

What does a Type 1.09 Aquifer Protection Permit Inspection look like?



Raymond Morgan, P.E.

1. This permit came into being on 1/1/2001.
2. It was created to reduce costs and the permitting time of a facility by eliminating the need for an individual permit for certain Wastewater Treatment Facilities (WWTFs).
3. It grandfathered all onsite WWTFs in operation on 1/1/2001 whether they had records of prior approval or not.
4. The Arizona Administrative Register (AAR) explained that delegated authorities were to focus on determining whether or not a facility was operating correctly and to stop trying to retrieve historic approval paperwork from the permit holders.

Time & Reason for the Permit

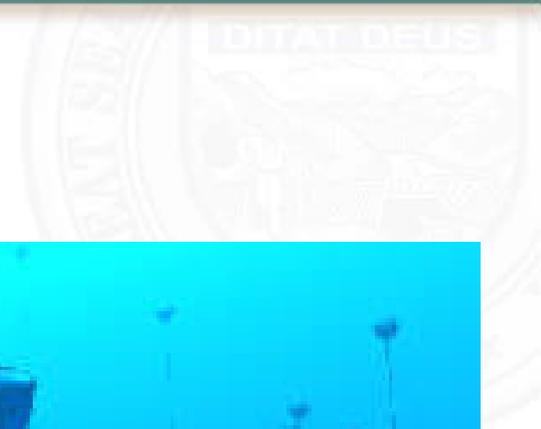


1. This permit gives approval for the operation of:
 - a. A sewage treatment facility with flows less than 20,000 gallons per day and approved by the Department before January 1, 2001, and
 - b. An on-site wastewater treatment facility with flows less than 20,000 gallons per day operating before January 1, 2001;

2. The person who owns or operates a facility can only do so if the following conditions are met:
 - a. The discharge from the facility does not cause or contribute to a violation of a water quality standard;
 - b. The owner or operator does not expand the facility to accommodate flows above the design flow or 20,000 gallons per day, whichever is less;
 - c. The facility only treats typical sewage (max of BOD5 – 380 mg/l, TSS – 430 mg/l, TN – 53 gm/l & FOG – 75 mg/l);

- d. The facility does not treat flows from commercial operations using hazardous substances or creating hazardous wastes, as defined in A.R.S. § 49-921(5);
- e. The discharge from the facility does not create any environmental nuisance conditions listed in A.R.S. § 49-141;
 - Environmental Nuisance – Sewage, human excreta, wastewater, garbage or other organic wastes deposited, stored, discharged or exposed so as to be a potential instrument or medium in the transmission of disease to or between any person or persons.

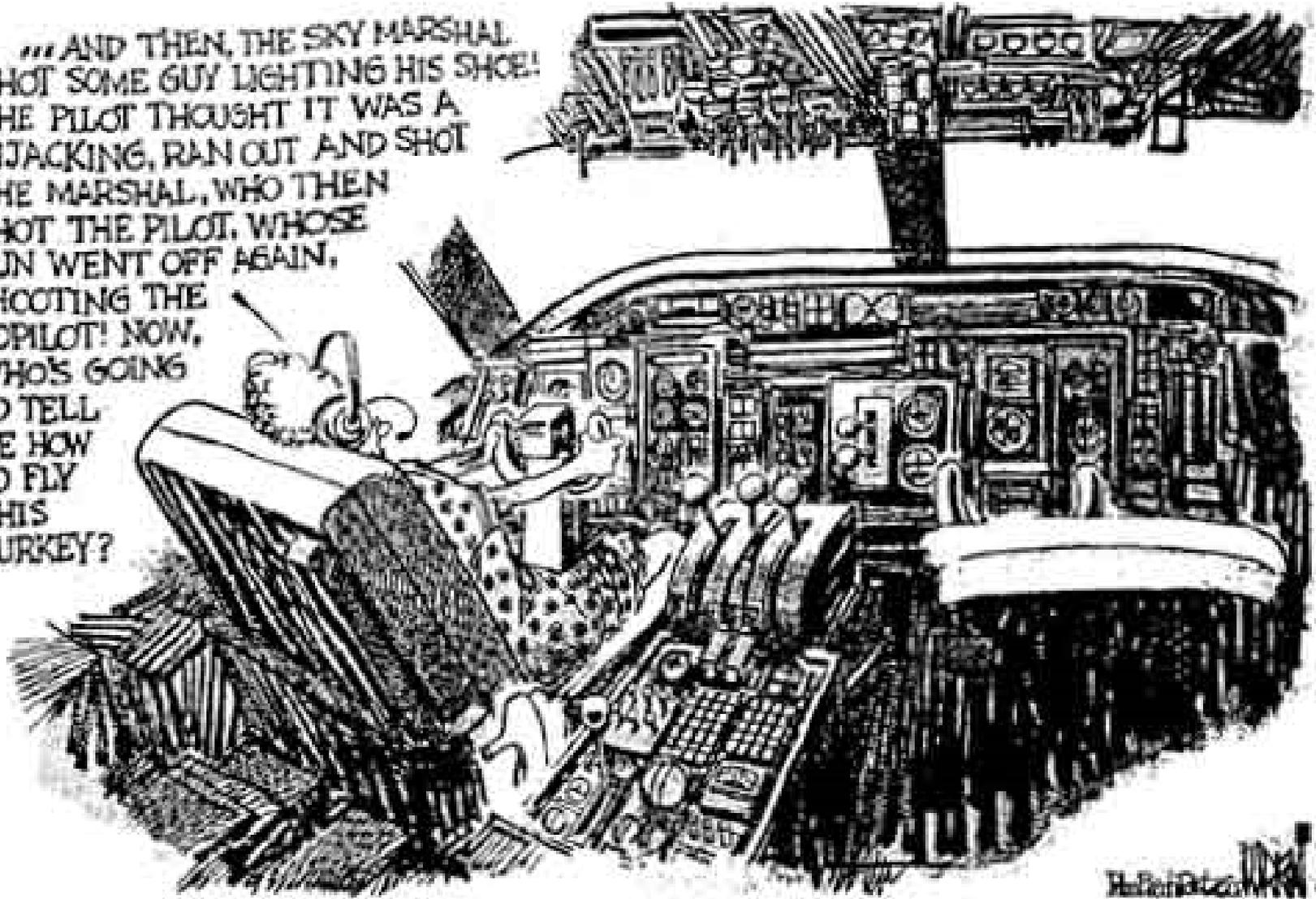
- f. The owner or operator does not alter the treatment or disposal characteristics of the original facility, except as allowed under R18-9-A309(A)(9)(a).
 - 1) The owner of the facility must maintain all of the approved Wastewater Treatment Facility (WWTF) in good working order.
 - 2) No new additions to the WWTF.



3. Operators are required for the type 1.09 permit as per R18-5-102 (2 & 10)
 - a. Arizona licensed operators are required for all type 1.09 permits unless they –
 - 1) Discharge only to a septic tank
 - 2) Serve a home

Details of the Inspection

... AND THEN, THE SKY MARSHAL
SHOT SOME GUY LIGHTING HIS SHOE!
THE PILOT THOUGHT IT WAS A
HIJACKING, RAN OUT AND SHOT
THE MARSHAL, WHO THEN
SHOT THE PILOT, WHOSE
SUN WENT OFF AGAIN,
SHOOTING THE
COPLOT! NOW,
WHO'S GOING
TO TELL
ME HOW
TO FLY
THIS
TURKEY?



1. Determine which facilities to inspect.
2. Contact the representative of the facility to be inspected and arrange a date and time for the inspection.
3. Exchange cell phone numbers with the representative to facilitate communication if delays occur or there is difficulty finding the facility.
4. Send a copy of the inspection checklist to the representative to do a pre-inspection review of the facility and make needed corrections.

5. Prepare for the inspection by:
 - a. Filling out the facility description page of the inspection report
 - b. Generating the inspection number
 - c. Reviewing an aerial photo of the facility to determine direction of surface drainage and general facility layout
 - d. Assembling personal protective gear (hard hat, steel toed boots, etc.) and inspection tools (tape measure, camera, GPS unit, tablet, clipboard, etc.)
6. Upon arrival at the facility, read the Notice of Inspection Rights to the facility representative and have them sign it.

7. Utilize the inspection checklist to determine whether or not the facility is in compliance with their permit.
8. Review Inspection findings with the facility representative
9. Complete the inspection report, incorporating any findings into the report that were not represented in a specific checklist item.
10. Field issue the inspection report to the facility representative
11. Potentially issue a Notice of Opportunity to Correct Deficiencies



INSPECTION RIGHTS

- I understand that I can accompany the ADEQ representative(s) on the premises, except during confidential interviews.
- I understand that I have right , on request, to:
 - Copies of any original documents taken during the inspection, and that ADEQ will provide copies of those documents at ADEQ's expense;
 - A split of any samples taken during the inspection, if the split of the samples would not prohibit an analysis from being conducted or render an analysis inconclusive;
 - Copies of any analysis performed on samples taken during the inspection and that ADEQ will provide copies of this analysis at ADEQ's expense;
 - Copies of any documents to be relied on to determine compliance with licensure or regulatory requirements if the agency is otherwise permitted by law to do so.
- I also understand that:
 - Each person who is interviewed by an ADEQ inspector during the inspection must be informed that:
 - (1) participation in an interview is voluntary, unless legally compelled to participate;
 - (2) they have the right to have an attorney or other experts in their field present during the interview to represent or advise the regulated person;
 - (3) the ADEQ inspector may not take any adverse action or treat less favorably or draw any inference as a result of the regulated person's decision to be represented by an attorney or advised by any other experts in their field;
 - (4) statements made by the person may be included in the inspection report; and
 - (5) they have the right to 24 hours to review and revise any written witness statement drafted by the ADEQ inspector on which the ADEQ inspector requests that person's signature.
 - If the information and documents provided to the ADEQ inspector become a public record, trade secrets and proprietary and confidential information may be redacted, unless the information and documents are not confidential pursuant to statute.
 - Each person interviewed during the inspection must be informed that statements made by the person may be included in the inspection report;
 - Each person whose conversation is tape recorded during the inspection must be informed that the conversation is being tape recorded;
 - If an administrative order is issued or a permit decision is made based on the results of the inspection, I have the right to appeal that administrative order or permit decision. I understand that my administrative hearing rights are set forth in Arizona Revised Statutes § 41-1092 *et seq.* and my rights relating to an appeal of a final agency decision are found in Arizona Revised Statutes § 12-901 *et seq.*;
 - If I have any questions or concerns about this inspection, I may contact the person listed as the ADEQ Follow-up Contact on the front of this form; ADEQ's Ombudsman at (602) 771-4322 (toll free inside Arizona at (800) 2345677, extension, 771-4322); or the Arizona Ombudsman-Citizens' Aid office at (602) 277-7292 (toll free at (800) 872-2879);
 - If I have any questions concerning my rights to appeal an administrative order or permit decision, I may contact ADEQ's Office of Administrative Counsel at (602) 771-2212 (toll free inside Arizona at (800) 234-5677, extension 771-2212).

Details of the Inspection



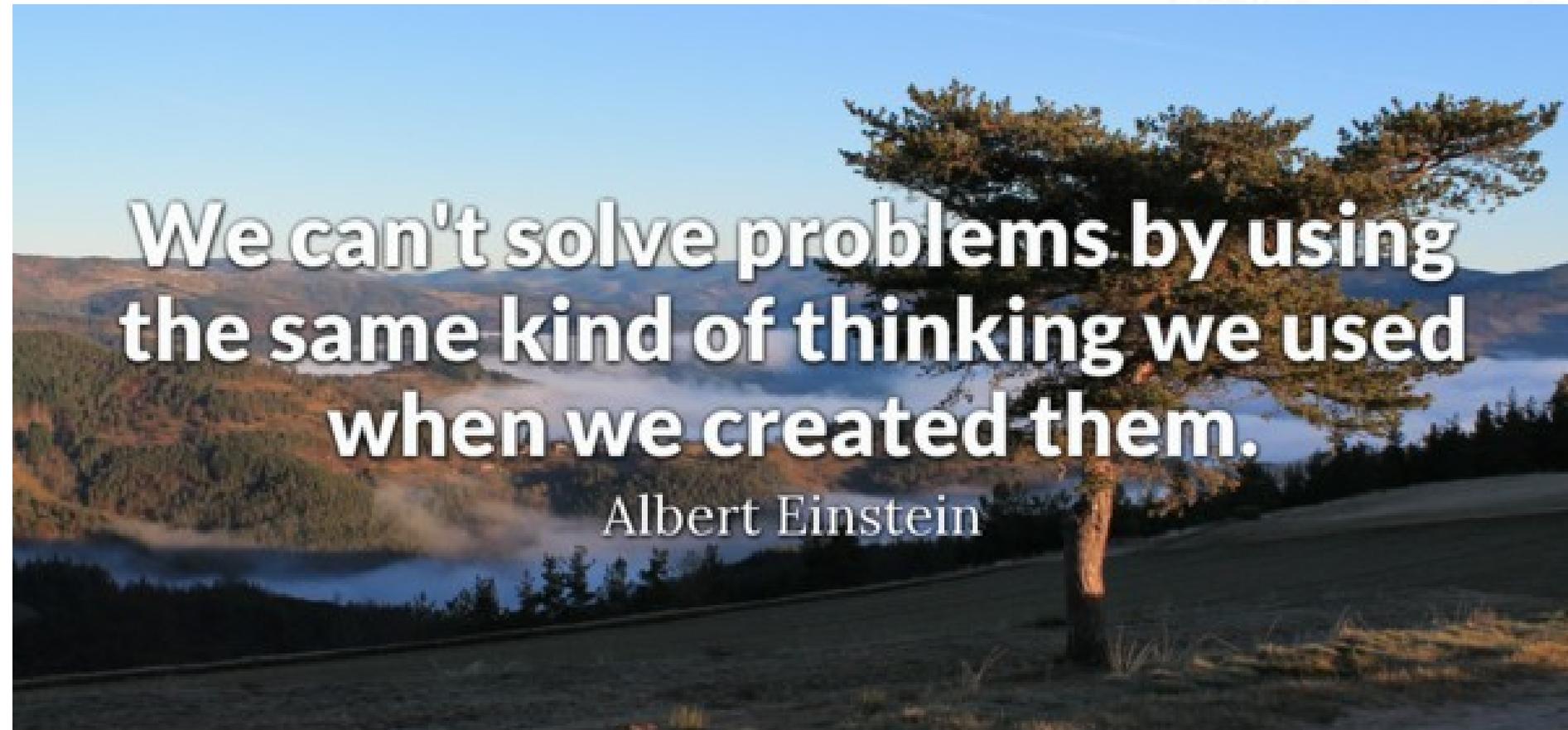
Aquifer Protection Permit Compliance Checklist For Type 1.09 Permit

This checklist is provided as a tool for permit holders and ADEQ staff to have a consistent understanding of the major compliance expectations under this permit. This checklist is designed to be easy to read and follow. It is intended only to address the permit requirements that ADEQ feels are the most important to protect human health and the environment. This list does not include every permit condition and permit holders should ensure they understand the full requirements of their permit. This list does not supplant or supersede any legal requirement and is not binding on the permit holder or ADEQ staff.

Facility Name: Click here to enter text.	Inspection No: Click here to enter text.
Place ID: Click here to enter text.	Inspection Date: Click here to enter text.
Inventory/Permit #: Click here to enter text.	Inspector(s):
Current LTF#: Click here to enter text.	
Facility Address: Click here to enter text.	Inspector Phone: Inspector Email:
City, State, Zip: Click here to enter text. County: Choose an item.	
Permittee/Responsible Party: Click here to enter text.	WWTP Population Served: Click here to enter text. Treatment Plant Grade: Click here to enter text. Collection System Grade: Click here to enter text.
Contact: Click here to enter text.	
Mailing Address: Click here to enter text.	
City, State, Zip: Click here to enter text. Phone: Click here to enter text. Email: Click here to enter text.	
Operator/ID: Click here to enter text.	Compliance Summary: Certified Operator <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Physical Facilities <input type="checkbox"/> Yes <input type="checkbox"/> No
Phone: Click here to enter text.	
Email: Click here to enter text. Op. Cert. Grade/Expiration: Click here to enter text.	
Results of Inspection:	
<input type="checkbox"/> No deficiencies were noted during the course of the inspection. No ADEQ action will result from this inspection.	
<input type="checkbox"/> Potential deficiencies were noted during the course of the inspection. Additional correspondence regarding this inspection may be forthcoming.	
Inspection Report Issued: Choose an item.	Facility Initial: ADEQ Initial:
Potential Deficiencies:	
<p>PHOTOGRAPHS TAKEN DURING INSPECTIONS ARE AVAILABLE ON REQUEST</p>	

Details of the Inspection

Average Daily Wastewater Flow [R18-9-B301(l)(1)]	Requirement met?	Comments
Is the average daily flow less than 20,000 gallons per day?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Discharge from the Wastewater Treatment Facility (WWTF) [R18-9-B301(l)(2) & R18-9-A309(A)(7)(f)]		
Does the discharge from the WWTF cause or contribute to a violation of a water quality standard?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Type of Wastewater [R18-9-B301(l)(2) & R18-9-A309(A)(7)(a)]		
Does the facility treat only typical wastewater (waste from toilet flushing, food preparation, laundry or personal hygiene)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Commercial Wastewater Discharges [R18-9-B301(l)(2) & R18-9-A309(A)(7)(b)]		
Does the facility treat wastewater from commercial operations using hazardous substances (as defined under A.R.S. § 49-921(5)) or creating hazardous wastes?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Environmental Nuisance Condition [R18-9-B301(l)(2) & R18-9-A309(A)(7)(f)]		
Does the discharge from the facility create an environmental nuisance condition as listed in A.R.S. § 49-141?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Expansion of the Facility [R18-9-B301(l)(2)]		
Has the facility been expanded to accommodate flows above the design flow or 20,000 gallons per day, whichever is less?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Facility Modification [R18-9-B301(l)(2)]		
Has the facility been modified to alter the treatment or disposal characteristics of the original facility except as allowed under R18-9-A309(A)(9)(a) (for repairs and maintenance)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	



**We can't solve problems by using
the same kind of thinking we used
when we created them.**

Albert Einstein

1. Failure to maintain facility as originally approved
2. Failure to construct a facility as originally approved
3. Failure to operate facility as originally approved

Failure to maintain facility as originally approved

Evaporation
Transpiration (ET)
Bed



ET Bed



Failure to maintain facility as originally approved

ET Bed



Failure to maintain facility as originally approved

ET Bed



Failure to maintain facility as originally approved

ET Bed



Failure to maintain facility as originally approved

DATA DEUS



ET Bed

Extended Aeration Treatment Facility with Evaporation Lagoons



Extended Aeration Treatment Facility with Evaporation Lagoons



Extended Aeration Treatment Facility with Evaporation Lagoon



Residential Aerobic Treatment Unit (ATU) with Spray Disposal



Residential ATU with Spray Disposal



Residential ATU with Spray Irrigation Disposal



Residential ATU with Spray Irrigation Disposal



Residential ATU with Spray Disposal



Residential ATU with Spray Disposal



Residential ATU with Spray Disposal



01.19.2012

Commercial ATU with Spray Disposal



Commercial ATU with Spray Disposal



Commercial ATU with Spray Disposal



Commercial ATU with Spray Disposal



Failure to operate a facility as originally approved



Commercial ATU with Spray Disposal



Commercial ATU with Spray Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Recirculating Sand Filter with Seepage Pit Disposal



Evaporation - Transpiration Bed



Evaporation - Transpiration Bed



Evaporation - Transpiration Bed



Evaporation - Transpiration Bed



Evaporation - Transpiration Bed



10.19.2011

Activated Sludge Wastewater Treatment Facility (WWTF)



Activated Sludge Wastewater Treatment Facility (WWTF)



Activated Sludge Wastewater Treatment Facility (WWTF)



Activated Sludge Wastewater Treatment Facility (WWTF)



Activated Sludge Wastewater Treatment Facility (WWTF)

WWT TREATMENT FLOW DESIGN CRITERIA

I. Flows	
Plant Design Flow (Maximum Day), GPD	12,000
Average Day, GPD	5,400
II. Total BOD Loadings	
Maximum Day, LB/Day	39
Average Day, LB/Day	18
III. Total Suspended Solids Loadings	
Maximum Day, LB/Day	39
Average Day, LB/Day	18
IV. Design Plant Efficiencies	
Effluent BOD, %CL	~5
Effluent Suspended Solids, %CL	~5
V. Headworks	
A. Cominitor	
Type	Open Channel
Capacity, GPM	500
Increaser	
B. Flow Measurement	
Flow Type	Parshall
Three Sides, In.	
Level Sensing Method	Ultrasonic
VI. Equalization Tank	
Length, Ft.	11
Width, Ft.	6.5
Maximum Liquid Depth, Ft.	5
Freeboard, Ft.	4,100
Volume, Gal.	5
Air Supply, SCM	1
Influent River Horsepower	
VII. Aeration Tank	
Length, Ft.	11.5
Width, Ft.	11
Maximum Liquid Depth, Ft.	5
Freeboard, Ft.	7,300
Volume, Gal.	
Retention Time, Hr.	15
Maximum Day	34
Average Day	21
Air Supply, SCM	2
Influent River Horsepower	
VIII. Clarifier	
Length, Ft.	4
Width, Ft.	4
Maximum Liquid Depth, Ft.	4
Freeboard, Ft.	2
Volume, Gal.	800
Retention Time, Hr.	
Maximum Day	1.6
Average Day	3.4
Overflow Rate, GPD/ft. ²	
Maximum Day	600
Average Day	270
weir Rate, CFM/L.F.	
Maximum Day	5,000
Average Day	1,200
IX. Not Well	
Length, Ft.	4
Width, Ft.	4
Maximum Liquid Depth, Ft.	7.4
Freeboard, Ft.	2.4
Volume, Gal.	800
X. Advanced Wastewater Treatment Unit	
Nominal Flow, GPD	12,000
Flotation Chamber Volume, Gal.	180
Chemical Feed Tank	4
Number (Including Hypochlorinator)	
Volume, In., Gal.	20
Pump Flow, G.P.M.	21
Take-Off Rate, GPD/In. Rate at Nominal Flow, GPD/In.	200
Filter Media	
Surface Area, Ft. ²	7.16
Surface Loading at Nominal Flow, GPD/ft. ²	3
Backwash Volume, Gal.	500
Backwash Rate, GPM	32

XI. Effluent Storage (On-line Contract) Tank

Length, Ft.	11.2
Width, Ft.	11
Maximum Liquid Depth, Ft.	9
Freeboard, Ft.	7,000
Volume, Gal.	
Chlorine Contact Time, Hr.	2
Min. Liquid Level in Tank	
XII. Aerobic Digester	
Length, Ft.	11
Width, Ft.	8
Maximum Liquid Depth, Ft.	8
Freeboard, Ft.	5,100
Volume, Gal.	
Total Sludge Age, Days	44
Influent River Horsepower	2
Air Supply, SCM	12
XIII. Sludge Drying Bed	
Total Area, Ft. ²	600
Number of Compartments	2
Compartment Length, Ft.	15
Compartment Width, Ft.	12

XIV. Pumping Stations

A. Equalization Pumps	
Number of Pumps	2
Type	Air-Driven Diaphragm
Flow, GPM	4
Head, Ft.	2 to 10
B. Sludge Return Pumps	
Number of Pumps	2
Type	Air-Drives Diaphragm
Flow, GPM	4
Head, Ft.	2
C. A.S.T. Influent Pumps	
Number of Pumps	2
Type, CM	Air-Driven Diaphragm
Flow, Ft.	17
Head, Ft.	
D. Backwash Pumps	
Number of Pumps	2
Type	Centrifugal
Flow, GPM	40
Head, Ft.	40
E. Final Effluent Pumps	
Number of Pumps	2
Type, CM	Centrifugal
Flow, Ft.	10
Head, Ft.	50
F. Sump Pumps	
Number of Pumps	2
Type	Submersible Centrifugal
Flow, CM	15
Head, Ft.	17
G. Sludge Transfer Pump	
Number of Pumps	1
Type	Vertical Centrifugal
Flow, CM	150
Head, Ft.	6
H. Drying Bed Underflow Pump	
Number of Pumps	2
Type	Submersible Centrifugal
Flow, CM	10
Head, Ft.	22
IV. Mixers	
Number	3
Type	Positive Displacement
Motor Horsepower	71
Maximum Capacity, G.P.M.	3.8
Discharge Pressure, PSIG	
XV. Standby Generator	
Type	Diesel-Electric, Auto-Start
Capacity, KW	45

XVI. Compressor

Number	2
Type	Single Stage, Pressure Lake
Motor Horsepower	10
Capacity, Gals. SCM	120
Influent Capacity, Gallons	

XVII. Building Heating/Ventilating

Design Temp.	Summer	115
	Winter	25
A. Lab & Control Room		
Inside Design Temp.	Summer	68
	Winter	48
B. Pump Room		
Winter Ventilation		6
Air Changes/Hr.	CM	70
Summer Cooling		85
Design DB		2500
Evaporative Cooling (ECM)		
C. Tank Room		
Winter and Summer Ventilation		6
Air Changes/Hr.	CM	1000
D. Blower Room		
Summer Evaporative Cooling (ECM)		700
Winter Ventilation		600
Temp. above 40°F (CM)		5000
Temp. below 40°F (CM)		

TREATMENT PLANT

DESIGN CRITERIA

PREPARED BY: [Redacted]

DESIGNED BY: [Redacted]

DRAWN BY: [Redacted]

CHECKED BY: [Redacted]

DATE: [Redacted]

DRAWING NO. [Redacted]

SHEET [Redacted]

OF 66

Activated Sludge Wastewater Treatment Facility (WWTF)

WASTEWATER TREATMENT PLANT DESIGN CRITERIA

I.	<u>Flows</u>	
	Plant Design Flow (Maximum Day), GPD	12,000
	Average Day, GPD	5,400
II.	<u>Total BOD Loadings</u>	
	Maximum Day, LB/Day	39
	Average Day, LB/Day	18
III.	<u>Total Suspended Solids Loadings</u>	
	Maximum Day, LB/Day	39
	Average Day, LB/Day	18
IV.	<u>Design Plant Efficiency</u>	
	Effluent BOD, MG/L	< 5
	Effluent Suspended Solids, MG/L	< 5
V.	<u>Headworks</u>	
	A. Comminutor	
	Type	Open Channel
	Capacity, GPM	560
	Horsepower	2
	B. Flow Measurement	
	Flume Type	Parshall
	Throat Width, in.	1
	Level Sensing Method	Ultrasonic

Extended Aeration WWTF



Extended Aeration WWTF



Extended Aeration WWTF



Extended Aeration WWTF



Questions?

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