



UNDERSTANDING NITROGEN REDUCING TREATMENT OSTDS OPTIONS

TECHNICAL ADVISORY COMMITTEE

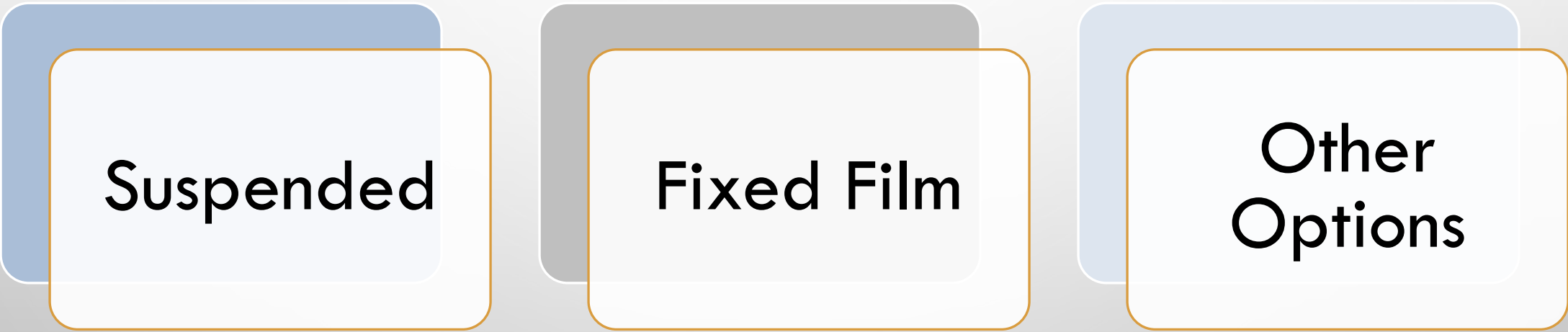
OCTOBER 13, 2021

ROXANNE L GROOVER, EXECUTIVE DIRECTOR

FLORIDA ONSITE WASTEWATER ASSOCIATION



TYPES OF TREATMENT



The diagram consists of three rounded rectangular boxes arranged horizontally. Each box has a light blue header and a white body with a thin orange border. The first box is labeled 'Suspended', the second 'Fixed Film', and the third 'Other Options'. The boxes are slightly offset from each other, with the second box being the most prominent.

Suspended

Fixed Film

**Other
Options**

ATU TREATMENT

- REMOVE SUBSTANTIAL AMOUNTS OF BOD AND TSS
- NITRIFICATION OF AMMONIA
- REDUCTION OF PATHOGENIC ORGANISMS
 - NOT STERILIZED
- MAY HAVE DENITRIFICATION AS A COMPONENT

COMPONENTS

- TRASH TANK
 - TRASH REMOVAL/ANAEROBIC TREATMENT
- AEROBIC TREATMENT
 - MIXING OF THE FOOD & BACTERIA
 - F/M RATIO
- AIR SUPPLY
- CLARIFICATION
- SLUDGE RETURN

TRASH REMOVAL AND ANAEROBIC TREATMENT

- GENERALLY REFERRED TO AS THE “TRASH TANK” OR SEPTIC TANK
 - REMOVES NON DEGRADABLE MATERIALS FROM THE WASTE STREAM.
 - PROVIDES ANAEROBIC TREATMENT.
 - CAN BE USED AS A COMPONENT OF A DENITRIFICATION PROCESS

MICROBES

- MICROBES
 - PROVIDE TREATMENT
 - MUST KEEP THEM HEALTHY
 - FOOD
 - PH
 - OXYGEN - DO
 - TEMPERATURE
- DEAD MICROBES
 - STINK
 - ARE BLACK
 - DON'T MOVE



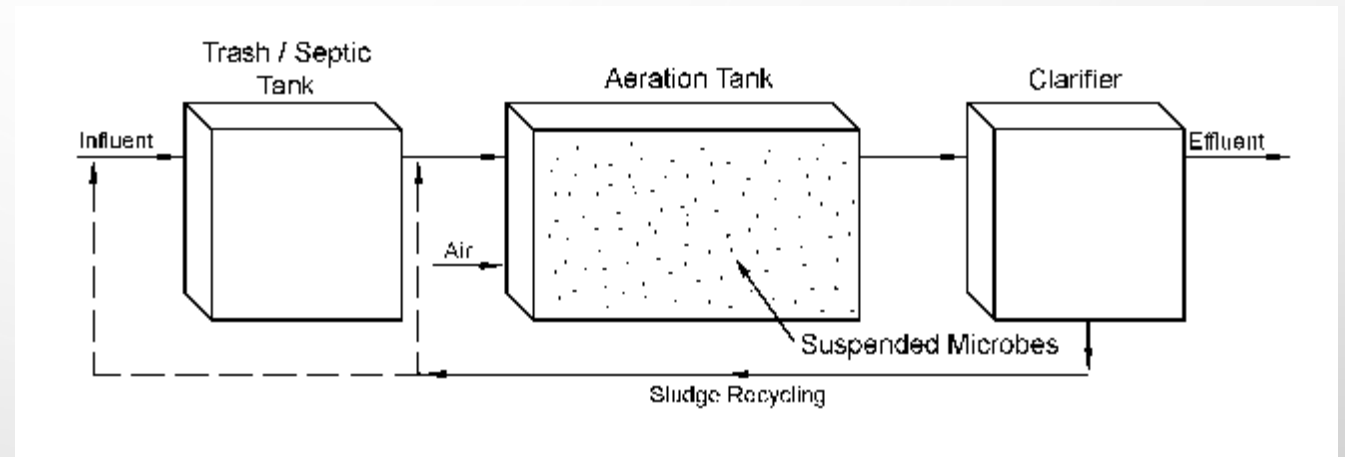


LOADING

- WATER – HYDRAULIC
 - FLOW VOLUME
 - FLOW RATE
- FOOD – ORGANIC
 - BOD
 - CONCENTRATION, MG/L
 - MASS, POUNDS PER DAY
- FOOD TO MICROORGANISM RATIO

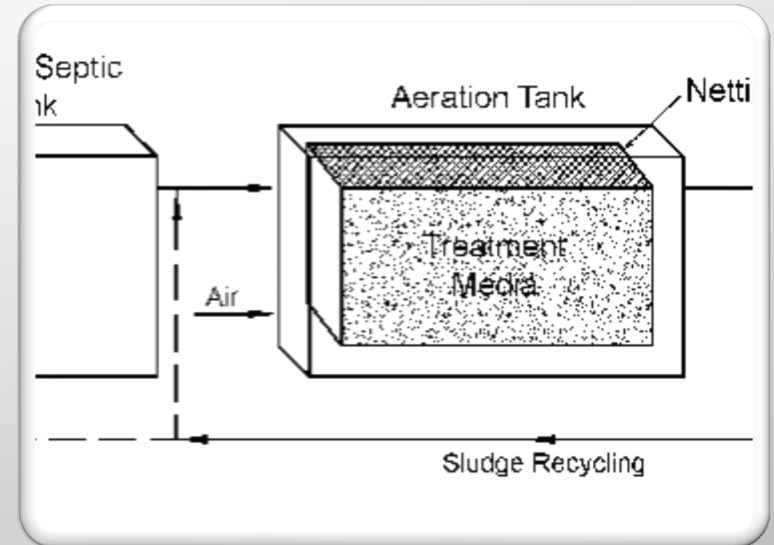
SUSPENDED GROWTH

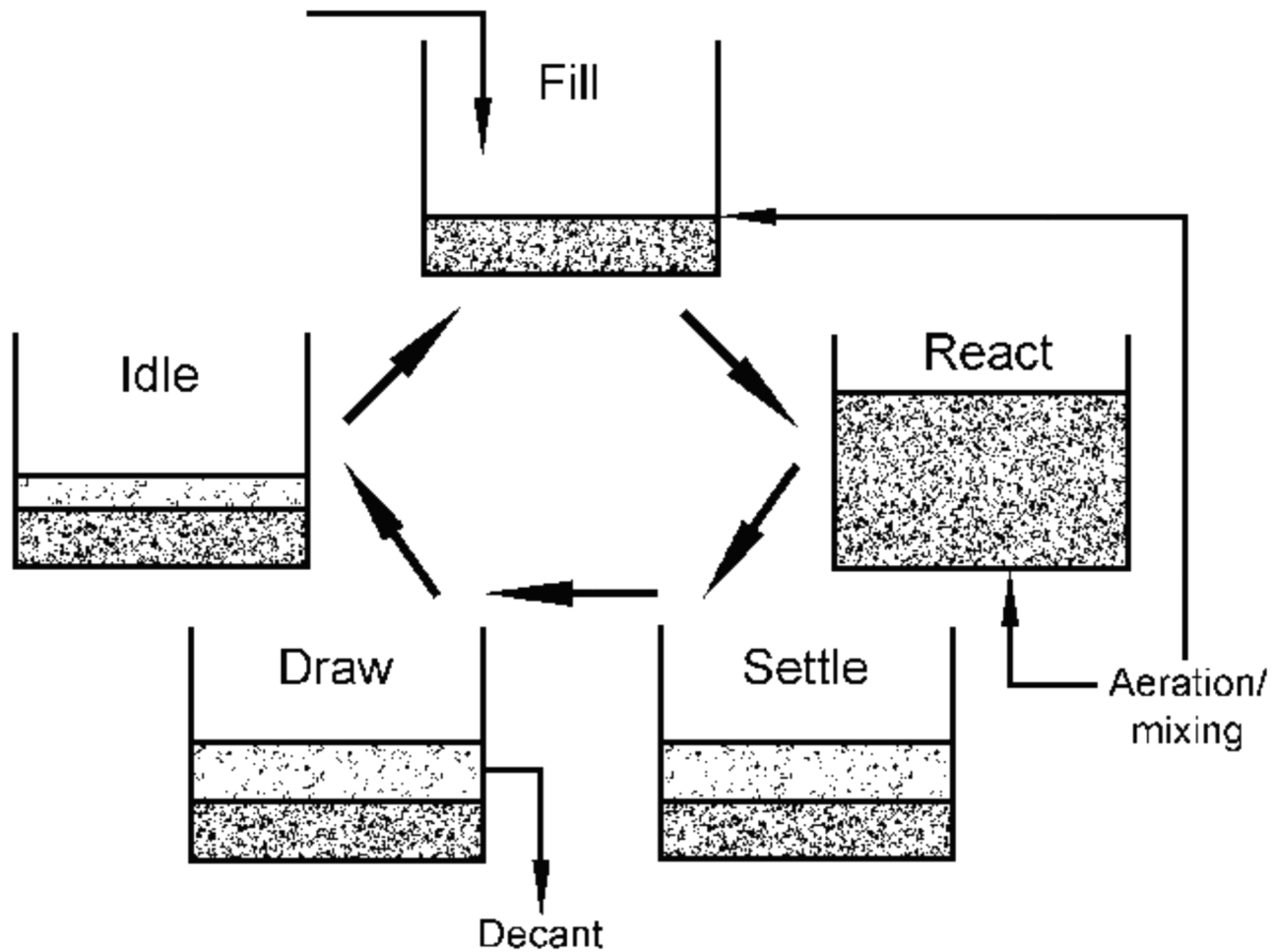
- AEROBIC MICROBES FREE SWIMMING IN THE AERATION CHAMBER
- MIXING IN THE CHAMBER MIXES THE MICROBES AND THE WASTEWATER CONTAMINANTS
- EXTENDED AERATION TO LIMIT BIOMASS WASTING



SUBMERGED ATTACHED GROWTH/FIXED FILM MEDIA

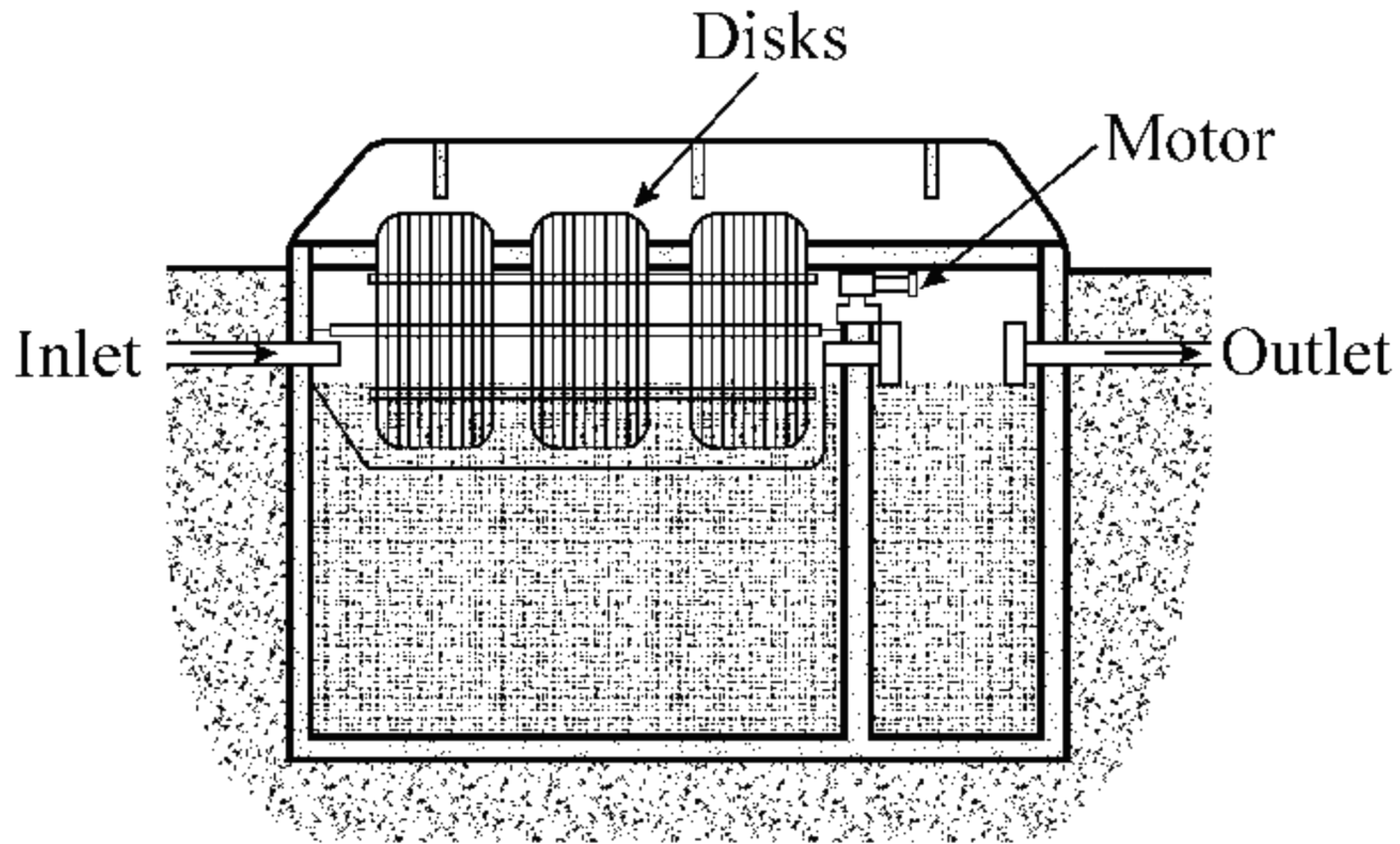
- MEDIA IS SUBMERGED IN THE AERATION CHAMBER
- MICROBES ARE ATTACHED TO THE MEDIA
- EFFLUENT IS CIRCULATED THROUGH THE MEDIA THUS PASSING CONTAMINANTS BY THE MICROBES
- EXTENDED AERATION TO LIMIT BIOMASS WASTING





SEQUENCING BATCH REACTOR

- SUSPENDED GROWTH TREATMENT PROCESS
- UTILIZE A SINGLE CHAMBER FOR ACHIEVING AERATION, CLARIFICATION AND ANOXIC CONDITIONS
- FLOW EQUALIZATION CHAMBER FOR DOSING EFFLUENT INTO THE TREATMENT CHAMBER



ROTATING BIOLOGICAL CONTACTOR

- FIXED FILM MEDIA
- MEDIA IS A DISK
- MOTOR SLOWLY ROTATES DISKS THROUGH THE EFFLUENT
- AERATION IS ACHIEVED BY PASSING THE MEDIA THROUGH THE AIR SPACE IN THE CHAMBER



AERATION METHODS



ASPIRATOR/AERATOR

- VACUUM PULLS AIR INTO THE WATER
- SPINNING SHAFT OR IMPELLER CAUSES THE VACUUM

COMPRESSORS

- GREATER PRESSURE
- LOWER AIR FLOW
- TWO DISTINCT TYPES OF COMPRESSORS
 - ROTARY
 - LINEAR



Rotary



Linear



BLOWERS

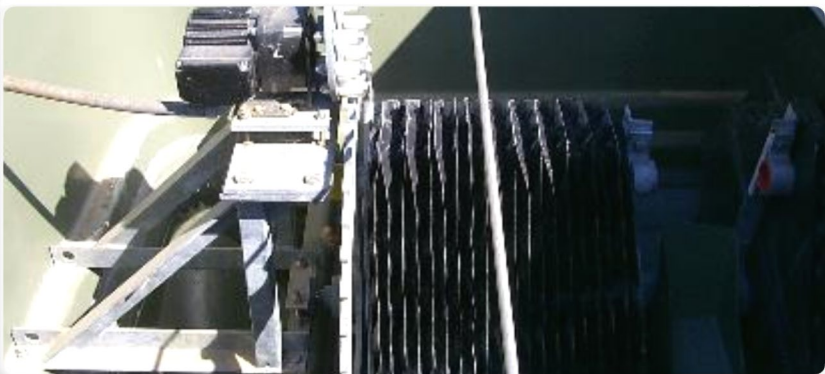
- GREATER AIR FLOW
- LOWER PRESSURE





FREE AIR

- ROTATING MEDIA THROUGH AIR SPACE IN TOP OF UNIT
- WATER ACCEPTS OXYGEN FROM AIR



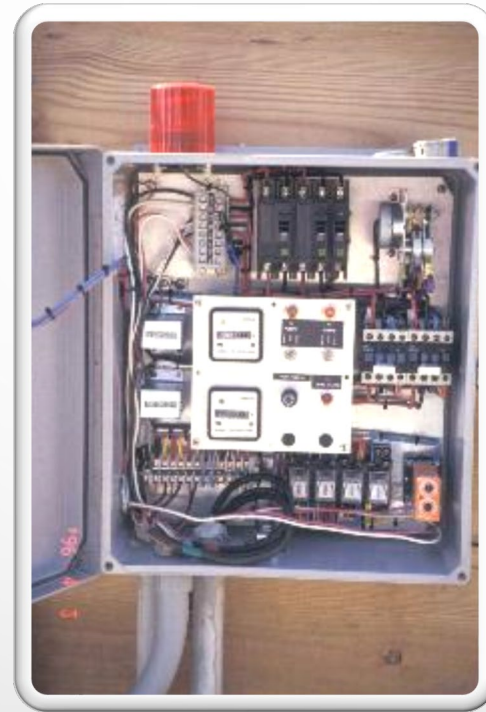


AIR SUPPLY

OPERATION:

- CONTINUOUS
- TIMED





CONTROL PANELS

BASIC – ADVANCED

FLOAT DOSED VS. TIME DOSED

AIR DISPERSION



Perforated Pipe

- INTRODUCES AIR INTO THE WATER
- SUPPLY LINES
- DISPERSION METHODS
 - HOLES
 - SLOTS
 - POROUS MATERIAL



Porous Stone Diffuser



AERATION CHAMBER

- MIXING IN AERATION CHAMBER
 - ROLLING MOTION
- DO IN AERATION CHAMBER
 - 2 MG/L
- PH IN AERATION CHAMBER
 - 7.0
- TEMPERATURE IN AERATION CHAMBER
 - ROOM TEMPERATURE

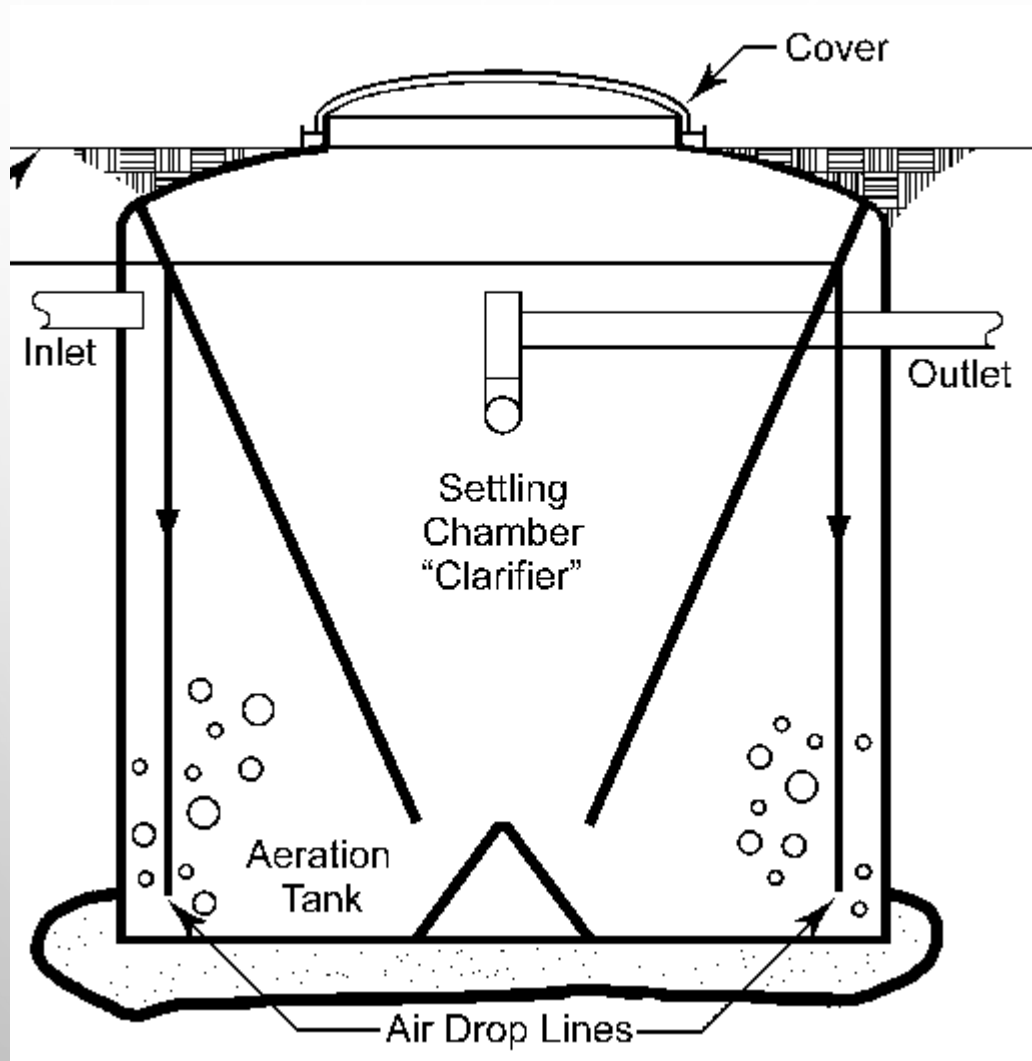


AERATION CHAMBER (CONT.)

SETTLABILITY TEST

- 30 MINUTE SETTLEABILITY TEST
 - BEAKER WITH 10 EVEN GRADATIONS
 - FILL BEAKER WITH SAMPLE FROM AERATION CHAMBER.
 - LET STAND FOR 30 MINUTES AND READ LEVEL OF CLEAR ZONE.
- 20% TO 60% IS TYPICALLY OK.
 - ALWAYS CHECK THE MANUFACTURER'S MANUAL FOR SPECIFICS.





CLARIFICATION CHAMBER

- PROCESS OCCURS IN A "CLARIFIER"
- CLARIFICATION IS THE PROCESS WHERE THE MICROBES, CELL WASTE AND BIOMASS SETTLE OUT OF THE WATER.
- SLUDGE BLANKET IN THE BOTTOM AND A CLEAR ZONE BELOW THE DISCHARGE POINT



CLARIFICATION CHAMBER (CONT.)

- SCUM LAYER
- CLEAR ZONE DEPTH BELOW OUTLET
- EFFLUENT SCREEN/TERTIARY FILTER
- DO IN CLARIFIER
- PH IN CLARIFIER





SLUDGE RETURN

SETTLED SOLIDS PASSING INTO A PREVIOUS TREATMENT CHAMBER

- PASSIVE SYSTEM
 - SETTLED SOLIDS PASSING THROUGH THE BOTTOM OPENING
- ACTIVE SYSTEM
 - SETTLED SOLIDS BLANKET BELOW THE OUTLET BAFFLE



DIFFERENT LEVELS OF TREATMENT IN FLORIDA

- AEROBIC TREATMENT UNIT
 - SECONDARY TREATMENT
 - ADVANCED SECONDARY TREATMENT
 - FLORIDA KEYS
 - ADVANCED WASTEWATER
- 

FLORIDA PERFORMANCE STANDARDS (long-term averages)

POLLUTANT	BASLINE SYSTEM STANDARDS Septic tank (effluent) (64E-6.025(3))	BASLINE SYSTEM STANDARDS @ base of 24 inch unsaturated zone (64E-6.025(3))	AEROBIC TREAT- MENT UNIT ≤1500 gpd (effluent) (NSF-40)	SECONDARY TREATMENT STANDARDS (effluent) (64E-6.025(3))	ADVANCED SECONDARY TREATMENT STANDARD (effluent) (64E-6.025(1))	FLORIDA KEYS NUTRIENT REDUCTION TREATMENT (effluent) (64E-6.025(8))	ADVANCED WASTE- WATER TREATMENT STANDARDS (effluent) (64E-6.025(2))
CBOD₅ (Carbonaceous Biochemical Oxygen Demand)	120-240 mg/l	< 5 mg/l	≤ 25 mg/l	≤ 20 mg/l	≤ 10 mg/l	≤ 10 mg/l	≤ 5 mg/l
TSS (Total Suspended Solids)	65-176 mg/l	< 5 mg/l	≤ 30 mg/l	≤ 20 mg/l	≤ 10 mg/l	≤ 10 mg/l	≤ 5 mg/l
TN (Total Nitrogen)	36-45 mg/l	15-25 mg/l	not applicable	not applicable	≤ 20 mg/l	≤ 10 mg/l	≤ 3 mg/l
TP (Total Phosphorus)	6-10 mg/l	< 5 mg/l	not applicable	not applicable	≤ 10 mg/l	≤ 1 mg/l	≤ 1 mg/l
Fecal coliform	1E+4 to 1E+7 (WERF 2009)	undetected	not applicable	≤ 200 fc col/100 ml	≤ 200 fc col/100 ml	Depends on Disposal	BDL for 100 ml
DRAINFIELD REDUCTIONS (cBOD ₅ and TSS see Note 1)	not applicable	not applicable	25% in slightly limited soil	25% in slightly limited soil	40% in slightly limited soil		40% in slightly limited soil
REDUCE: SETBACKS surface water groundwater drains dry retention & swales SEPARATIONS to SHWT	no change no change no change no change	no change no change no change no change	no change no change no change no change	65 ft no change no change no change	50 ft 10 ft 10 ft no change		25 ft 10 ft 10 ft 12 in
INCREASE AUTHORIZED FLOWS	no change	no change	no change	25%	50%		100%

Note 1: Drainfield size reductions depend on achieving the results above for CBOD₅ and TSS. TN, TP and fecal coliform do not apply.
f/n: Performance Information/table02_2015.doc

AEROBIC TREATMENT UNITS (ATU)

NSF STANDARD 40

- CBOD5: 25 MG/L
- TSS: 30 MG/L
- FC: NA
- TN: NA
- TP: NA

AEROBIC TREATMENT UNITS

NSF 245

- NITROGEN STANDARD ONLY
 - 50% REDUCTION
 - MIGHT NOT MEET FL NITROGEN REDUCTION STANDARD
 - OFTEN MANUFACTURER WILL HAVE TO COMPLETE ADDITIONAL TESTING



FLORIDA AEROBIC TREATMENT UNITS

ALLOWANCES

- DRAINFIELD REDUCTION: 25% IN SLIGHTLY LIMITED SOILS
 - REDUCED SETBACKS: NO CHANGE
 - INCREASE AUTHORIZED FLOWS: NO CHANGE
- 



FLORIDA AEROBIC TREATMENT UNITS

- TABLE IV – AEROBIC PLANT SIZING
 - DIFFERENT SIZING FOR RESIDENTIAL AND COMMERCIAL
 - OVER 1 500 GPD DESIGNED BY FL PROFESSIONAL ENGINEER
- 

FLORIDA SECONDARY TREATMENT STANDARDS

- CBOD5: 20 MG/L
- TSS: 20 MG/L
- FC: <200 COL/100 ML
- TN: NA
- TP: NA



FLORIDA SECONDARY TREATMENT STANDARDS

ALLOWANCES

- DRAINFIELD REDUCTIONS: 25%
 - REDUCED SETBACKS: 65FT SURFACE WATER
 - INCREASED AUTHORIZED FLOWS: 25%
- 



FLORIDA ADVANCED SECONDARY TREATMENT STANDARDS

- CBOD5: 10 MG/L
 - TSS: 10 MG/L
 - FC: <200 CFU/100 ML OR <14 CFU/100 ML (CLASS II WATERS)
 - TN: 20 MG/L
 - TP: 10 MG/L
- 



FLORIDA ADVANCED SECONDARY TREATMENT STANDARDS

ALLOWANCES

- DRAINFIELD REDUCTIONS: 40%
 - REDUCED SETBACKS: 50 FT SURFACE WATER, 10 FT GROUNDWATER, 10 FT DRY RETENTIONS/SWALES
 - INCREASED AUTHORIZED FLOWS: 50%
- 

FLORIDA KEYS STANDARDS

- CBOD5: 10 MG/L
- TSS: 10 MG/L
- FC: BDL FOR 100 ML (IF USING INJECTION WELL)
- TN: 10 MG/L
- TP: 1 MG/L



FLORIDA ADVANCED WASTEWATER TREATMENT STANDARDS

- CBOD5: 5 MG/L
 - TSS: 5 MG/L
 - FC: BDL FOR 100 ML
 - TN: 3 MG/L
 - TP: 1 MG/L
- 



FLORIDA ADVANCED WASTEWATER TREATMENT STANDARDS

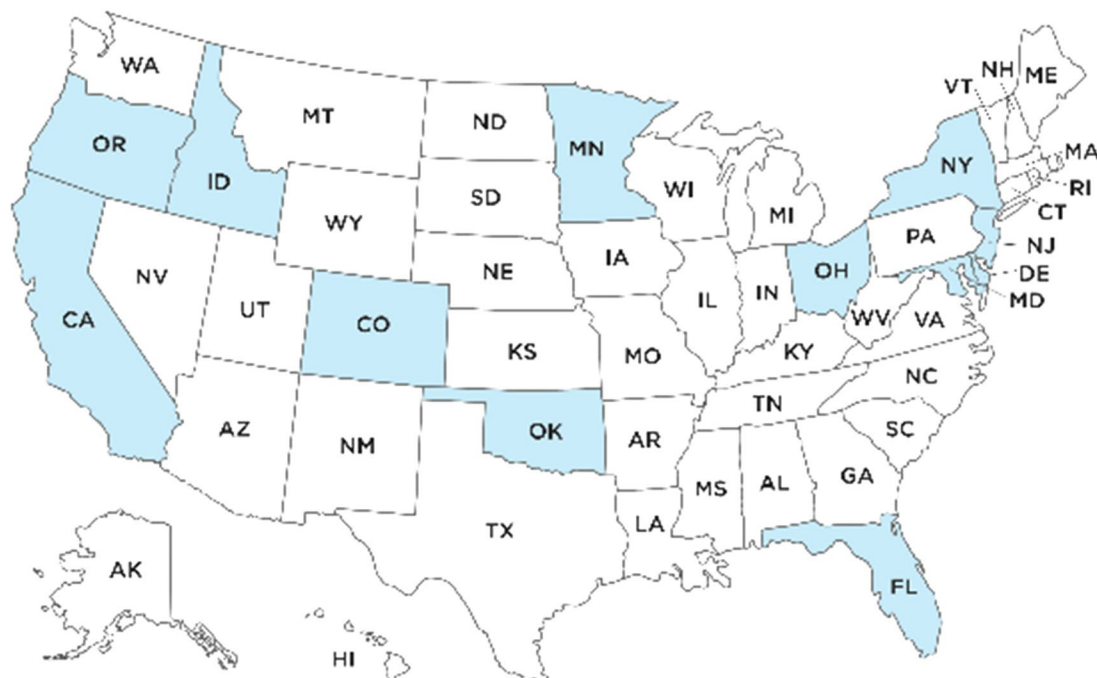
ALLOWANCES

- DRAINFIELD REDUCTIONS: 40%
 - REDUCED SETBACKS: 25 FT SURFACE WATER, 10 FT GROUNDWATER, 10 FT DRY RETENTIONS/SWALES
 - SHWT: 12 INCHES
 - INCREASED AUTHORIZED FLOWS: 100%
- 

FLORIDA TECHNOLOGY APPROVAL PROCESS



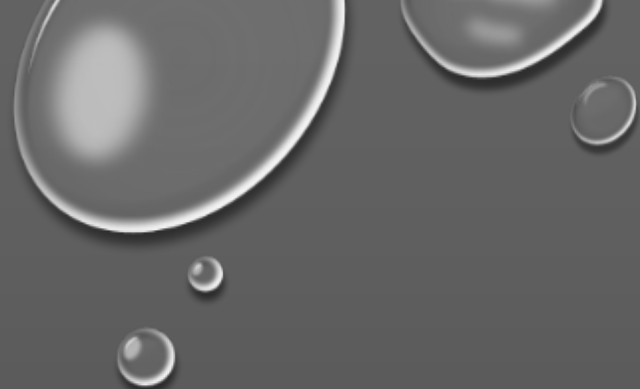
ACCEPTANCE AND ADOPTION OF NSF/ANSI 245



States that have adopted or specified NSF/ANSI 245⁹

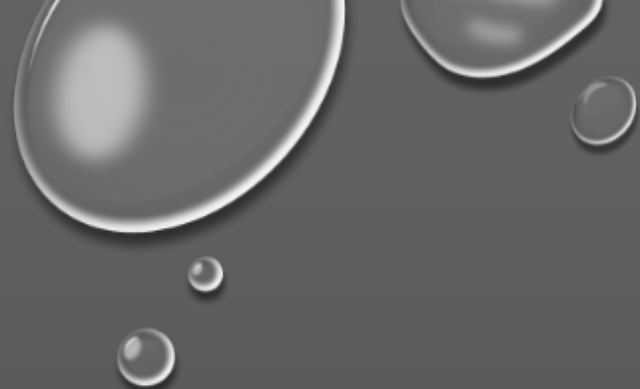
^aLocal requirements may still apply.

NSF 40/245



NSF STANDARD 245 EVALUATION CRITERIA

- MUST HAVE PASSED NSF 40 OR RUN TEST CONCURRENTLY
- ONLY SAMPLES COLLECTED DURING DESIGN LOADING PERIODS USED IN PASS/FAIL CALCULATIONS.
- EFFLUENT CONCENTRATIONS AVERAGED OVER COURSE OF TESTING PERIOD SHALL NOT EXCEED:
 - CBOD₅: 25 MG/L
 - TSS: 30 MG/L
 - TOTAL NITROGEN: <50% OF AVERAGE INFLUENT TN
 - PH: 6.0 TO 9.0



NSF STANDARD 40 EVALUATION CRITERIA

▪ INFLUENT WASTEWATER CHARACTERISTICS:

- BOD₅: 100 MG/L - 300 MG/L
- TSS: 100 MG/L - 350 MG/L
- PH: 6 – 9
- TEMPERATURE: LESS THAN 30°C

▪ EFFLUENT CRITERIA (CLASS 1; 30-DAY AVERAGE):

- CBOD₅: 25 MG/L
- TSS : 30 MG/L
- COLOR, ODOR, OILY FILM & FOAM (MBAS): 3 TIMES DURING TEST
- PH: 6 – 9
- TEMPERATURE: NO CRITERIA
- DO: NO CRITERIA



TESTING & CERTIFICATION PROCESS

APPLICATION/ENGINEERING REVIEW: 1-3 MONTHS

TEST UNIT INSTALLATION AT TEST FACILITY: 1-3 DAYS

TEST ADMINISTRATION: 6 MONTHS

TEST DATA ANALYZED BY PROGRAM OFFICE & ENGINEERING: 4-6
WEEKS

ISSUANCE OF THE WASTEWATER TECHNOLOGY REPORT



TESTING & CERTIFICATION PROCESS

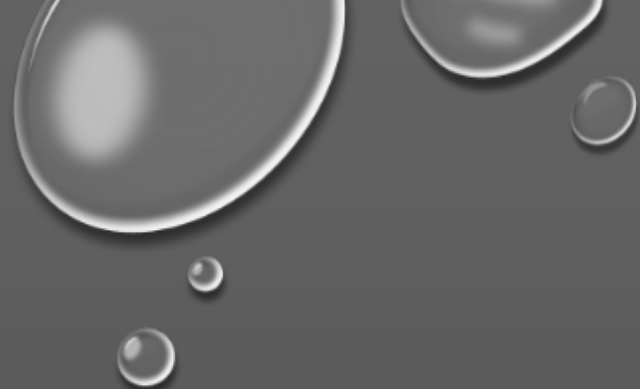
COMPLETION OF ALL PRODUCT LITERATURE, DATA PLATE &
DOCUMENTATION REQUIREMENTS

AUDIT OF MANUFACTURING FACILITY COMPLETED

CERTIFICATION & LISTING

REMOVAL OF TEST UNIT FROM TEST FACILITY

CONTINUED OR ON-GOING CERTIFICATION



TEST ADMINISTRATION

INSTALLATION:

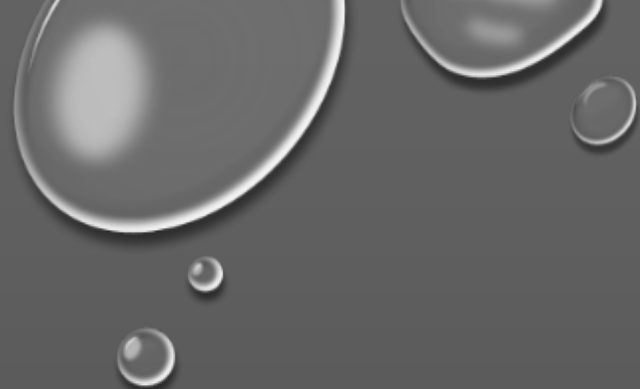
FIRST THINGS FIRST – DOCUMENTATION COMPLETE WITH
NSF PROGRAM OFFICE

TEST SITES ARE FIRST-COME-FIRST-SERVED BASES

NO RESTRICTION FOR SEASONS

A TEST CLIENT REPRESENTATIVE MUST BE ON SITE

INSTALLED PER MANUFACTURER'S INSTRUCTIONS



TEST ADMINISTRATION

INSTALLATION LOGISTICS:

- INSTALLATION SCHEDULED WITH NSF PROGRAM OFFICE
- AND WITH TEST FACILITY MANAGER

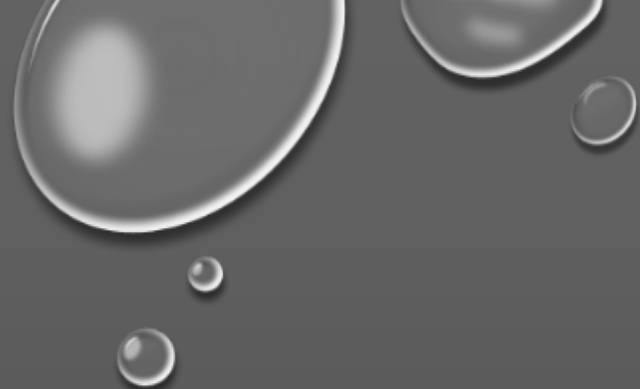
- INFILTRATION/EXFILTRATION TEST – 24-HOURS WITH NO
- MORE THAN A 0.5% CHANGE

- EXCAVATION

- ELECTRICAL

- FINAL CONNECTIONS

- INITIAL DOSING



TEST ADMINISTRATION

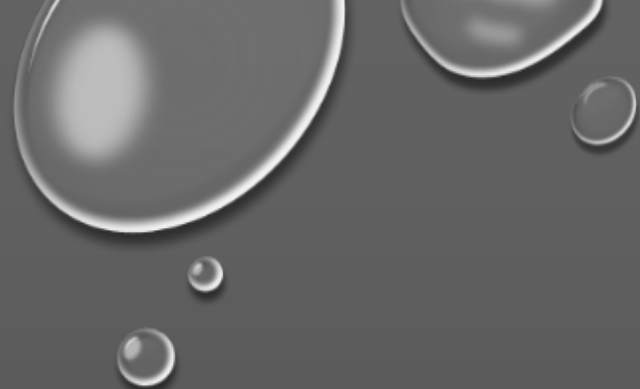
INSTALLATION – OTHER CONSIDERATIONS:

OPERATED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.

NO SERVICE OR MAINTENANCE DURING ENTIRE SIX-MONTH TEST.

ALL TEST DATA REPORTED.

NO ALLOWANCE FOR DISCARD OF ANY DATA, EXCEPT IF TEST FACILITY FAILS TO PROVIDE AN ACCEPTABLE TEST.



TEST ADMINISTRATION

TEST SCHEDULE:

OVERALL LENGTH IS 26 CONSECUTIVE WEEKS

DOSING:

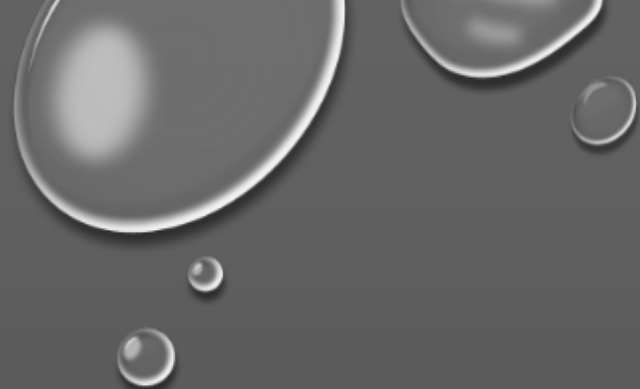
INITIAL DOSING: 1/3 WASTEWATER & 2/3 MAKEUP WATER

DESIGN LOADING: 16 WEEKS

SYSTEMS DOSED 7 DAYS/WEEK

STRESS LOADING: 7.5 WEEKS (52 DAYS)

FINAL DESIGN LOADING: 2.5 WEEKS (18 DAYS)



TEST ADMINISTRATION

DESIGN LOADING OF WASTEWATER (100% $\pm$ 10% OF RATED CAPACITY)

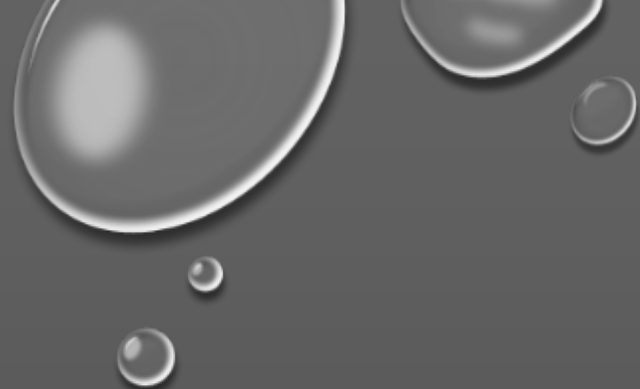
6:00 AM TO 9:00 AM: 35%

11:00 AM TO 2:00 PM: 25%

5:00 PM TO 8:00 PM: 40%

TOTAL OF 100 DOSES OVER 24 HOURS, DIVIDED EQUALLY
AMONG THREE DOSING PERIODS

500 GPD: 100 X 5 GALLONS



TEST ADMINISTRATION

STRESS LOADING:

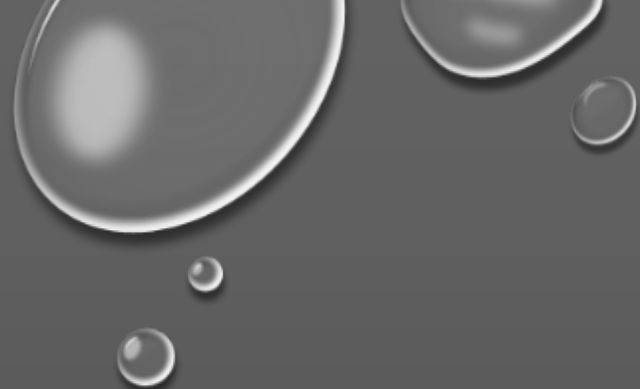
FOUR NON-IDEAL CONDITIONS EACH SEPARATED BY 7 DAYS OF DESIGN LOADING:

WASH-DAY STRESS: 3 WASH DAYS IN A 5-DAY PERIOD (3 WASH CYCLES AND 6 RINSE).

WORKING PARENT STRESS: DOSED 40%/60% + ONE WASH LOAD.

POWER/EQUIPMENT FAILURE STRESS: OFF FOR 48 HOURS.

VACATION STRESS: NO DOSING FOR 9 DAYS.



TEST ADMINISTRATION

SAMPLE COLLECTION:

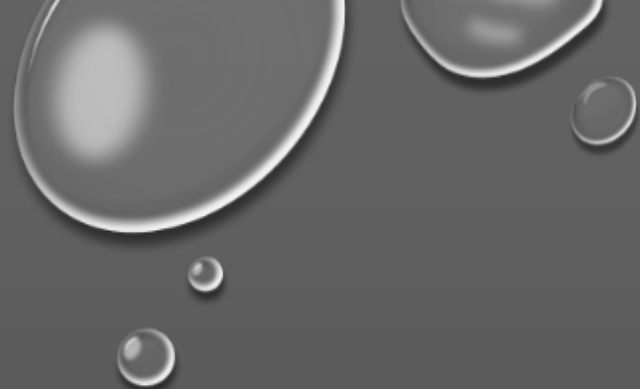
5 DAYS/WEEK DURING DESIGN LOADING

INFLUENT SAMPLES ARE FLOW-PROPORTIONAL 24-HOUR
COMPOSITES – DURING PERIODS OF SYSTEM DOSING

EFFLUENT SAMPLES ARE FLOW-PROPORTIONAL AND
DURING SYSTEM DISCHARGE.

DATA COLLECTION:

IN-SITU MONITORING OF PH, TEMPERATURE & DO.



EVALUATION CRITERIA

INFLUENT WASTEWATER CHARACTERISTICS:

BOD₅: 100 MG/L - 300 MG/L

TSS: 100 MG/L - 350 MG/L

PH: 6 – 9

TEMPERATURE: LESS THAN 30°C

EFFLUENT CRITERIA (CLASS 1; 30-DAY AVERAGE):

CBOD₅: 25 MG/L

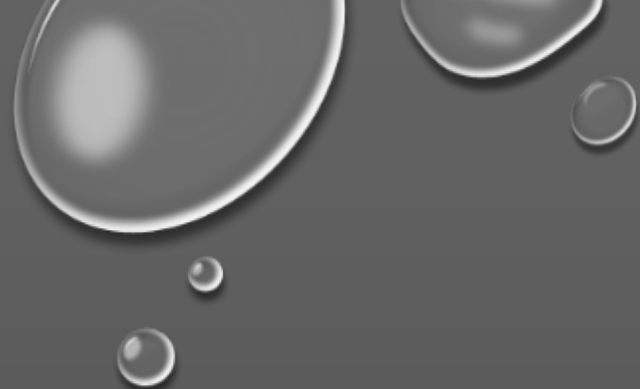
TSS: 30 MG/L

COLOR, ODOR, OILY FILM & FOAM (MBAS): 3 TIMES
DURING TEST

PH: 6 – 9

TEMPERATURE: NO CRITERIA

DO: NO CRITERIA



EVALUATION CRITERIA

DESIGN & CONSTRUCTION:

STRUCTURAL INTEGRITY: INSPECTED DURING AND
AFTER TEST: MUST RESIST EARTH & HYDROSTATIC
PRESSURES

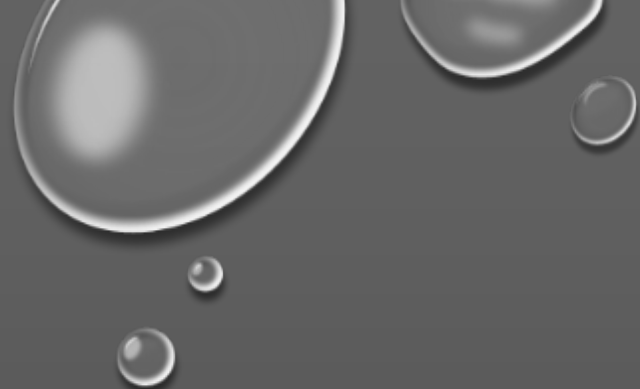
INFILTRATION/EXFILTRATION: LESS THAN 0.5%
CHANGE IN 24 HOURS

NOISE: MAX 60 DBA AT 4 FT.

ACCESS PORTS:

GROUND LEVEL FOR ANY COMPARTMENT
REQUIRING ACCESS WITHIN 2 YEARS

SECURITY: PADLOCK/SPECIALIZED FASTENERS/65
POUND COVER



EVALUATION CRITERIA

DESIGN & CONSTRUCTION (CONTINUED):

FAILURE SENSING & SIGNALING FOR DETECTING:

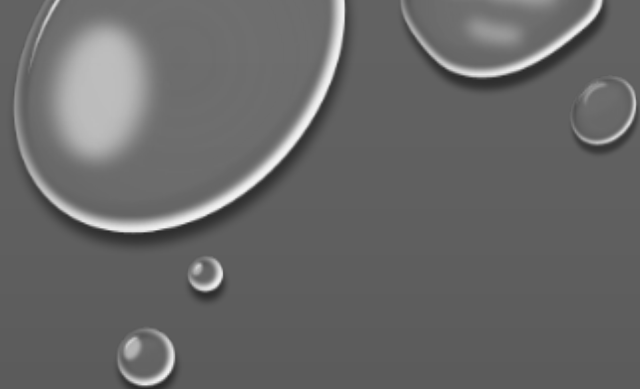
ELECTRICAL FAILURE

MECHANICAL FAILURE

HIGH WATER CONDITION

VISUAL SIGNAL = CONSPICUOUS FROM 50 FT. IN
1 000 FT. CANDLE LIGHT

AUDIBLE SIGNAL = BETWEEN 70 & 90 DBA AT 5 FT.,
DISCERNABLE AT 50 FT.



EVALUATION CRITERIA

DESIGN & CONSTRUCTION (CONTINUED):

DATA PLATES = TWO, PERMANENT & LEGIBLE ON UNIT

- ONE ON FRONT OF ELECTRICAL CONTROL BOX
- ONE ON TANK, AERATION EQUIPMENT OR RISER
ACCESSED DURING SERVICE.

- MUST HAVE:

MANUFACTURER'S NAME & ADDRESS

MODEL NUMBER

SERIAL NUMBER (ON ONLY ONE PLATE)

RATED GPD CAPACITY OF THE SYSTEM

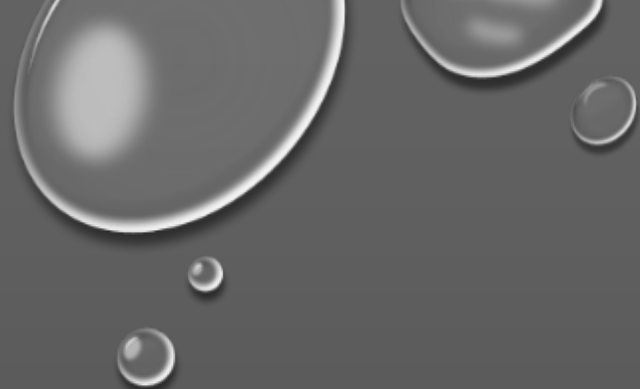
SYSTEM CLASSIFICATION (CLASS I, CLASS II)

SERVICE LABEL:

CLEARLY VISIBLE LABEL OR PLATE

INSTRUCTIONS FOR OBTAINING SERVICE

PERMANENTLY LOCATED NEAR FAILURE SIGNAL



EVALUATION CRITERIA

OTHER CONSIDERATIONS:

OPERATED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.

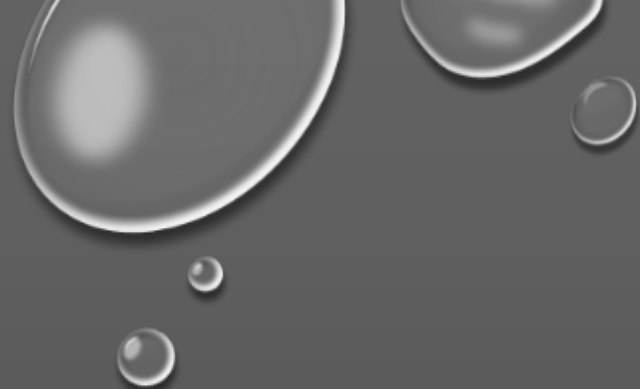
NO SERVICE OR MAINTENANCE DURING ENTIRE SIX-MONTH TEST.

ALL TEST DATA REPORTED.

NO ALLOWANCE FOR DISCARD OF ANY DATA, EXCEPT IF TEST FACILITY FAILS TO PROVIDE AN ACCEPTABLE TEST.

CATASTROPHIC SITE PROBLEMS ADDRESSED

ELECTRICAL OR MECHANICAL DEFECTS DURING TESTING



ADDITIONAL CERTIFICATION REQUIREMENTS

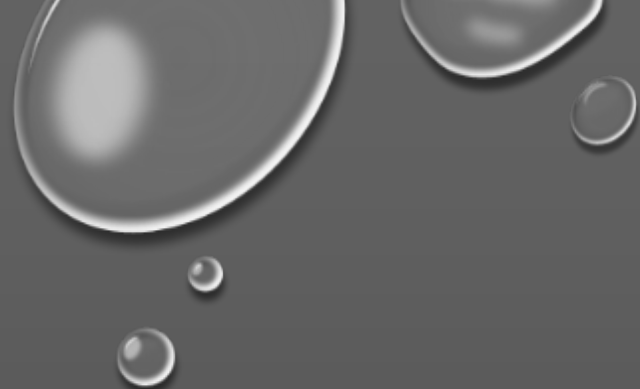
PRODUCT LITERATURE:

OWNER'S MANUAL.

INSTALLATION MANUAL.

OPERATION AND MAINTENANCE MANUAL.

TROUBLESHOOTING AND REPAIR MANUAL.



ADDITIONAL CERTIFICATION REQUIREMENTS

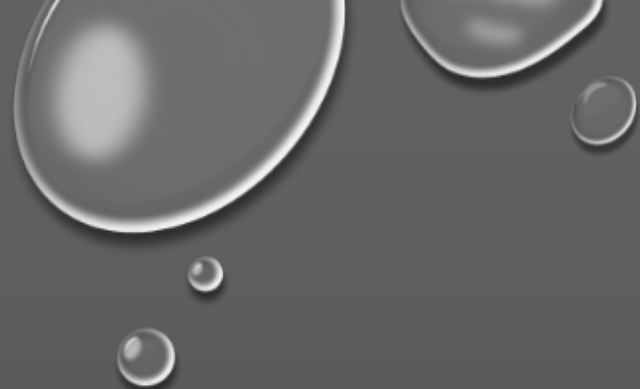
SERVICE-RELATED OBLIGATIONS:

TWO-YEAR INITIAL SERVICE POLICY WITH PURCHASE;
FOUR SITE VISITS.

EXTENDED POLICY AVAILABLE FOR FEE.

STAND-BY PARTS IN STOCK.

SERVICE WITHIN 48 HOURS.



CONTINUING CERTIFICATION

MANUFACTURER RESPONSIBILITIES:

COMPLIANCE WITH STANDARD 40 BY ALL AUTHORIZED
REPRESENTATIVES

WARRANTIES

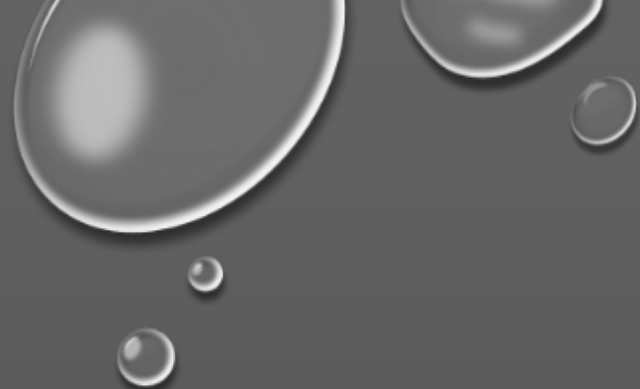
SERVICE

LITERATURE

PARTS

TRAINING

AUDITS OF 10% OF ALL ARS & A CURRENT LIST TO NSF



CONTINUING CERTIFICATION AUDITS

MANUFACTURING FACILITIES:

FOCUS ON PROPER PRODUCT SPECIFICATIONS.

ANNUAL, UNANNOUNCED AUDIT OF ALL PRODUCTION LOCATIONS.

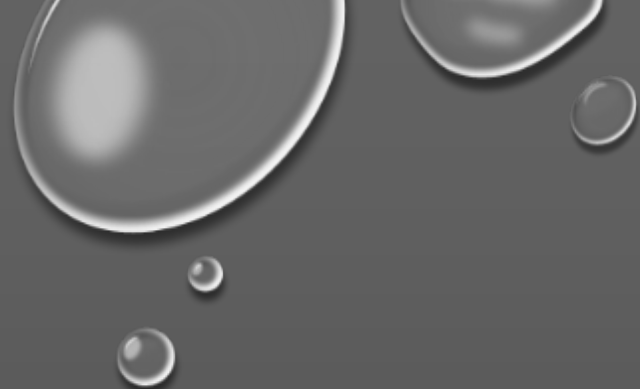
AUTHORIZED REPRESENTATIVE FIELD AUDITS:

SCHEDULING & LOGISTICS

ONLY A 48-HR NOTICE REQUIRED

TYPICALLY TAKES ABOUT 4 HOURS

CONSISTS OF TWO PARTS – THE OFFICE REVIEW & FIELD INSPECTIONS



CONTINUING CERTIFICATION AUDITS

AUTHORIZED REPRESENTATIVE FIELD AUDITS - IN THE OFFICE:

LITERATURE REVIEW – REQUIRED TO HAVE ON HAND:

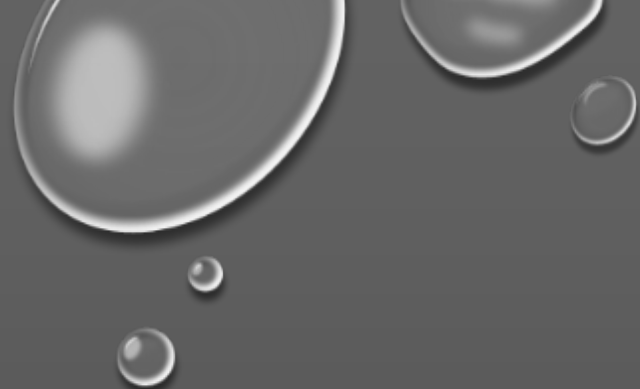
COPY OF STD. 40 & NSF POLICIES

COPY OF THE DOCUMENTATION REPORT FOR
CERTIFIED PRODUCT

COPY OF THE COMPANY'S OFFICIAL LISTING
PRODUCT MANUALS:

- OWNER'S MANUAL.
- INSTALLATION MANUAL.
- OPERATION AND MAINTENANCE MANUAL.
- TROUBLESHOOTING AND REPAIR MANUAL.

REVIEW OF ADVERTISING USE OF THE NSF MARK



CONTINUING CERTIFICATION AUDITS

AUTHORIZED REPRESENTATIVE FIELD AUDITS - IN THE OFFICE:

REVIEW OF RECORD KEEPING REQUIREMENTS:

REQUIRED TO KEEP RECORDS FOR FOR THE EFFECTIVE
LIFE OF EACH SYSTEM INSTALLED:

INSTALLATION – DATE AND LOCATION

DOCUMENTATION OF SERVICE FOR:

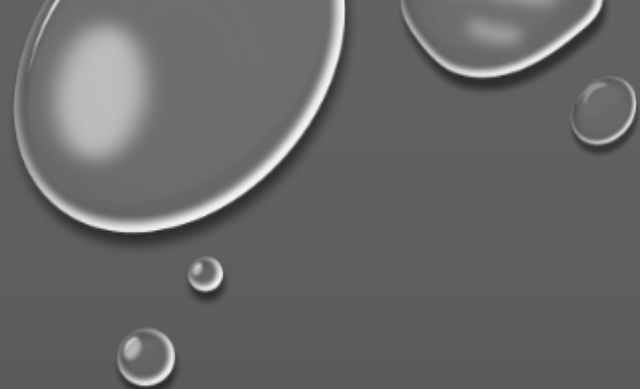
COMPLETION OF REQUIRED INITIAL 2-YEAR
SERVICE VISITS

ANY EMERGENCY SERVICE (WITHIN 48
HOURS)

COMPLAINTS AND RESOLUTION

OFFER TO HOMEOWNER OF EXTENDED
WARRANTY

NAME, ADDRESS & PHONE # OF SERVICE
PROVIDER IF NOT AR



CONTINUING CERTIFICATION AUDITS

AUTHORIZED REPRESENTATIVE FIELD AUDITS - IN THE OFFICE:

REVIEW OF INVENTORY OF STANDBY PARTS

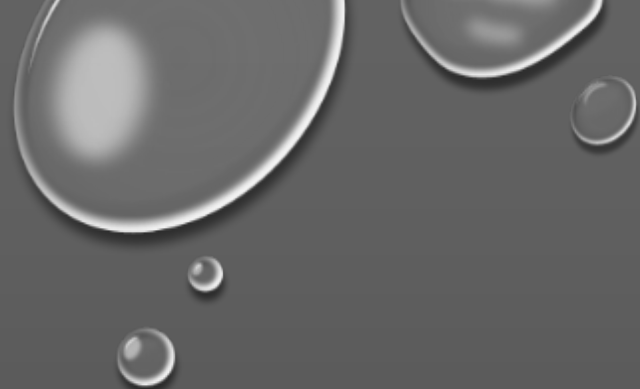
SUFFICIENT TO ENSURE SERVICE WITHIN 48
HOURS

INSPECTION OF CERTIFIED PRODUCTS ON HAND

ARE DATA PLATES IN PLACE AND COMPLIANT
DIMENSIONS COMPLIANT?

ANY SIGNS OF UNAUTHORIZED PRODUCT
MODIFICATIONS

ARE UNITS QA/QC'ED



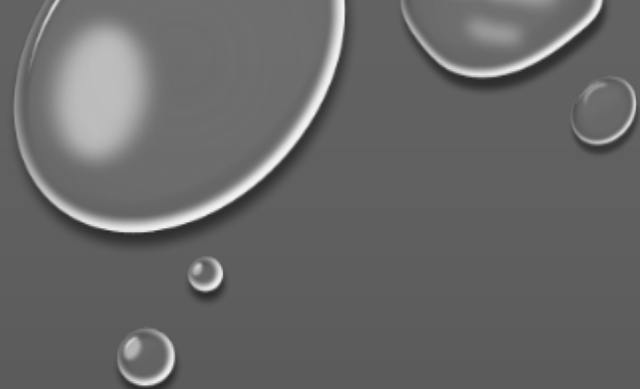
CONTINUING CERTIFICATION AUDITS

AUTHORIZED REPRESENTATIVE FIELD AUDITS - IN THE FIELD:

THREE INSTALLATION SITES ARE RANDOMLY SELECTED
BY AUDITOR FOR INSPECTION FROM AR FILES

VERIFICATION MADE AS TO WHETHER THE RECORD OF
INSTALLATION AND SERVICE IS UP TO DATE FOR EACH
INSTALLATION

AUDITOR AND AR INSPECT EACH INSTALLATION
INSTALLATIONS INSPECTED FOR STD. 40 COMPLIANCE,
PRESENCE AND ACCURACY OF REQUIRED DATA
PLATES/SERVICE LABELS



CONTINUING CERTIFICATION AUDITS

AUTHORIZED REPRESENTATIVE FIELD AUDITS - IN THE FIELD:

AUDITOR VERIFIES WHETHER:

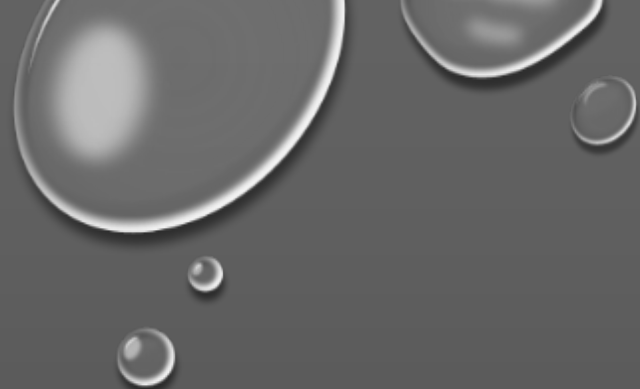
ANY MODIFICATIONS HAVE BEEN MADE TO THE
UNIT

ARE THE ACCESS COVERS IN PLACE AND SECURE

DOES THE EFFLUENT APPEAR TURBID OR FOAMY

WAS THE HOMEOWNER'S MANUAL AVAILABLE AT
THE SITE

IF HOME, THE HOMEOWNER IS INTERVIEWED & ASKED
ABOUT RECEIPT OF A HOMEOWNER'S MANUAL,
TRAINING, SERVICE AND SATISFACTION



CONTINUING CERTIFICATION AUDITS

AUDIT RESULTS:

A MULTI-PAGE AUDIT REPORT IS COMPLETED

COPY TO AR

COPY TO MANUFACTURER

COPY TO NSF FILE FOR FOLLOW-UP IF ITEMS OF NON-COMPLIANCE NOTED

ANY ITEMS OF NONCOMPLIANCE NOTED ARE REVIEWED WITH AR

LETTER SENT TO MANUFACTURER WITH AUDIT RESULTS & A TIME FRAME SET FOR CORRECTIVE ACTION

AUDITOR FOLLOWS UP TO ENSURE COMPLIANCE



Testing Aspect

Duration of testing

System start-up

Influent requirements

NSF/ANSI 245

6 months; up to 37 weeks total

Up to 3 weeks

Average required over course of test:

CBOD5 100 – 300 mg/L

TSS 100 – 350 mg/L

TKN 35 – 70 mg/L

Alkalinity >120 mg/L

Temperature 10°C - 30°C

Allows chemical addition to adjust influent – sodium bicarbonate for alkalinity; urea and methanol at a C:N ratio of not less than 5:1 for TKN.

ETV Nutrient Reduction

1 year

Up to 8 weeks

Only suggested ranges: CBOD5 100 – 450 mg/L

TSS 100 – 500 mg/L

TKN 25 – 70 mg/L

Phosphorus 3 – 20 mg/L

Alkalinity >60 mg/L

Temperature 10°C – 30°C

Allows chemical addition to adjust influent – sodium bicarbonate for alkalinity.

NSF245 VS. ETV





Testing Aspect	NSF/ANSI 245	ETV Nutrient Reduction
Temperature impacts (temperatures below 10°C impact process bacteria)	Allows for suspension of Nitrogen sampling when temperature drops below 10°C, with extension of sampling to obtain a minimum of 55 valid sample sets	No allowance, test runs 1 year and all data is reported
Maintenance during testing	None – same as NSF/ANSI 40	Maintenance allowed, but documented and reported in final report
Stress Sequences	4 - wash day, working parent, equipment/power failure, vacation	5 - wash day, working parent, equipment/power failure, low loading, vacation

NSF 245 VS. ETV





Testing Aspect	NSF/ANSI 245	ETV Nutrient Reduction
Sampling	3 times/week during design loading (weeks 1–16 and weeks 24½–26); 2 times during the week following each stress test	Minimum 1 time/month; same as NSF/ANSI 40 during stress sequence; also for 5 consecutive days at end of test
Acceptance criteria	For pass/fail, only samples collected during design loading periods (samples during stress sequence reported, but not included in the pass/fail criteria calculation). Average of all effluent samples may not exceed: CBOD5 25 mg/L TSS 30 mg/L TKN <50% of average of all influent pH 6.0 – 9.0 SU	None; all data is reported

NSF 245 VS. ETV





INNOVATIVE PROCESS

- APPLICATION BY FL PE
 - MONITORING PROTOCOL DESIGNED TO VALIDATE THE SYSTEM
 - COMPELLING EVIDENCE THAT SYSTEM WILL PERFORM
 - INTENT IS TO RECLASSIFY SYSTEM
- USED TO BRING NEW TECHNOLOGY TO STATE OR CHANGE APPROVAL STATUS



INNOVATIVE SYSTEM RECLASSIFICATION

FOLLOWING THE INSTALLATION AND MONITORING OF SYSTEMS ALLOWED BY INNOVATIVE SYSTEM PERMIT

- RESULTS & ANALYSIS
- OBSERVATIONS OF PERFORMANCE
- MAINTENANCE, REPAIR, OR MODIFICATIONS
- COMMENTS FROM OPERATORS OR USERS
- COMMENTS FROM DESIGN ENGINEERS
- COMMENTS FROM CHD
- SPECIFICATION OF PROPOSED CLASSIFICATION



INNOVATIVE SYSTEM RECLASSIFICATION

FOLLOWING THE INSTALLATION AND MONITORING OF SYSTEMS ALLOWED BY INNOVATIVE SYSTEM PERMIT (CONT.)

- RATIONALE FOR THE PROPOSED TYPE OF CLASSIFICATION
- PROPOSED MONITORING PROTOCOL
- A SAMPLE MANUAL ADDRESSING THE SITING, DESIGN, INSTALLATION, INSPECTION, OPERATION, MAINTENANCE, AND ABANDONMENT

**AVAILABLE OSTDS
TECHNOLOGIES**



SUSPENDED ATUS APPROVED IN FLORIDA

- [AERO-TECH](#)
- [AWS BEST](#)
- [AQUA AIRE](#)
- [AQUAKLEAR](#)
- [AQUA SAFE](#)
- [BIONEST](#)
- [CAJUNAIRE](#)
- [CLEARSTREAM](#)
- [HOOT](#)
- [HYDROACTION](#)
- [NORWECO](#)
- [NAYADIC](#)
- [PURASYS \(SBR\)](#)
- [WHITEWATER](#)

FIXED FILM ATUS APPROVED IN FLORIDA

- [BIOBARRIER](#) (FILTERING ALSO SIMILAR TO MEDIA FILTERS)
- [ECOPOD](#)
- [ENVIRO-GUARD](#)
- [FAST](#)
- [FUJICLEAN](#)
- [HOOT ANR](#)
- [JET](#)
- [MULTIFLO](#)

PROPRIETARY MEDIA FILTERS APPROVED IN FLORIDA

UNSATURATED - NATURAL

- [ECOFLO](#)
- [ECOPURE](#)
- [PURAFLO](#)
- [BIOCOIR](#)

UNSATURATED - ARTIFICIAL

- [ADVANTEX](#)
- EARTHTEK
- [AEROCCELL](#)
- [SEPTITECH](#)

NSF 245 SYSTEMS

- ACQUIRED WASTEWATER TECHNOLOGIES, LLC
- ADELANTE CONSULTING, INC.
- ANUA
- AQUAKLEAR
- BIO-MICROBICS, INC.
- BIONEST TECHNOLOGIES INC
- BUSSE INNOVATIVE SYSTEM GMBH
- CLEARSTREAM
- **DELTA TREATMENT SYSTEMS**
- E-Z TREAT
- ECOLOGICAL TANKS, INC.
- FUJI CLEAN USA, LLC
- HOOT AEROBIC SYSTEMS, INC.
- HYDRO-ACTION INDUSTRIES
- JET
- NORWECO, INC.
- ORENCO SYSTEMS INC.
- PREMIER TECH AQUA
- SEPTITECH®
- SOSYSTEMS LLC



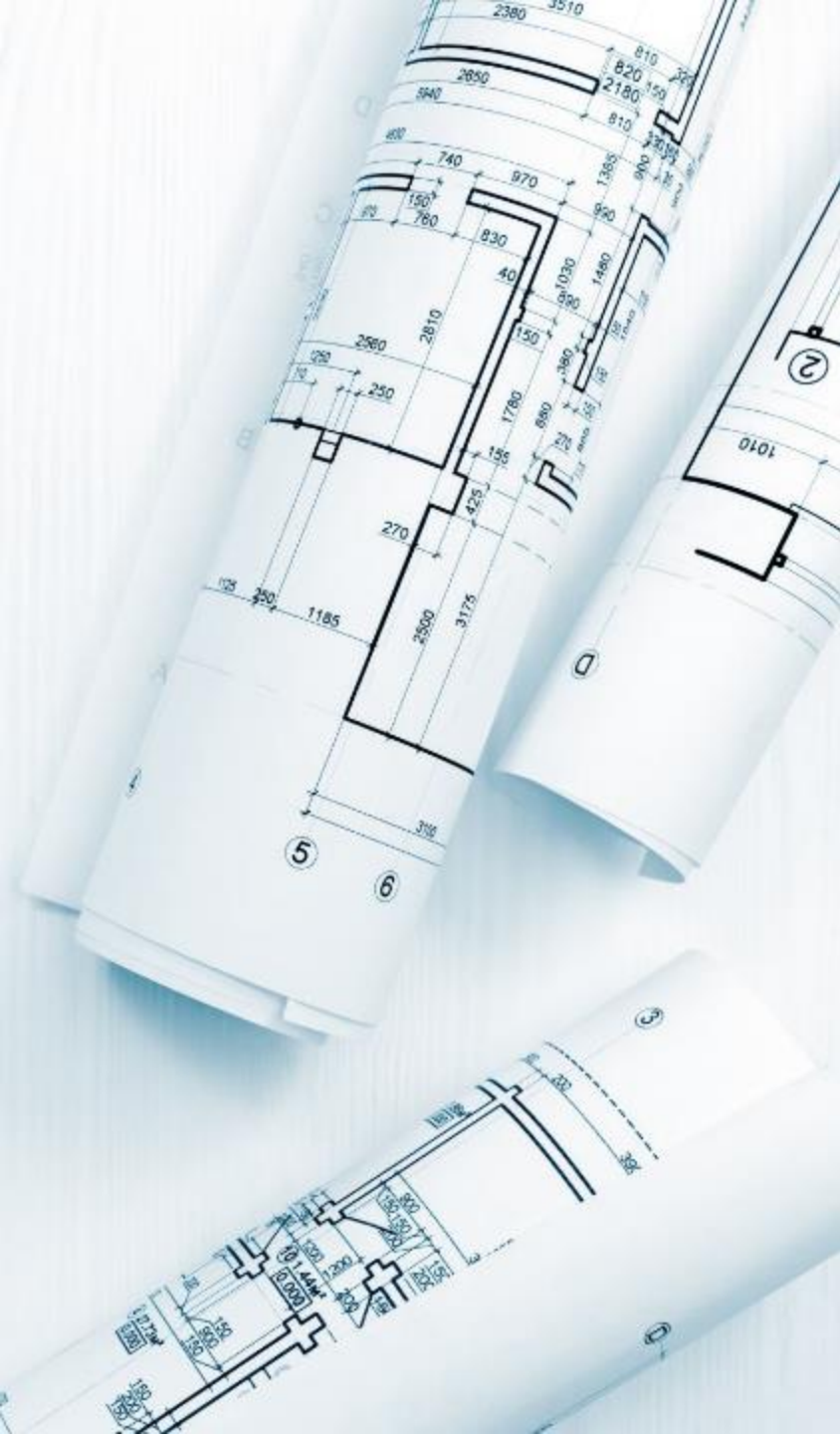
PERMITTING PERFORMANCE BASED TREATMENT SYSTEMS (PBTS)

SYSTEM CONSTRUCTION PERMITS: 18 MONTHS

- 90 DAY EXTENSION
- TURN AROUND 15 WORKING DAYS (COMPLETED APPLICATION)
- FINAL INSPECTION –PE/DOH

NO REPAIR PERMIT NEEDED:

- SERVICING/REPLACING LIKE KIND MECHANICAL/ELECTRICAL PARTS
 - PUMPING
 - MINOR STRUCTURAL CORRECTIONS TO TANK/DISTRIBUTION BOX
- 



ATU/PBTS/NSF 245 O&M REQUIREMENTS

MAINTENANCE ENTITIES

- CONTRACTORS
- HOMEOWNERS
- OPERATING PERMIT

INSPECTIONS

- DOH
- MAINTENANCE ENTITIES

MONITORING

SECONDARY AND ADVANCED SECONDARY TREATMENT SYSTEMS

- MAINTENANCE REPORTS TO DOH QUARTERLY
 - PONDING CAN BE OBSERVED THROUGH PORTS
 - CBOD5 & TSS COLLECTED PRIOR TO DF
 - IF SOIL IS PART OF TREATMENT 2 MONITORING POINTS MUST BE AVAILABLE IN PLUME
 - FC FOR SECONDARY
 - TN, TP, FC FOR ADVANCED SECONDARY

MONITORING

- **ADVANCED WASTEWATER TREATMENT SYSTEMS**
 - MONTHLY MAINTENANCE FOR 1ST 6 MONTHS
 - THEN ONCE EVERY 3 MONTHS
 - MONITORING FOR CBOD5, TSS, TN, TP, & FC
 - 1ST 6 MONTHS – EVERY 2 WEEKS
 - OR AFTER FAILURE
 - MONITORING FOR CONSTITUENTS TO WEEKLY
 - AFTER 6 MONTHS OF COMPLIANCE MONITORING FOR CBOD5, TSS, TN, TP, & FC
 - SAMPLING QUARTERLY
 - AFTER 8 ACCEPTABLE SAMPLES
 - ONCE EVERY 6 MONTHS
 - IF 2 SAMPLES EXCEED DESIGN TREATMENT STANDARDS BY MORE THAN 100% A PE MUST INSPECT/RECOMMEND CORRECTIVE ACTION

MONITORING

INNOVATIVE TREATMENT SYSTEMS

- MONITORING IN ACCORDANCE WITH THE DESIGN ENGINEER'S PROTOCOL
 - AT A MINIMUM
 - DETERMINE IF BASELINE STANDARDS ARE BEING MET
 - ADDRESS THE MONITORING FOR ANY CONTAMINANT BEING REDUCED
 - ADDRESS THE MONITORING OF ANY SITE CONDITION BEING MODIFIED

FLORIDA
DATABASE OF
APPROVED
TECHNOLOGIES

The background of the slide is split into two horizontal sections. The top section has a blue gradient and is decorated with several realistic water droplets of varying sizes. The bottom section is a solid light gray and features a dense cluster of 3D question marks in the upper right corner. Centered in the lower half of the gray section is the contact information.

QUESTIONS/COMMENTS
ROXANNE GROOVER
RGROOVER@FOWAONSITE.COM