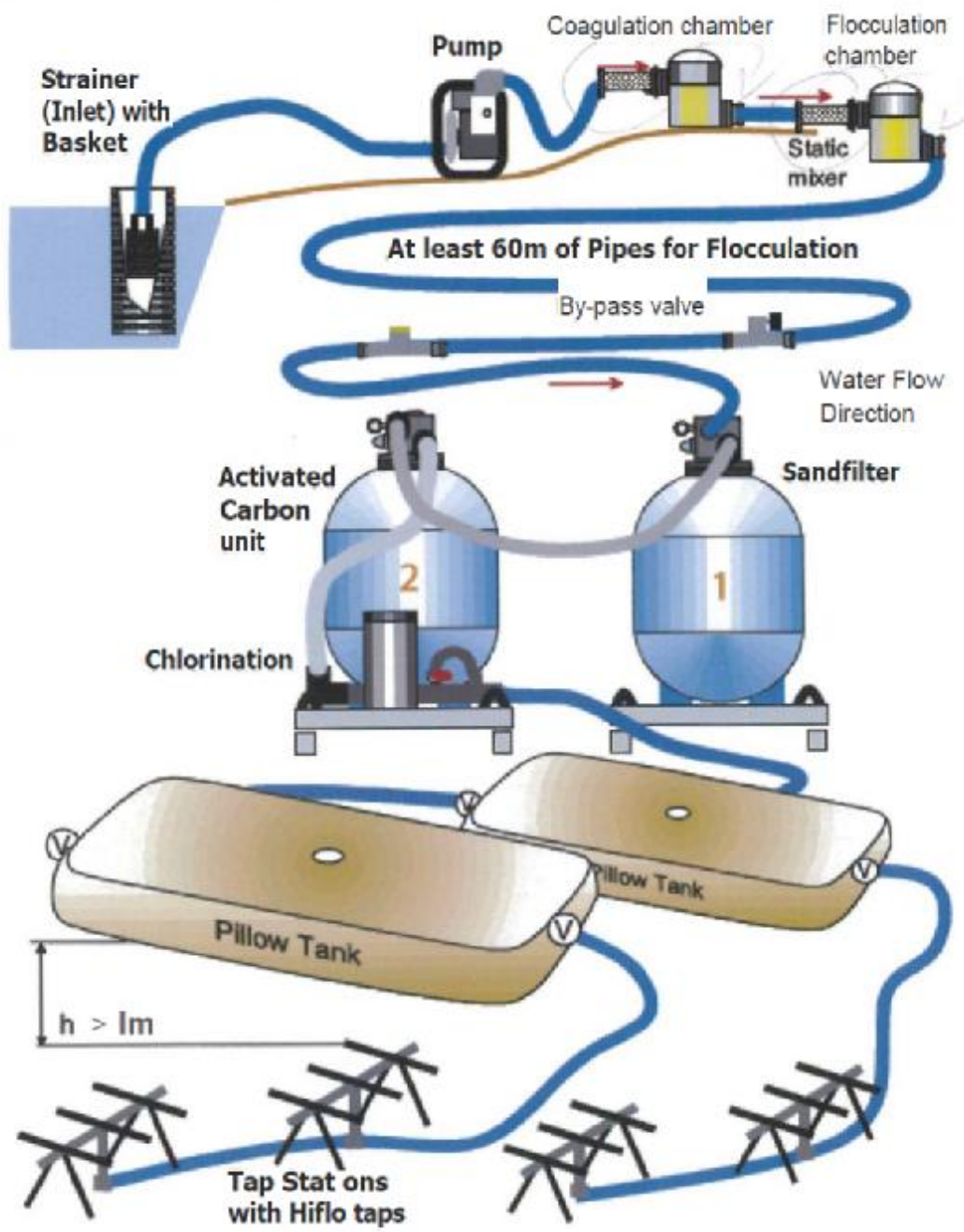
ylwl jyx m ; o n h v l y i e f ; p 0 f t q i l r s m ; r h v l o m ; c s i f p m e a x m u l x m ; a & ; t u l t n l r s m ; u l l t a & ; y : t a j c t a e r s m ; w l l v n f a u m i f ? z o l z k a & ; t u l t n l r s m ; a y ; & m w l l v n f a u m i f ? u @ t c s l t w l u f & n l & g l a z m i n e f ; o n h t c s u l r s m ; j z p l y g o n l t l r b j z i h & i f q l l l a o m t c u i t c l t l u y f t w n f r h a & p p j c i f ( F i l t r a t i o n ) j z p l o n l t b , l a l u m i l q l a o m b o b m 0 a & o n l r s m ; r h ( Z D & l y f y g z i f ? Z D & l y f u i f r j c i f ) r s m ; w l l E S l a v ; v l r s m ; j y m ; v a o m t e , f t E p l r s m ; y g v m a o m a l u m i j z p l o n l t e , f t E s p l r s m ; y g a o m a l u m i h a e m u f u s t l e f ; u l l w l l f ; w m i 15 NTU w u l r s m ; v l i f a & p p l o n h v l y i e f t v g l y i f a E s a u f o h ; r n i j z p l o n l t E p l w l a & p p j c i f ( M i c r o - F i l t r a t i o n ) o n l v n f a & p p l r s m ; y l w l q l l o j z i h t v l y i r j z p l a w m l a y / o h a & p p l r s m ; j z p l a o m S a n d - F i l t e r r s m ; r h 3 - b u l 3 - D i m e n s i o n a l M u m ; c l k m ; a o m a l u m i h a e m u f u s t l j r i l r m ; ( t v l a e m u f u s t ) a o m a & ( H i g h T u r b i d i t y W a t e r ) u l l p p E l l o n l o h a & p p l r s m ; r s o j y e f a q ; j c i f b a c k - w a s h i n g r h t a r s y g a & p p l ( M e m b r a n e F i l t e r s ) r s m ; x u l y l l x a & m u l r l a v o n l

a & m \* g y l l o w j c i f q l b n l r h r n b o n Z D & l y r s m ; u l r q l l z , l a & ; y p j c i f j z p l i o e l p i l a l u m i f ; t m r c e l l o n l t a e t x m ; j z p l o n l a & m \* g y l l o w l o n l t q i l w l f a & r h l u n l v i l a e i a e m u f u s t l t w l l t t w m t m ; j z i h ( 15 NTU ) t q i l w l l l a v o n l a b ; t E & m , l u i f & s f ; o n l a o m u l a & o e l t p p f t r e f & & b n f t x v l y l u l l l a o m t q i l r s m ; r h u v l i f j z i l l g w j y l j c i f ? t a o ; p l w l p p l x l w j c i f ? c & r f v l e f a & m i j c n l a y ; j c i f ? o l l g w l a j y m i f v l a p j c i f ? a t m u l q l l s i l l g w l a y ; j c i f w l l j z p l i a i f w l l r s t r s m ; q l l t o l l j y l a o m e n t v r f r s m ; j z p l a v o n l

, c k t q i l i t x d t u s o f 1/2 l i a z m j y & r n l q l l v l i l a & o e l p i l a m u r n l o n l p e p l u b l o n l j z p l a p a e m u f u s t l r s m ; a o m a & u l l l a l u e l a o m e n t y n m y l l f q l l l a m r s m ; E S h a y g i f p y l v s u l y l l o w j c i f y i f j z p l y g o n l

EMWAT a&oelpli pufu l v u a w l w y l q i l y l E S h t o l l j y l r s m ; (Practical Installation and use of the Emwat Unit)







ajcdf qlljzwl&rnjzplon/a&&&Eil rna&mt u lft u lft \ tajctae? a&plw/, &rnhi ae&m \ t o lft jyi ft aet x m; Characteristics ES h a&&cs, f x m; onlvlyul &rnhi ajrrsuEhoo fyif Terrain wlrn pOfpm;&rnft csur m; jzplygon/ peplusaom pulwyqilwnaqmurN tueltowf Imitations rsm;ES h qupyaeonft ajct ae 3&yirni -

a&ay;aOrba&m \ t jri b jzpeil lonba&m

a&ay;aOrba&m \ aO;Eil bor t aO;qha&m

oha&eonba&plwpuir s t rsm;qha&ES fit ent;qha&wi Eil lonba&yrmP

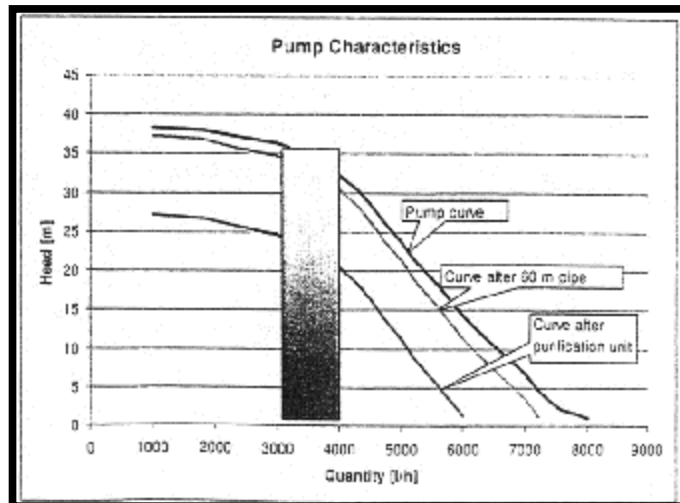
a&oelipi puwpcck 'Zil f;azm x kw x m; ylrni a&oel x kw lyirrit rsm;qha&&Eil &ejzplf a&oelipi rlvlyif ef;ulv nft pepluxap&elyhazm x m; ygon/ oha&jzpaomlv nft;&&bni obmOa&\ t &nft aof aumi fraumi ft ay:w l rwnba&eum plvba&Ueyav mu lonh tajct aet x d oelipi at mi lvly&rnjzplon/ a&ent;v li ent;rnrsm;v li v nft rsm;rn/ oha&jzplf zdt m;ay;a&ppf Pressure Filter Unit wpcjzi h a&rn rlx kw& rniqbom uellowcsuf wpcr&ha&/ p t csuul t pOlw x m;vsuf tajct aet rstr w l Unit u l t o lcsEil r n jzplon/ oha&jzpaom l u mi h a&oelipu ft w l ba&m a&&cs, &mw l i t x t o w x m;&el a&oel&&ha&w l v nft t &nft csi f jyn r p ha&mi &u&el ponwlrn t oha&jykon puu&d m rsm;rs t u s jzpx b f r t rsm;qha&&ha&p&eft w l v l t y c s u r m; jzpa v on/ a&oelipi f x kw lyay;aOa&w l ba&zdt m;pepES h yw bouf at mu fyg t ajct cl rsm;u l em;v n b a b m a y g u x m;&rnjzplygon/

(1) a&oelipi puES ba&plwpuir w l t e r f t jri l u h jcm;avav puft w l f;&Zdt m; entavav jzplon/

(2) a&oelipi puES ba&plwpuir w l aO;u h a v a&y l u rsm;t w l f;&ly w l t m; Friction qha&h r rsm;av jzplv suf - a&oelipi puN zdt m;entavav jzplon/

(3) a&plwpu lonh a&&&ma&mx u jri lav pepf ( System ) t w l f zdt m;entavav jzplon/ a&plwpuN a&plwlon bouf (Suctions Side) w l f tenfi, rbaom 'u p r l v m ( Decimetres Decimetre ) u h jcm;&Zi h zdt m;ay;onlv P w l f Pressure rsm;phusqi favon/

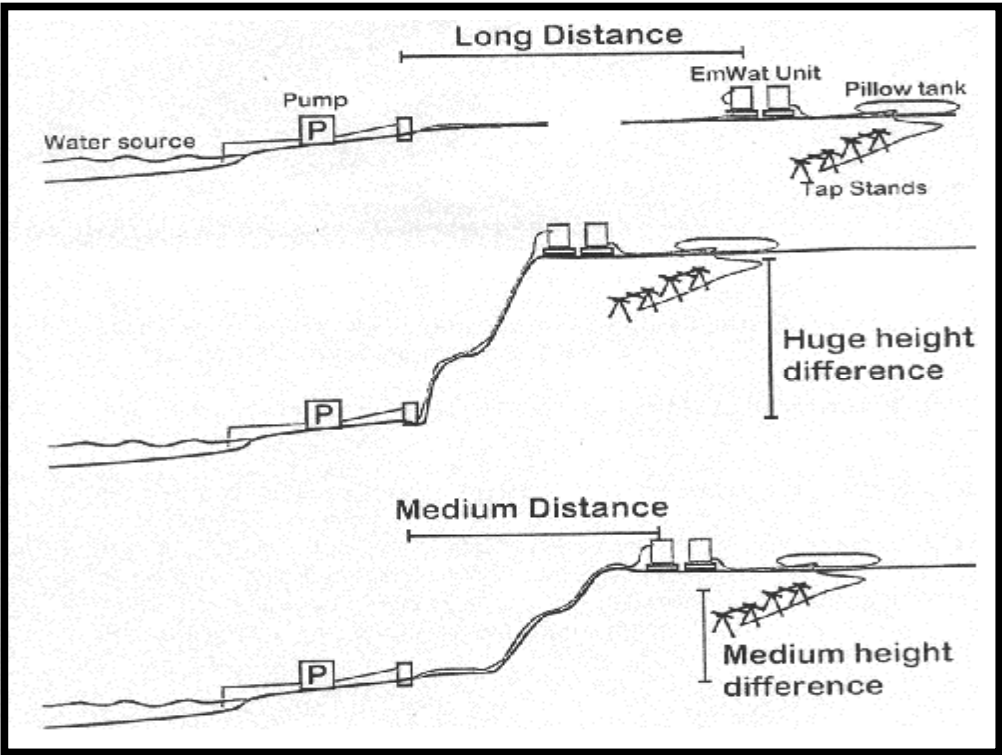
a&plw l w i &onh t p l t p O rsm;w l f zdt m;q b n r n a&u l w i bay;&onft jri h (rn r f r i l o n) ay:w l rwnba&vonf &ze&kgw l ba&w i bay;&rnft jri l u h a c g i f Head [ k t r n b a y ; x m ; o n / a&&& m a e&mw l \ t e r f t jri l u h jcm; c s u r m ; u l l z d t m ; a c g i f Pressure Head [ l a c : l u o n / w p a e& m E s h v p a e& m t v l a o ; u h v l i f a&plw l w i l o n f t c g u r n l o n b a&y l u l w l f u r q l l j z p l v m o n h y l w l t m ; Friction a l l u m i h Final Head v n f a v o n l u s m r n j z p l o n / a&y l u l w l f u&h o m y l w l t m ; Friction u l w l v m a p a o m t a l l u m i f r s m ; r n y l u l w l f &h& t v s i f Velocity y l u r s m ; a u f i q u x m ; j c i f E s h Valve r s m ; w l l a l u m i h j z p l o n / O y r m t m ; j z i h y l w l b v i f y l u l t O u s , f 63 r l v r l w m t c s i f & b j z i h y l w l t m ; qha&h r b n i 1 - r l v m v l i f t l u r f z s i f t m ; j z i h 0.7 p i f w r l w m qha&h a v o n / a i f r n 4 m 3 h j z p l o n / w p e m & l w l f a& 4 - u A r l v m y r m P & y g o n / qha& l b n r n r l v m 500 t u h t a O ; & h o m t c g w l f p a&plwpuN p l w l t m ; r n 3.5 r l v m a v s m e n f r n j z p l o n / p u l w y q i f x m ; o n h a e& m E s h O f a j y m j c i f j z p l y g o n / p a e& m w l f y l u l q u f t a u r s m ; w l u l x n b o f p O f p m ; j c i f r & y g /



yl(9) / / a&plwpuES h a&oelpi puism;ull wyqibonit cg , ifwlylurism;twG a&plwpuonit Eef;ull wplm&v Gif 4000 v lvm t x djzplaeat mif p0&rnif

a&oelpi jci;ull jzpEil bor0 taumif;qm Optimun jzplif a&ulvntf trsm;qm xlvlyEil f &eft wul aqmi &u&rnir0 terhit jri h Head Differences rsm;ull a&oelpi puN vuPm&yism; ES lvnfaumi f? a&yult wif ywft m; Friction qm&hrism;ES lvnfaumi f ñEil f;cbqí vly&yg rn/ a&oelpi pu f wyqilwnaqmurnh ae&ma&fcs, &mwif atmulazmjygg tajcclhrsm;ull x nbl f; pOf;pm;&rnjzplon/ puwyqijci frjy/r0 omreft m; jzi hat mulygt wif; cbq wul;csul &rnjzplon/

a&oelpi pu f ylvlyx m; onh design \ xlvlyEil irpif; t m; u p p l u n & e f /  
 a&plwpu x m; & e f a t & i f t j r p f ( a & & & m j r p l u e p o n ) E S h j z p E i l b o r 0 t e p q m a e & m u l l & n & e f /  
 a&plwvi jci f; t wul a&ES ha&plwpu f terhit jri lu thjcm; csul ull celr&f; Mun & & e f /  
 a&plwpu wif rnonit jri hit x & & ( r n i r 0 ) y E i l b a l u m i f ( Z , m ) r o f a u f C u r v e u l l M u n i f  
 a&oelpi pu N y l p h i z i l f t & y g & h o m a & p l w y l u l S u c t i o n H e a d \ t j r i E S h  
 a & x l v l y E i l i r p i f ; t m ; p o n l w E S i r n b u n E i l f ; x m ; a l u m i f ; M u n & r n / p t e r h i t j r i h H e a d u l l  
 a j r r s u E n o f j y i f u h j c m ; c s u l o l r [ k w i t u h t a 0 ; w p c c b a l u m i h q & h o n h y w f t m ; q m & h r l F r i c t i o n  
 L o s s p o n l w t w u l t o l j y E i l o n / t x u f y g w u l o & d x m ; r s o m  
 a & o e l p i p u f w p c l v y q i l w n a q m u & e f a e & m r & f w p c l u h & f c s , E i l f y g r n /

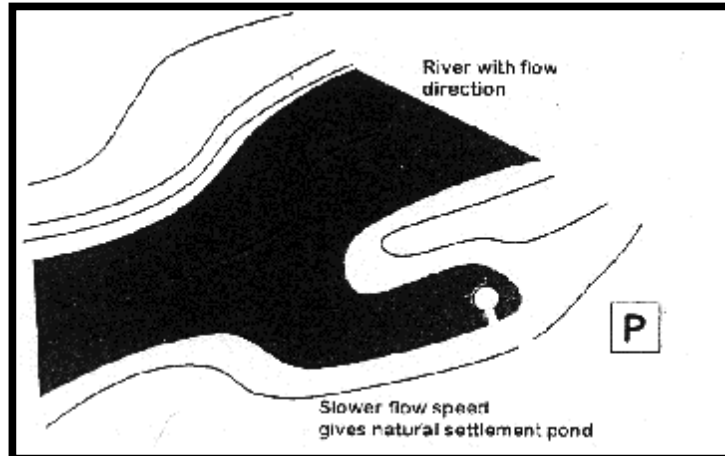


yl(10) / / a&oelpi pu f wyqif &mwif a&plwpuN tajct ae ( t a e t x m ; ) E S h a j r t e r f t j r i h t o l b o e l w l t a y ; w i f t a j c c p o f ; p m ; E i l & e f t a j c t a e 3 - & y l u l a z m j y x m ; y w

a&plwpu ul a& & & m a e m E S h w w E i l b o r 0 t e p q m x m ; E i l f r s o m v G i f a & p l w v i & m w l f p u f t i f t m ; q m & h r & b w m r n r [ k w a y / a & p l w v i b o n b u w i f 1 r l w m y l t v l y l v y & o n t q l v G i f z d t m ; E S h a w e f w i & o n b u w i f 1 0 r l w m x u l y l t v l y l v y & r n j z p l o n /

**a&&, El &eft wUf jyi qj jci f; PREPARING THE WATER INTAKE**

t aumi f; qUaom t ajc t aewpck r f jr p a l l u m i f w p a v t u n w p a e m w l f a u e l w p l u e l a w l j c i f o l l r [ l w b u r m ; v a o m a u e b u l w p l u e l a k e \ t e l w l f a u e l i , l w p c k a w l j c i f r s t j z p l y g o n / j r p E s l q u i v s u j z m x l u a e o n j r p i v u l w u l u e b u l E s l q u i v s u a b ; x l u a e o n l u e l ( v u l w u l ) r s t v n f a w l E l l o n l x l l u e l r s m ; t w l f a p l a E s o j z i h a r n i t v l t a v s m u l t e , f x l l y l o m ; j z p a e o n l ( y l t 11 )



y l t - ( 11 ) / / r v o b m o & a e o n l a u e b l r [ l w j r p i v u l w u l w l f a p l a E s a o m a l l u m i h w p a e m w l f a t e , f x l l l u m i f a w l o n l

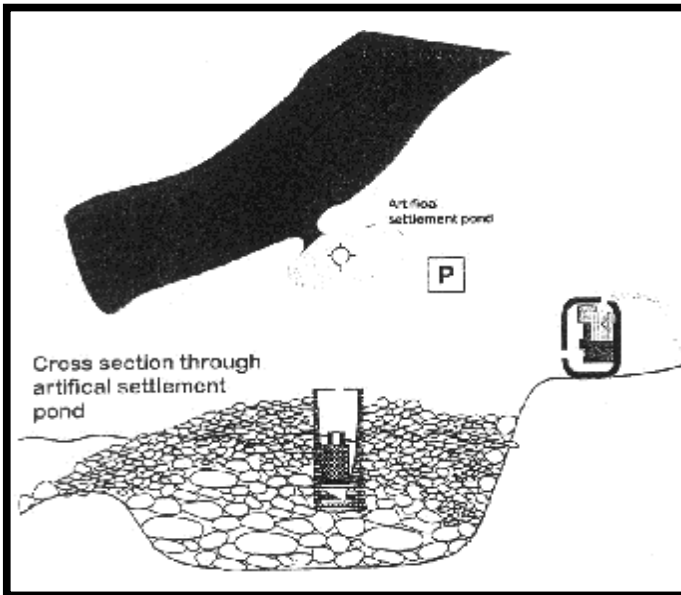
w p c g w p & l w l f a a e m u l s t r a v s m l u j c i f ( a & l u n l v m j c i f ) u l l t v g l w u j r i f a w l o n l r [ k [ l w a y / o l l m w l f a p l E l e f t e n f i , f a v s m l u s o n l q l w l f a t e , f x l l b o l i j c i f r t i j r e l r n j z p o n l

o b m o t a v t u j z p a y : o n l a u e l r s m ; u l l r a w l o n l t c g r s m ; & l w w b o n l o l j z p a o m a l l u m i l v l u z e w l , & o n l u e l ( w l , j c i f ) r s m ; u l l a t m u l a z m j y g r l r s m ; u l l t a j c d l w l r n j z p l o n l y l t ( 12 )

a & o e l p u i v n y w a e o n l t c g w l f a p l w p u l t w l f o l l x E s f x n E s h a p l o i f r l r s m ; j y m ; & r n j z p l o n l a & & f r e n f a p e f z p l o n l

a & u e l u l u s m u p p c h r s m ; E s h a u s m u l w l i , l r s m ; j z i h j z n l v l f a p l w l , l o n l C o l l e c t i o n b a s k e t z u l o l a p l E l e f r t i a E s o l i ; r n j z p l y l t e , f x l l l r s m ; v n l j z p l v m r n j z p l o n l

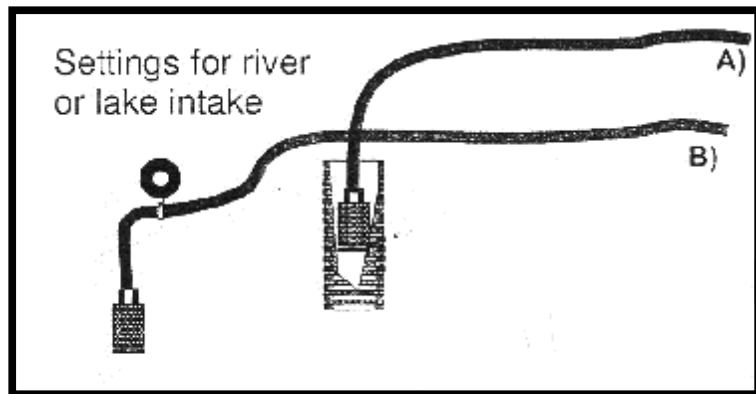
Collection basket u l l e m c s x m ; & m w l f j r p a & r s u E b i j y i f ( u e l q l w l l v n l u e a & r s u l E b i j y i ) e l j r i l v l y l o n l \* , u l r s m ; u C o l l e c t i o n b a s k e t u l l v l a p ( o l l r [ l w l ) a j c m u l a o l r o l i ; a p a t m i f a e m c s x m ; & r n l



yl-12/ / obmOr[ kwbl wTaz:  
 xm;onh uefsm;wlf a&aemufustf  
 fsm;pthenfyg;avon/ a&ueBubrsm;  
 lakes ab;&ll xif&uefi, fsm;wlf  
 tyifi, fsm;? t&Lurfm; r&Bjzif  
 a&plw&mwlf vG; iulavon/

a&&, &mwlf omreftm;jzientf 2  
 r&f&bn/ a&ppawmitf Strainer basket  
 olr[ kwf a&ajrfawmitf Swimmer Ef h  
 jzpavon/ xif wluLueX wlf  
 ajrfixm;&on/

yl-13/ /a&ppulul a&ppawmitf  
 wlf xnfxm;&ef olr[ kwf  
 a&ajrfawmitf Ef h ajrfixm;&ef  
 jzplon/



a&plwylul ( Suction Pipe )  
 a&plwylul Ef h  
 xif wlf wyqifxm;onh  
 t plwft ylf fsm;rfin  
 tenti, lom&lygon/

- (1) a&ppf Strainer
- (2) a&plwylul Suction Pipe
- (3) a&plw&elwyqifjci fsm; Coupling to Pump

a&ppf Strainer wpcwlf wpczubh;tq&sf ( non - returnable valve ) wpclygojzif a&plw  
 pulwlvubonitcgwlf yluwlf rs a&jyerxulawmay/ polla&&eojzif puEhonitcg  
 a&clif vG; loh;on/ puftopqulwlpzubh; tq&siul aocmpth pmlun&rn/  
 a&plwpuul yxrqtburf pwiEhvof tq&siulzoh xm;ay;rbm purfm; vG; iulph  
 vnywllurnjzplon/

a&plwvlonh burf wyqifxm;onh t plwft ylf fsm; tm;vluul cil bellph wifwif luylyy  
 wyqifxm;allumitf aocmap&rn/ avrchatmi lowk m;&rn/ avplw, lonit ylf jzpaom  
 Pumping Chamber xwlf avcbh; ygu puEh&ef Priming rfin t v&ebubh;rnjzplon/

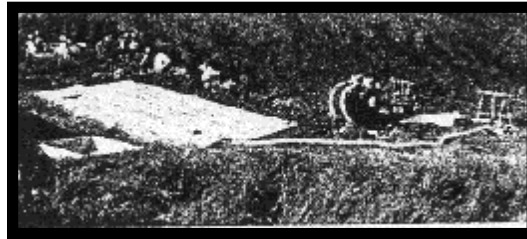
'E, puji h&wi jci f ( Pump with diesel engine)  
 a&plwpu' E, ft ifsiul vnywjci Ef lywouf vnfauimf? jyljyf x&etortjci Ef h  
 ywouf vnfauimf? aemulquwlvlf azmjyxm;onh ñ&llum;csurfm;ull aocmpth zw&lu&ef  
 jzplygon/

te, p&etwyqifjci f



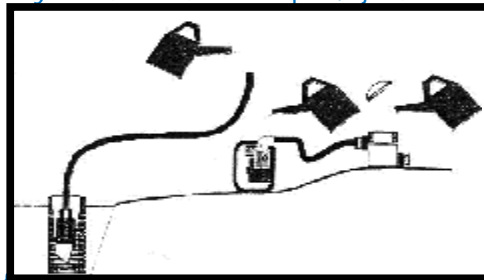
Piper's a&ppft rsvf-1 o'oi llyd' ai frsvpq i la&ppft rsvf-2 o'quDi ion/ llyd'ra&av hii f uex b' O i lavon/

y'p't-15 / awmi ft m'z&L' E' h' i' h' -  
u' h' z' t' v' t' emw m; v' l' w' o' f' awmi h' p' m' i' t' u'  
a&oel' p' i' p' u' f'  
Em Water Kit w' y' t' q' i' f' v' l' y' t' u' l' l' y' w'



a&plw' l' w' i' r' p' w' i' j' c' i' t'  
( STARTING THE PUMP PROCESS )

t' a& ; b' u' d' o' n' t' r' i' n' y' l' u' t' q' u' i' r' s' m' ; c' s' w' i' q' u' i' f' w' y' t' q' i' f' x' m' ; & m' r' s' m' ; j' z' p' a' o' m' a& p' p' a' e' & m' t' q' u' i' f' Strainer  
Connection w' o' l' v' n' t' a' u' m' i' f' ? y' l' u' b' a' y' s' m' E' s' t' q' u' i' x' m' ; o' n' t' a' e' & m' Couplings r' s' m' ; w' o' l' v' n' t' a' u' m' i' f' ?  
w' i' f' w' i' f' M' u' y' M' u' y' & & r' n' j' z' p' l' i' a& , j' c' i' t' a& p' t' r' i' x' u' j' c' i' t' v' l' o' r' & h' l' u' m' i' t' a' o' c' s' m' a' p' & r' n' /  
a&plw' l' w' i' j' c' i' t' p' w' i' b' o' n' t' c' g' w' o' f' Pump Housing E' s' h' y' l' u' r' s' m' ; t' w' o' l' t' o' l' l' a' v' p' l' w' i' j' c' i' t' r' i' t' v' e' l' y' i' f'  
c' u' t' c' h' l' u' m' i' t' a' w' o' l' l' a' v' o' n' /



a&plw' l' w' i' j' c' i' t' Pumping r' p' w' i' f' r' o' a&plw' l' w' i' l' u' f'  
E' s' h' i' a& p' l' y' p' u' f' t' y' l' l' j' z' p' a' o' m' Pump house r' s' m' ; u' l' l'  
t' & i' f' a& j' z' n' & r' n' / y' l' t' 16 u' l' l' u' n' t' y' g' / M' u' n' & r' n' i'  
r' i' n' Strainer x' l' w' o' l' l' a' o' m' w' p' z' u' y' o' f' i' t' q' u' i' & s' E' s' h'  
Pump Housing x' l' w' o' l' l' a' o' m' w' p' z' u' y' o' f' i' t' q' u' i' & s' f' w' o'  
v' l' y' & s' i' n' ; t' v' l' y' v' l' y' v' s' u' & & l' v' m' ; q' b' n' u' l' l' a' o' c' s' m' a' t' m' i' m' a' r' t' & i' n' v'

x' l' e' n' t' w' p' o' h' t' e' , j' z' p' a' o' n' t' c' e' f' Flocculation Chamber u' l' l' v' n' t' a' u' m' i' f' ? Chamber E' s' h'  
a&plw' p' u' l' l' u' m' ; & y' l' u' f' t' w' o' l' t' o' l' l' v' n' t' a' u' m' i' f' a& j' z' n' & y' g' r' n' / a' i' f' r' i' a&plw' l' w' i' j' c' i' t' j' z' p' a' j' r' m' u' h' a' p' & e' f'  
j' z' p' o' n' /

a&plw' l' w' i' j' c' i' t'  
( PUMPTING )

a&plw' p' u' l' l' t' v' s' m' ; v' l' u' f' t' c' i' l' l' t' c' e' l' x' m' ; & y' g' r' n' / o' l' l' r' o' m' w' e' b' c' g' r' l' Vibration u' p' u' t' u' l' l'  
w' e' b' c' g' v' l' y' & s' i' n' ; a' p' r' n' i' t' [ l' w' a' w' m' l' a' y' / a&plw' p' u' l' l' n' t' c' g' r' s' m' ; w' o' l' j' z' k' w' i' a' e' & m' a' & l' x' m' ; & w' w' l' o' n' /  
o' l' l' r' [ l' w' i' r' o' l' l' o' n' t' c' g' r' s' m' ; w' o' l' a' e' & m' a' & l' x' m' ; & o' n' / t' c' i' t' ? M' u' r' t' c' i' t' ? u' e' l' u' & p' o' c' l' p' o' n' j' i' t' r' & b' l'  
a' j' r' b' u' l' a' y' : w' o' l' x' m' ; & w' w' l' y' g' o' n' / o' l' l' j' z' p' i' a&plw' p' u' l' l' t' o' l' l' j' y' l' v' n' y' w' a' e' o' n' t' t' c' e' l' w' o' f' i' t'  
u' l' h' p' m' i' M' u' n' & e' v' l' y' g' o' n' /

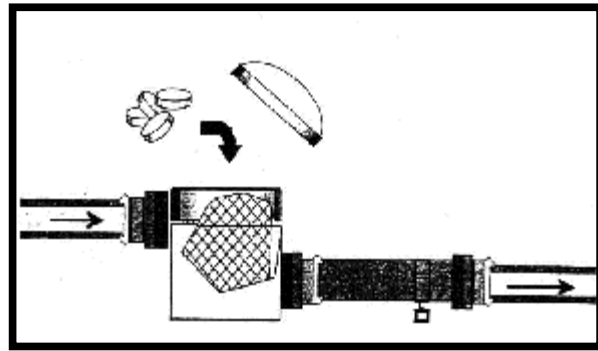
a& p' p' l' y' l' l' j' z' p' a' o' m' Filter Unit w' o' l' v' l' t' y' o' n' h' i' a& y' r' m' P' t' a' y' : w' o' l' f' t' a' j' c' c' l' i' w' l' u' c' s' u' & & f' l'  
a' y' : t' a' j' c' y' l' u' m' a&plw' p' u' l' v' n' y' w' E' l' e' f' , Speed u' l' l' a' v' o' n' t' & r' n' j' z' p' o' n' / o' l' l' a' o' m' v' n' t' ' l' z' , f' t' i' f' s' i' f'  
v' n' y' w' E' l' e' f' t' w' l' u' j' z' p' E' l' l' o' n' t' i' t' e' n' t' q' u' i' p' u' l' v' n' y' w' E' l' e' f' t' x' t' o' m' a' v' o' n' t' & r' n' j' z' p' l' y' g' o' n' / a' i' f' x' u' f'  
x' y' l' i' a' v' o' n' t' & e' r' j' z' p' l' y' g' / t' u' , l' i' a&plw' l' w' i' r' o' l' l' r' [ l' w' i' a& t' O' i' t' u' l' x' y' a' v' o' n' t' & e' v' l' a' o' ; v' o' i' f' a& p' p' l' y' l' l' f' 1  
Filter Unit - 1 w' o' l' l' a' o' m' a& O' i' y' l' u' f' t' w' o' l' t' & w' p' z' u' y' o' f' i' t' q' u' i' & s' f' u' l' l' t' e' n' t' i' , l' w' p' D' u' i' w' p' l' y' s' u' b' e' l'  
y' l' v' a' y' ; i' & y' g' o' n' / a& p' p' l' y' l' l' f' Filter Units w' l' l' x' d' y' l' l' t' t' q' u' i' & s' f' Top - Valves r' s' m' ; u' l' l' t' o' l' l' c' s' e' f'  
t' w' l' u' r' i' n' a& p' u' i' r' s' m' ; u' l' l' j' z' w' o' e' f' o' h' ; o' n' t' a& u' l' l' & y' l' y' p' & e' f' a&plw' p' u' l' l' y' l' w' & r' n' / ( o' l' l' r' [ l' w' i' )  
t' q' u' i' & s' f' w' o' l' l' a' o' m' a& x' l' u' a' y' g' u' i' r' a' e' i' a& x' l' u' a' p' E' l' l' y' g' o' n' /

t' e' , j' z' p' a' p' & e' h' a' q' ; x' n' j' c' i' t' ( FLOCCULATION )

t' e' , f' t' j' z' p' o' l' l' a' j' y' m' i' f' v' a' p' o' n' t' a' t' Flocculation Chambers r' s' m' ; u' l' l' a&plw' p' u' E' s' h' a& p' p' l' y' l' l' f' Filter Unit  
w' l' l' t' l' u' m' ; z' i' t' m' ; a' y' ; o' n' t' i' v' l' l' f' w' o' l' l' y' w' y' t' q' i' f' a' v' & y' g' o' n' / r' e' l' u' e' p' e' l' u' s' o' n' t' i' t' e' , f'  
t' j' z' p' o' l' l' a' j' y' m' i' f' j' c' i' t' t' q' i' j' z' p' a' j' r' m' u' & e' f' t' w' l' u' r' i' n' - t' e' , j' z' p' a' q' ; t' a' u' m' i' t' q' u' i' t' p' m' ; r' s' m' ; Flocculent  
Medium t' r' e' t' r' u' l' l' p' r' f' o' y' z' e' y' e' f' Test Tube w' o' l' b' b' m' O' a' & E' s' h' a& m' i' p' r' f' & r' n' j' z' p' o' n' /  
a' q' ; c' h' a' q' ; t' e' n' t' i' , j' c' p' l' , l' i' o' b' m' O' a' & E' s' h' a& m' l' y' d' p' r' f' o' y' & e' j' z' p' o' n' / r' n' t' ( r' e' f' r' e' t' t' e' , f' j' z' p' o' h' ;  
o' n' t' e' , f' r' s' m' ; p' l' o' h' ; i' a& E' s' h' u' b' h' ; u' a& M' u' n' t' u' j' r' i' v' m' o' n' i' p' a' o' m' a' j' y' m' i' f' v' b' h' ; y' l' l' r' s' m' ; u' l' l' z' e' l' y' e' x' l'  
w' o' l' r' s' u' f' r' i' p' r' f' o' y' l' u' n' t' u' m' r' n' o' n' t' i' t' a' u' m' i' t' q' u' i' a' q' ; c' u' l' l' a& & c' s' , & r' n' i' u' l' l' q' u' i' j' z' w' i' c' s' u' t' s' & r' i' n'  
j' z' p' o' n' /



yl - 17 / tenf;plaq;chsm;ull Chamber  
 xblx nlyg/ rnbnaq;chsrnrDx nh  
 rnbqbnf rnzelyeES prf;oybsuirs; tay:  
 wlv nfaumi f? &&homobm0a&ay:wlf  
 vnfaumif rwnlygonf



trsm;t m; jzi h  
 te, jzpbp&ex n&v&bnrtn aq;cl 3 vlrS  
 5 vljzponf yll - 17 ull Lunlyg/  
 oll&mwll baq;chsrnrDx a&aemulustull rnrDx d&mu&alumif Lun&elrtn a&ppf Filtration  
 lyDaomt cgrtn jzponf aq;cl 3 vlrES h pwi jci rtn taumif qljzplygonf rnbnt h  
 aq;cl rdt tpm; oll&alumif vnf Lun&ygrn/ a&ppjci f Filtration lyDofn;aomvnf a&u  
 aemulusteaom;onqvlvif a&t wlvllf x n&ebllr [ lw aq;cl rdt tpm;ajymi f i x n&ef  
 jzplygonf a&byll f&uirs;wlf prf;oyfaw&f qljzwxm;aom aq;cl rdt tpm;ES h ta&t wlv  
 rsm;ull rsvlom; i aemulust wlf fi faz:jrlvmt wlf owES laqmi &u&awmtrnjzponf oll&om  
 a&&shwlf a&oellpi jci f vlyi efu aq;yll x nrjci f Overconsumption rdt ull a&ni v Ell fawmtrn f  
 jzponf

trsm;t m; jzi haq;At; x wlf te, plaq;cl Flocculent Tablets 4 rdygav&bnf te, pjci f  
 rtn jzntf nS faom jzpbp0bmjzponf q&vsmoi jr wlonhplent Optimal Flocculation ull jzpb&mi f  
 c&elq vlyull &rnjzplygonf tvlyjzpb&elrtn &xm;onlobm0a&\ te, ix ll yll trdt rdt ay:wlf  
 rlvnfv su&bnf te, plaq;cb&fcs, &mwll tr&ft uejzpb&eft wlv rna& aemulust wlf wlv  
 onh zelyef Test Tube ull oll&rnjzponf zelyewl obm0a&x nli aq;cl vprst (yx rtrdt  
 tpm;) ull tenf i, zli x nvlulyg/ x laemuzelyeull vlycg i tenf pb&h; yll Lunlyg/ t jcm;  
 trdt tpm; aq;cl vprst pES h p ubll tvnhusquv ulf prf;oyllunlum te, pjci f ull t jrelq ll  
 jzpb&pi a&Munb&h;aponh aq;cl rdt tpm;ull oll&rnjzplygonf at mulygZ, m;wlf &&x m;  
 aomobm0a&\ vu& yirs; tay:rwnli rnbnaq;cb& jci f onf taumif qljzpb&alumif  
 vrf n&ent jyx m; ygonf

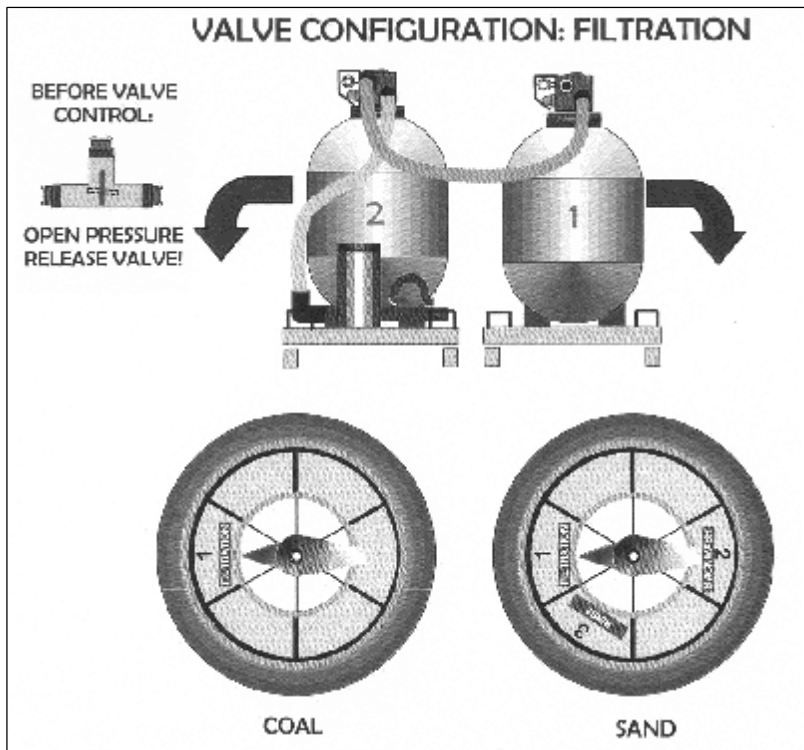
oll&rn h aq;cl rdt tpm;	&&bnobm0a&\ toft jyi v u P m rsm;	aq;cl xlyllrl
OX 6-13 2A	&lap; ygaom? &DE prsm; aoma&rtrsm; jzpli tyll fa' orsm; &jr prsm; uelrsm; wlf faw&aom t Oga&mi ? v& r ffa&mi rsm; &bnobm0a&rsm; aq; t mebi rtn Anionic Polymer with negative charges	aq;cl 12-cl ygaom usn fawmuf At; Tube rsm;
OX 6-13 IC	ZDypint Organic Material rsm; ygaoma&/ tyift &u&aq& rsm; ygaeon&a&/ aq; t mebi rtn Cationic Polymer With Positive Charges	aq;cl 12-cl ygaom usn fawmuf At; Tube rsm;
OX 6-13-SA	&lap; ygaom? &DE prsm; ygaoma&/ oll&rnbaq; rtn tvr&emqmv zlvES h jykvlyx m; aom pks& rdt e, plaq; jzponf	aq;cl -9cl ygaom usn fawmuf At; Tube rsm;
OX 6-13 SF	&lap; ygaom ? &DE prsm; ygaoma&/ oll&rnbaq; rtn oll&mv zlv Iron Sulphate ES h jykvlyx m; aom pks& rdt e, plaq; jzponf	aq;cl 16 cl ygaom usn fawmuf At; Tube rsm;

te, plaq;cbnf te, pcef Flocculation Chamber wlf a&ES fawlonft cg ylvwlv mi  
 tenf rsm; ull ypcaplyb aemulustom jznlnS f p&haysmlysub&h; onf

a&wł fyg&bnł te, frsm; nrłrsm;jym;on/ rnbłobm0&bnłwłt ay:włf rłwnf  
 í aq;chnrłwłt yonıll o&rnjzpon/ a&\ aemufsrłt aeji łt ajct aerqłvđi bobm0  
 a&- 100 uArłwmılyjyı bell&f&erđn aq;cbłłczi łv łv muayrn/ rnbłyi jzpaumrl  
 te, jzpaıjci f; jzplysrłt&vm' lıllm; oi łt aeji łt yłrđyi pplunłe&rnjzpon/ aq;ct a&  
 t włft en; qłt ołjył&i f;ES łt taumi f; qłt ajct aeıjzpaırmıat mi f zelwđ&rnjzpon/  
 rolłbıuseaeonłaq;chsm;uđ aq;usnławmuAł; Tube rsm;włf jyeıxnłi ajcmıbaolıom  
 ae&mwł łx m;&rn/ aq;chsm;uđ błk łł f;ES łt vđOrqupył rxđwłap&ex m;&ygrn/

ppłx łwjci f  
 ( FILTRATION )

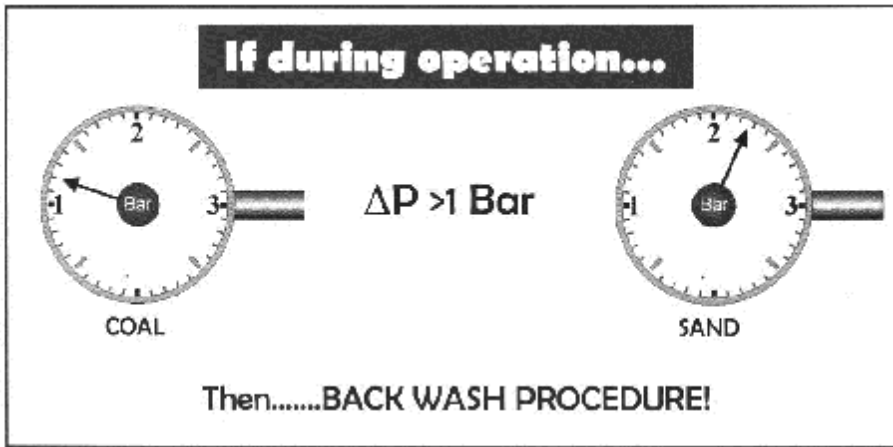
ył (18) wł ławđ&onıđn te, ppbnłt cłwłf tqıłqiđđom tqłł&f Valve rsm;\  
 taet x m; Positions rsm;uđ włđ&rnjzpon/ tqłł&f rsm;uđ łyđ&n;nrjyłrđ a&pđaeonıll t&i f  
 &yłpıvıll&ygrn/ arıwmv nıaeonıll &yłpEł fygon/ (olr[ łwł ) a&rsm; Filter Unit x błł  
 rıi łv r f;vđ ab;burđx łwypıvıllEł fygon/



ył 18/ /  
 a&ppıep0ft awm  
 t wł f; tqłł&f rsm;\  
 taet x m;

ppłx łwıep0f  
 t awm t wł f; Unit  
 uđ pımi unłe&rn/  
 x łt jyi f  
 a&pđaeıvıll n; x łt  
 ay; &ygrn/ Unit  
 uđ &jzwpđaeonıł

a&yrmPonı puft wıubwrsvıx m; onıx uıyłı rplđqi f ap&yğ/  
 x łt jyi pđqi f v nıy wıaeonıı pepłt wł f; &đıtt m; Pressure onı 3 bars x uıryłı &yğ/  
 zıtt m; av Onıay; &eft wııf pıepłt wı f; olıt Oı łv r f; allımi f; jzpaom Inlet wplcłwłf tqłł&f wplcł&yğ  
 on/ owırvzıtt m; x uıyłıđn; vđi f tqłł&f jyđı bđn; vđı r n jzpygon/



yl-19/ /  
 oES h rbaog coal  
 a&ppfsm;Mum;wlf  
 &homzdt m;  
 u h jcm;csuf

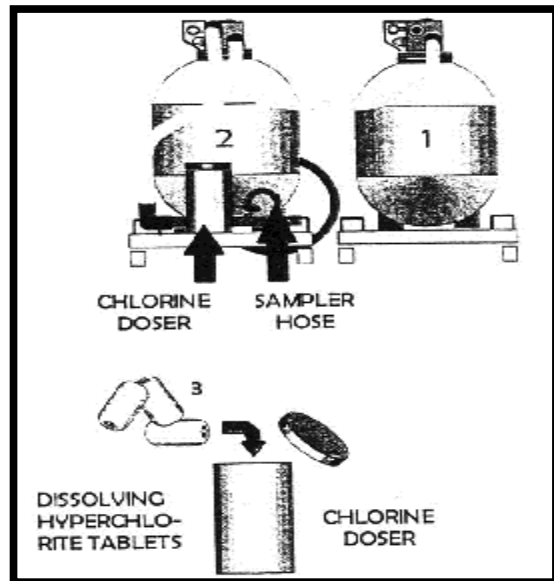
ppx lwaeonh  
 Filtration Process  
 t c&bwlf (

o&a&ppbWoi fonh t Oi layguif ) &zt m;ES h (coal filter oWoi fonh t Oi laygu)  
 &zt m;wlf u h jcm;csuf h 1-bar a usmfv Gif jyelv naq;allumjci f back washing vly&rn/

uv&i f jzi jylji jci f  
 (CHLORINATION)

a&oelpi b&;ES h jzelljz; a&;vlyi efpepat mi jri &eft wulf ta&;BuDonrhn uv&i f x n jci f  
 tqi lyi jzplygon/ a&onluv&i f elx lubev Gif rbutuMuojzi h e\* Rft avlit x rsm; t wlf yi f  
 roelpi &ao; aomusef rma&;ES h t n h wlon h&rsm; u bquif o h Murn jzpon/

yl-20/ / uv&i f A; rsm; ES h uv&i f  
 aq; chsm; x n h yll



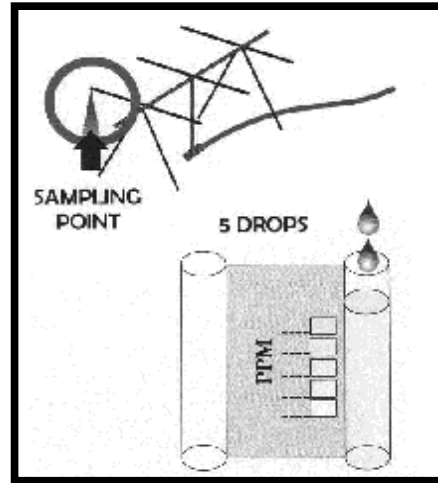
yl-20 u llunlv Gif aq; c x n & rnh dosage unit x bll aq; cl 3-cl x n & ygrn/ zdt m; Pressure  
 & h eonh t cgrsm; wlf rnbont cgr dosage unit u ll rzl hygES h a&wlf uv&i f t m; jyi f  
 p h ygaev Gif ta& jym; ES h t x; ojzi lrsu v h rsm; t wulf t E&m, & ygon/ wpph v p c rawnlv q  
 jzplygu rsu p l z Gif t v s i f t jre b&rsm; rsm; ES h aq; allumumq & m OeES h t jre l q u b G & ygrn/

aq; cl 3cl dosage unit x wlf x n h yll Gif z h u ll Muya t mi jyelv h rsm a&ppjci f  
 Filtration tqi l u l aumi f p h pwi E h l r n jzpon/ aq; c x n l o n h t c e f jz p a o m dosage unit wlf

tq&S full tr&w -4 ae&m Position - 4 w&lx m; r&om ñ&fy indicate v&ly&x m; aom uv&li&fygOifrl jyi&t m; jz&lonh 3-5 ppm (mg/L) u&rn&njz&pon/

uv&li&fygOifrl "gw&ay; x m; aom a&on&ajymif v&jcif&jz&pay: &eft w&uf ten&tq&lem&Duf&celv&ll on/ em&Duf&ausm&lo&th; on&it&cg a&w&ll&ul&rs a&p&lo&qif&apum a&y&ll&u&ac&gif&rs a&, li uv&li&fygOifrl u&ll&pp&ll&un&rn&njz&pon/

y&ll-21/ / uv&li&fygOifrl v&uf&use&f&ym&P&ull a&er&em, li pp&aq; w&ll&f&w&my&ll



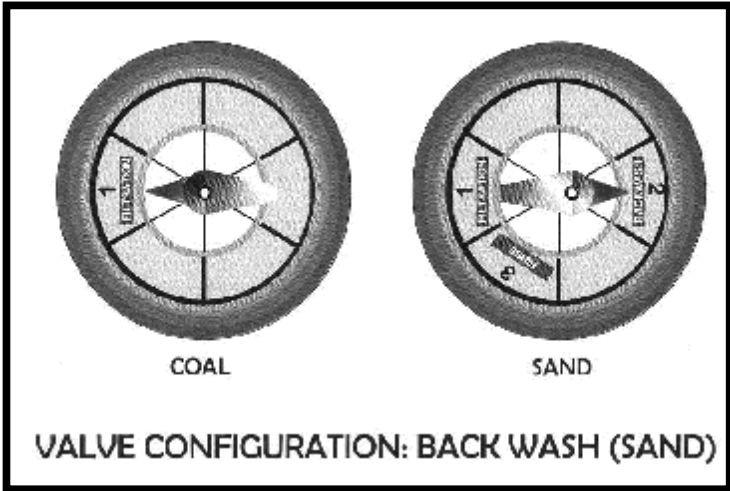
a&, b&rs m; a&w&ll&ul&rs x&ul&f&go&th; i& n&ep&-30 a&usm&ll&um&ly&z&pi a&om&v&n&t a&o, y&ll&rs m; x&w&ll&f qu&iv&ul&i y&ll&ow&eft w&uf t&ra&m&ub&on&ft x&i uv&li&fygOifrl v&uf use&rs m; &Beo&i&av&on/ o&ll&z&pi a&om&all&um&i h& oi&ft&ae&j&zi&lu&v&li&fygOifrl v&uf use&f r&n&tr&Q&bn&u&ll Colour Comp&ar&tor j&zi&h r&e&f&e&w&ll&f, u&ll&un&rn&njz&py&gon/ y&ll&ow&eft w&uf use&f Free residential Chlorine on&f 0.2 ES&h 0.5 ppm u&ll&um; w&ll& B&bi&av&on/ a&i&f, r&na&w&pv&ll&w&w&ll&f &Bea&om milligram jz&pon/ y&ll-21 u&ll&un&ly&g/

pp&lx m; l&y&ll&ba&oma&w&ll&f uv&li&fygOifrl u&ll&ow&eft w&ll&f x&n&e&a&om&v&n&t y&ll&ow&eft w&uf use&Be a&om&aysm&O&i&ly&o&om; uv&li&fygOifrl Free residual chlorine y&rm&P&ten&t&rs m; r&um; t&y&ll&e&ay: w&ll&f v&n&fa&umi&f? O&b&m&O&a&w&ll&fyg&B&on&h&a&m\*gy&ll&t&y&ll&t&O&i&f ZD&yl Organic Material Including Bacteria w&ll&t&ay: w&ll&f r&wn&iv&su&B&bn/

a&ay; a&O&mae&m a&y&ll&u&ac&gif&rs m; &B&m ae&m&w&ll&f a&x&w&ll&fygOifrl on&ft y&ll&ow&eft w&uf use&Be a&om&aysm&O&i&ly&o&om; uv&li&fygOifrl Free residual chlorine content

j&y&ll&v&n&aq; a&ll&um&j&ci&f (BACK WASHING AND RINSING) a&p&pp&f Filter r&sm; u&ll&um; w&ll&f z&dt&m; on&i 1 bar x&u&y&ll&f u&th&j&cm; v&ll&f (o&ll&r[&ll&w&ll&f ) a&on&i a&p&pp&f r&sm; u&ll&z&w&au&sm&ly&o&on&w&ll&at&mi&f a&em&u&be&y&gu o&h&a&p&pi&tr&sw&ll&f (1) Sand Filter - 1 u&ll&j&y&ll&v&n&aq; a&ll&um&rn&njz&pon/ y&ll-22 u&ll&un&ly&g/ j&y&ll&v&n&aq; a&ll&um&j&ci&f w&ll&f t&v&ly&f 2 c&ll&g& on/ j&y&ll&v&n&aq; a&ll&um&j&ci&f

a&ppf Filter  
t m; aq; allumjci f; wllzpb n/



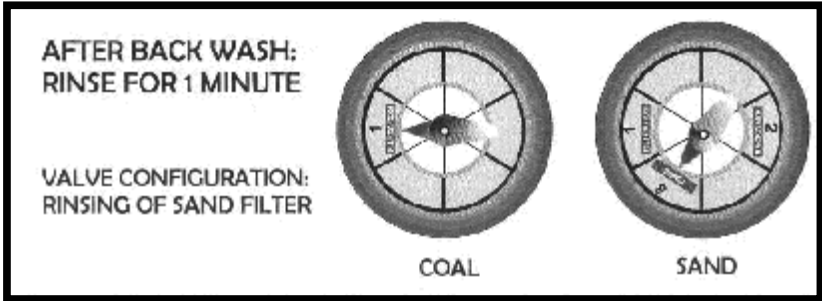
y#-22 / /  
ob&ppf Sand Filter ull jyelv n/ aq; allum&mwll f t qll&s f rsm; ull x&ef; &rn h t aet x m;

jyelv n&aq; allumjci f; ull 5  
r&epv ly&rn/ ull  
oll r [ l w/ CONTROL WINDOW

wll b&munv m  
onft x daq; allum&ygrn/

jyelv n&aq; allum&eft wll r h a&p&dq i f r l u&yq ll f ap i ob&ppf Sand Filter wll b&om t q i l q i l t q ll&s f Multistage Valve ull t q i h -2 Position -2 ae&mwll f x m; &rn/ x ll aem u b&ull p w i l p d ap u m a&ppf Filter ull z w a u s m ap&rn/ a i f t j y i t q ll&s f a e m u z u l b&x l u b y g u f Outlet r s v n f; a&x l u b ap&rn/ p j z p p 0 u ll Control Window n r s j r i b&a o m a&mun b o n f t x d v ly&rn/ a&oel p i p u l x m; &ll m a t m u c b j r u ll aq; allum o n b&w ll a l u m i h r j y l y s u b p&eft w ll f p l u a o m a&rsm; ull r v u w n f; u y l u j z i l t a 0; o ll o f i p d x l u b ap&rn/ jyelv n&aq; allumjci f; Back Wash v ly l y b i Control Window wll j r i b&on b&mun b o n f; l y b q l l v i f a&p d a e j c i f; u ll &y l y p l u&rn j z p o n / ob&ppf Sand Filter wll b&on f t q ll&s f Valve ull t r s w l -3 Position -3 wll f Rinsing v ly l aq; allum&ef x m; v l u&ygrn/

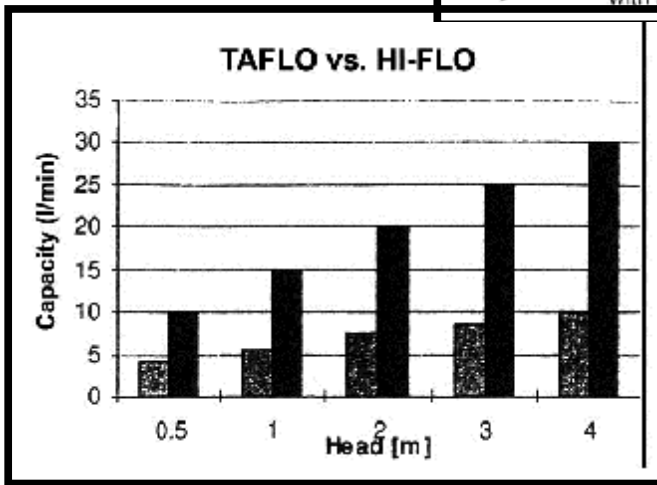
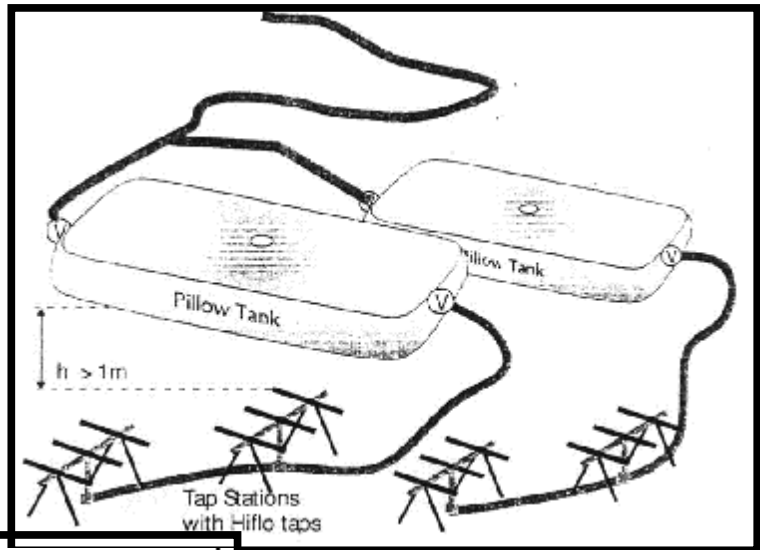
y#-23 / / ob&ppf Sand Filter ull aq; allum&ef t w ll u f t q ll&s f x m; y ll



a&ppf Filter ull aq; allum&eft w ll f 1 n&ep c e l l a&j z w b o n f; a p j c i f j z i h Filter o e l b o n f; l y b o l r s m; v n f o e l p i b o n f; r n j z p l y g o n / p t q i l y b o n f; a o m t c g p w p l w u s a&pp&eft w ll f Filter Unit t a e j z i h t o i l t a e t x m; w ll f j y e l v n b&mu b o n f; l y b j z p o n / v u l a w l a&ay; a 0&mwll f w y l q i f r r s m; p l p 0 l y ll ( PRACTICAL SET UP OF A WATER DISTRIBUTION )

y# -24 wll b&u ll b&ll&ll&s f&s f e n f; E s h x d&mu p h n b l l z e l l a 0 e ll b a l u m i f j y x m; y g o n f a&av n i f x m; o n h P i l l o w T a n k r s m; u ll t j y m; v l u c s x m; a o m a l u m i h v l y b n f; j c i f? a&ll o n f; j c i f r s m; r j z p e ll l y g / a&y ll b a c g i f; a&w ll f r s m; u ll t e r h t j r i l c h ( j r i h ) i a e&m c s x m; r o m v u f z d t m; a u m i f v s u b a p d a v m a u m i f r n j z p o n / y ll b a c g i f r s m; w ll z d t m; r s m; a v a&o, l y l r s m; j r e f j r e j y n b o n f; a v j z p l r n / o l l r o m w p a e l l a&ay; e ll b o n f; D b a& y l r s m; r n j z p l y g o n /

yl-24 / a&t/dyaysmbuDrsm; Pillow tanks ES h a&yLu&cgi f&sm; t&rt jri h u&1-r&vm&h (jr&f) x&m; jci f&zi ha&ch , &&Hjre&q&e&Mumi f jyx&m;yM



yl-25 / Hi - Flo w&lyf a&yLu&cgi f&sm; r&sd&t m; u&h&jcm; r&rt v&Lu&f a&w&Lu&yl&f&sm; u&ll bar - chart ES h jyx&m; jci f&jzpy&gon/ a&av&ni lu&e&ES h a&yLu&cgi f&w&lt&Mum; w&lf 1-r&lv&mr&0 z&t&m; u&h&jcm; y&gu o&i&on&f 1-r&ep&v&G&i a& 15-v&lv&m&&r&n&jz&pon/ &i&fa&y&rm&Pr&in v&lw&pa, mu&lw&pbu&rt o, E&ll&a&oma&jz&py&gon/

a&plw&pu&arm&lv&m ar&mi f&ES jci f&ES h j&y&ly&i f&x&e&f&ort&jci f

( PRACTICAL OPERATION AND MAINTENANCE OF THE MOTOR PUMP )

( t&ao; p&lv&it& csu&lt v&u&rs&m; u&ll ar&mi&lv&m x&lv&lv&ly&a&mi&f&son v&u&pp&mt&ly&u&lv&nt& zw&llun&e&f&jz&py&gon/ )

a&plw&pu&arm&lv&m v&n&ly&w&arm&i f&ES jci f&ES h j&y&ly&i f&x&e&f&ort&jci f&w&ll&w&lf t "lu&t&csu&lt&sm; r&in at&mu&ly&gt&w&ll f&jz&py&gon/

ar&mi&lv&mr&E&tr&q&&f&&tt&lr&mun&&y&gr&n/ q&&f&&lu&h&elp&0&pp&a&q;&y&gr&n/

av&mi&pm&q&&f&&lu&lv&nt& pp&llun&&y&gr&n/

'E, a&plw&pu&u&ll a&oc&mp&ha&e&mc&sf& c&il&cl&lr&mp&pl&lr&h& wy&qi&f&x&m;&r&n/ o&ll&ri&om& w&eb&gr&l Vibration ES h v&Lu&lf r&v&ly&bl v&n&ly&w&lv&tr&n&jz&pon/

y&Lu&f&sm; q&ub&g& wy&qi&f&w&w&lf&c&il&lr&f& v&lv&e&r&n/ pu&E&ll&w&w&lf&t&qi&h&j&y&ac&sm&ar&D&l

( Properly Primed ) jz&p&y&gr&n/

'E, f&t&i&f&si&fu&ll&pw&il&f& E&lon&h&t&cs&tr&p&f& t&lr&ap&mi&lv&n&e&&r&n/ pu&lv&n&ly&w&ae&oi

t&p&0&bj&zi& pu&bl&u&le&m; ax&mi&lv&n&e&&r&n/ t&u, f&rt&oll&v&pp&lv&pv&ck& aj&y&mi&f&ot&h; y&gu o&ll&r [ lv&f x&t&j&cm; on&lt& o&ll&tr&Mum;&v&G&i f& pu&u&ll& csu&lt&si&f&y&f&yp&v&Lu&lf& pp&a&q;&r&n/ v&u&pp&mt&ly&u&lv&nt& j&y&e&f& zw&llun&&y&gr&n/ x&t&j&cm; p&h&t& o&h&j&y&mi&f&v&su&ES& pu&u&ll

qu&lv&u&arm&i f&ES v&n&ly&w&ap&jci f&v&ll&0&r&v&ly&&y&g/

a&puylf ( Filter Unit ) ulwyleftwultqibib&ef jylqixm;ciit ortqntxm;  
jci ES h&shroibx m; jci w&Elywoubnfrsm;  
( PREPARING THE FILTER UNIT FOR PREPAREDNESS STORAGE AND NON-USE IN LONGER  
INTERVALS )

a&ppulroibx m; onh umvwav ( u w l f a & p p & b l ) ( Filter Sand ) ES rbaog ( Activated Coal ) rsm;  
ajcmu baolaeonq l w l f Filter Unit ull ortqntobvni fi &lyjzpon / olrnq l w l f vnt  
csucsi f y i f c s o l l e i b o n h t a e t x m ; w l f & h e a v o n /

prfoyx m; lyjzpaom Filter Unit rsm; olr [ kwf to h j y / x m ; l y d o m ; r s m ; j z p l w l f t c s e f l u m j r i p h  
a & s h o i p & m t a l l u m i f r & l y g u o r t q n t x m ; e a u m i f p h j y i q i & a w m h r n j z p o n /  
t " l u j y o e m r h p u l v n l y w l y d o n f t c g o E S r b a o g a & p p r s m ; ( Sand and Coal Filters ) w l f  
a & u s e h e w w o n / a i f a & r h - y l r o w & a o ; ( o l r [ k w f ) u v l e i f r x n & a o ; a o m t a j c  
t a e w l f & w w o n / q l w b n r h n Filter rsm; w l f b u l w d & d , m ; y l r s m ; & h e v t r n [ l i j z p y g o n /  
, i f y l w l o n f y h ; r s m ; v m r n j z p o n / a & p d & y o n f E S l w l y l i e u p w i y h ; v m r n / a e l p o f v l y & h ;  
v n l y w a e o n f t c g u b u x & d , m ; y l r s m ; r y h ; y g / a i f y l w l o n h a & p p l v l y i e f x d & m u i t u l  
a v s m l u s a p y g o n / p u l v n l u m v & s h u m p h & y x m ; & o n q l w l f & d m u s , j y e l p h y i f  
b u l w d & d , m ; y l r s m ; a j r m u i r s m ; a j r m u i r s m ; p h v f r h o h ; r n j z p o n / t x t o j z i h Activated Coal w l f  
j z p o n / a i f r h a & p l E S l y g o h ; o n h t a e t x m ; w l f r & E l h o a m l u m i h j z p a v o n / r b a o g Coal \

r s u E h j y i u a & p p r j y l y b j z i h r b a o g a v s m o h ; o n q l w l f a & p p l v l y i e f a q m i & u E l r l  
u s q i f r n j z p a v o n /  
a & p p r s m ; t w l f & d b u x & d , m ; y l r s m ; y h ; r s m ; r l u l a & h i & h ; E l l & e i r h a & p p r s m ; u l u v l e i f  
a & E S h a q ; a l l u m j c i f y i f j z p y g o n / a & p p r s m ; u l 5 - u a v m u i r u y i f r o i b x m ; r n q l y g u  
a i f w l u l v l t y o n f r s m ; a o c s m p h v l y a y ; l y d r s o r t q n t o l v n i & y g r n / u v l e i f a & m x m ; a o m  
a & ( j y i f t m ; Concentration ) r s m ; a o m a & E S h a q ; a l l u m & r n / o m r e a o m u h a w l f u v l e i f x n o n f  
x u l r s m ; p h y l j y n d & y g r n / c e l l r e f a j c t m ; j z i h a & 1 - v l w m w l f u v l e i f 20 - r l v d & r f a & m & y g  
o n / a i f u h a & p p l w l j z w a p & m u 15 - r e p l t e n t q l l u m & y g r n / p e n t j z i h a & p p r s m ; u l  
b u l w d & d , m ; y l r s m ; r s u m u g E l l y g o n /

p a & p p r s m ; u l t c s e l u m & h v p h o l v n i b o r t q n t x m ; c l o n q l y g u t u , l i j y e l v n f  
t o h j y r n q l w l f a & 2 - u A r l w m c e l l u l a & p p l j z w o e f y g a p ? u v l e i f x n i a o m u h a & & & e f  
t q i r v l y u l f r d - O b p h v l y & e f z p y g o n /

r b a o g a & p p l Coal Filter w p c l u l u m v & s h u m p h r o i b x m ; i 3 E p l u m o h ; o n f q l y g o l /  
r b a o g u l w h y ; & r n j z p o n / t q i l q i l t q l l s i Multi - Valve y g a o m t a y : q l r s t z l Top - Lid u l  
o w d m ; i j z k w l z o h & y g r n / A [ l y l u l r j z k w l E S h r b a o g u l k w l , l y g / a & p p l t w l f y l f o l  
a & m u b o n f t c g y l u a c g i f Nozzle rsm; u l x c l u l y s u p o n r h & d a p e f t x t o w k m ; & r n / a & p p l u l  
r b a o g t o p l New Activated Coal ES h j z n h o m t c g 4 Cum / h Unit t w l u l 38 - u l w l f r j z n h & r n /  
20 Cum / h Unit t w l u l 150 u l w l f r j z n h & y g r n / t q l l s i valve u l x d y w l f j y e l v n f w y q i b o n h  
t c g o - Ring o n f y l e f t a e t x m ; u t i d i f o l u s & l v m ; q l b n u h a o c s m a p & y g r n / z d t m ; e n t e n t  
E S l y i j y e l v n l y q i b o n f t c g w l f r n o n h l a y g u x l a y g u f [ m u l u f [ l i v h o r & h u m i f  
a o c s m a t m i l u n & r n /

r b a o g a & p p l Coal Filter \ v l y i e f y l h k d & m u a p e f t w l u l v l y & r n r h z d t m ; t e n t i , f E S l y i f  
p a & p p l j y e l v n a q ; a l l u m & e f j z p y g o n / x y r k n o b t o n h ( t o p j z p a o m ) r b a o g r s m ;  
u s p l v p p h a e & m w u s t x l l u s a p & e f z p y g o n /

v l y i e f u m v & s h u m p h Channel z o l i v l y c l a o m l u m i j z p o n / ( r b a o g u h a j z w j c i f  
r s m ; u l q l w l y g o n / ) p t c s u t a & ; b u d j c i f t a l l u m i f r h r b a o g \ v l y i e f t u s t & d x d & m u i r  
effect u l t v g l w u l w l f w m e f a o m v n t a u m i f ? x e f o r t & e a o m v n t a u m i f r v g l u l  
a o m l u m i h j z p y g o n /