MOHAVE COUNTY
DEVELOPMENT SERVICES

P. O. Box 7000 Kingman, Arizona 86402-7000 3250 E. Kino Ave, Kingman www.mohave.gov Telephone (928) 757-0903

Scott Holtry
Department Director

J. David Strahl
County Manager

Dear Builder:
This packet is to help you through the process of obtaining a permit to construct a septic system. This packet will give you step-by-step directions and appendices which will help you in this process. Please take a few moments to carefully read all the instructions contained in this packet.

While Development Services can provide resources to help you through this process, we are unable to design the system for you. If you require further help with the design of your system, you must contact a third party to help you in this regard.

Only 4.02 Conventional Systems can be designed and installed owner builder. All systems 4.03 and higher require engineering and a contractor for installation. Commercial Projects also require licenses contractors.

Sincerely,
Scott Holtry, Director
Mohave County Development Services
E-Mail: EQpermits@mohave.gov

Please Note

The FIRST step is to have an approved site evaluator perform soils and/or percolation testing at the property. A list of the persons (site evaluators) who are approved to conduct this type of testing in Mohave County is included in the packet. This testing must be completed by a third party who is approved in Mohave County and cannot be performed by the owner of the property.

The application CANNOT be turned into the Development Services office without the completed Site Investigation Report.

Following are the components of the application with instructions:

Procedures to Obtain Construction & Discharge Authorizations

- Read carefully for an overview of how this process will work.

Mohave County Application Worksheet

- Fill in numbers 1-6 and 8-11.

Notice of Intent to Discharge for a Septic Tank & Disposal Field System

a. Fill in General Information Section.
b. Fill in Supplemental Information.
   i. Section 10 (gallons per day) may be found by using Fixture Count Calculation Worksheet.
   ii. Soil Absorption Rate: Refer to the Site Investigation Report given to you by your site evaluator. It will be listed as the "SAR"
c. Fill in Other Miscellaneous Required Information.
d. Fill in Name, Sign and Date the Notice of Intent.

Disposal Field Design/Configuration (for Conventional Systems)

a. The required absorption area may be found by dividing the projected sewage flow (gallons per day) by the Soil Absorption Rate (SAR – found in the Site Investigation Report provided by the site evaluator)
   i. Example: 450 gpd ÷ 0.6 gpd/sq. ft = 750 sq. ft. absorption area
b. Fill in A through D.
   i. B is the width of the distribution pipe (leach pipe) plus 2" of rock
   ii. C is the total depth of aggregate. The maximum effective depth is 4 ft, depending on any limiting conditions noted by the site evaluator.
   iii. D is the total of A through C.
c. Fill in Trench Width.
d. Fill in Total Length of trench (100 ft. is the maximum a single line may be)
   i. Find the total length of trench by dividing the total absorption area by the effective depth PLUS width of the trench.

Example:

750 sq. ft. absorption area
4 ft. effective depth (sidewall area x 2) = 8 ft.
3 ft. trench width
750 sq. ft. ÷ 8 + 3 (11) = 69 ft. length

**4.03-4.22 Alternative require engineering design

Plot Plan (Commercial Projects may also require Site Plan)

a. Refer to Appendix B for instructions and a sample plot plan.
b. Refer to Appendix C for minimum setback requirements.

Sewer Availability Information Sheet

- This sheet must be turned in with every application. If the property is in an area where sewer MAY be available, you MUST have the sheet completed by the local sewer provider to verify if the property must connect to an available sewer system. In more rural locations, the applicant may complete the form.

Temporary Agreement Sheet

- This sheet must be turned in with every application, acknowledging the requirements to connect to any future municipal sewer systems when service may become available per R18-9-A309.A5.

List of Materials and Components for constructing the on-site wastewater facility

- Refer to Appendix A for a sample list.

Operation & Maintenance Manual

- Refer to Appendix E for a sample.

Inspection

- Refer to Appendix F instructions for how to complete watertightness test. Refer to Appendix D for an inspection checklist. These are the things the inspectors will be looking for the day of the inspection.

Owner Authorization

- If anyone other than the property owner will be applying for the permit on behalf of the property owner; this form is required. It must be signed by the owner and notarized. This does not allow someone other than the property owner to build the system if applying as an owner builder permit.

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Environmental Quality/Waste Disposal Division

ON-SITE WASTEWATER APPLICATION PROCEDURES

MOHAVE COUNTY DEVELOPMENT SERVICES DEPARTMENT ENVIRONMENTAL QUALITY/WASTE DISPOSAL DIVISION	
BULLHEAD CITY 1130 HANCOCK ROAD ZIP 86442 (928) 758-0707	**KINGMAN** 3250 E. KINO AVENUE ZIP 86409 (928) 757-0903

Application can be submitted through the Mohave County Portal https://co-mohave-az.smartgovcommunity.com/Public/Home

CONTENTS

- Letter & Instructions
- Application for on-site wastewater system
  - Procedures to Obtain Construction & Discharge Authorizations
  - Mohave County Permit Application Worksheet
  - Notice of Intent to Discharge
  - Fixture Count Calculation Chart Worksheet
  - Disposal Field Design/Configuration
  - Plot Plan
  - Sewer Availability Information Worksheet
  - Temporary Agreement
  - Agent Authorization
- Site Evaluator List – approved for Mohave County
- Appendix A: Sample for Conventional System & Material List
- Appendix B: Instructions for completing a plot plan/Sample Plot Plan
- Appendix C: Minimum Setback Distances
- Appendix D: Checklist for Inspection
- Appendix E: "So Now You Own a Septic System"
- Appendix F: Instructions for Watertightness Test
- Request for Discharge Authorization

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NOTICE OF INTENT TO DISCHARGE
ON-SITE WASTEWATER TREATMENT FACILITY
INSTRUCTIONS

Submit Notice of Intent to Discharge (NOI) to obtain authorization to construct and operate a septic tank and disposal field under a Type 4.02-4.22 General Aquifer Protection Permit in accordance with **Arizona Administrative Code (A.A.C.) R18-9-Article 3.**

The following must be submitted to complete an application for an onsite wastewater treatment facility. **Payment is due at the time of submittal** and is not refundable, permits are not transferable.

Requirements for submitting a complete on-site wastewater application must include:

- Mohave County Permit Application Worksheet
- Notice of Intent to Discharge
- Fixture Count Calculation Chart Worksheet
- Design Configuration Sheet
- Draft Operation and Maintenance Manual (Alternative Systems Only)
- On-site Wastewater Facility Plot Plan ****Use Engineer's Scale – MAX. 1 inch = 60 feet****
- Site Plan (Commercial Only)
- Sewer Availability Sheet
- Temporary Agreement
- List of Materials and Components for constructing the on-site wastewater facility
- Property Floodplain Information Sheet **(PFI)** email: MCFloodInfo@mohave.gov
- Site Investigation Report

GENERAL APPLICATION PROCESS

The application will be reviewed to ensure it is administratively complete. Then reviewed for technical compliance. Once all requirements have been met, a Construction Authorization (CA) will be issued to the applicant. CA must be signed and returned, then construction may begin of the on-site wastewater facility.

****Alternative & Commercial Systems must be installed by a contractor licensed for this type of work****
Construction **MUST** be completed, and a Request for Discharge Authorization (RDA) must be submitted within **2 years** to request an inspection of the facility. **The following must be submitted with the RDA**:

1. RDA form with Certification that the septic tank passed watertightness test after installation.
2. Final as-built plot plan of the project if it differs from the proposed plan.
3. Certificate of Completion or (ECC) (Alternative Systems Only)

When the above documents are received, an inspector will inspect the facility. If the facility was constructed according to the approved plan in compliance with all applicable State laws and local regulations, a Discharge Authorization (DA) will be issued.

FEES

Fees for Type 4 General Permits (4.02 through 4.22) are listed on website: Mohave County Septic Permitting

If an applicant requests priority review, the Department shall approve or deny the request. The Department will only consider requests where environmental nuisances of occupied properties exist. The request must be accompanied by a failed NAWT inspection report. When determining whether to approve a priority review request The Department shall consider the complexity of the project and the Department's current workload.

LICENSING TIME FRAMES

Licensing Time Frames (LTFs) are specified by the Arizona Department of Environmental Quality in A.A.C. R18-1-525. The following LTFs limit the number of business days ADEQ can review your project without a penalty:

License Type	Administrative Completeness Review	Substantive Review	Overall Time Frame
Single 4.02, 4.03, 4.13, and 4.14 General Permits	42	31	73
Combined Two or Three Type 4 General Permits	42	53	95
Combined Four or More Type 4 General Permits	42	94	136

- Each request for an alternative design, installation, or operational feature under A.A.C. R18-9-A312(G) to a type 4 general permit adds eight business days to the substantive review timeframe.

Notes:

1. Construction of the facility CANNOT take place until the Construction Authorization is issued.
2. Discharge CANNOT take place until the Discharge Authorization is issued.
3. If the construction differs from the proposed plan, and a second inspection and/or second review of the system is necessary, additional fees may apply.
4. A Sewer Availability Information Sheet is required from the sewer provider for the property location. This **MUST** be done **PRIOR** to having a site investigation and must be attached to the application submittal.

Mailing Address: DEVELOPMENT SERVICES P.O. Box 7000, Kingman, AZ 86402-7000

Mohave County
Onsite Wastewater Treatment Facility
Permit Application Worksheet

Date_____

Project # _____

Permit # _____

PLOT PLANS MUST BE NO LARGER THAN 8 ½ " X 11"
NOTE: Shaded areas are for county use only.

1. Type of Improvement: _____
2. Applicant's name: _____
   Mailing address: _____
   City: _____ State: _____ Zip: _____
2A. Contact Name: _____ **PHONE**: _____
   Fax Number: _____ Email: _____
3. Property Owners Name: _____
   Mailing Address: _____
   City: _____ State: _____ Zip: _____
   Fax Number: _____ Email: _____

4. **SITE LOCATION ADDRESS**: _____ _____ _____
   House No Street Dir Street Name:
5. Legal Description:

   Assessor Parcel Number: ___ ___ ___ - ___ ___ - ___ ___ ___ ___ Parent Parcel: ☐ Yes
   Subdivision Name: _____ Corner Lot: ☐ Yes
   Unit/Tract/Block/Lot: _____ -- _____ -- _____
   Township/Range/Section: _____ -- _____
6. Plot Plan Drawing (see instructions on plot plan form)

Public Works, Flood Control Division

7. Is there an existing structure? ☐ YES ☐ NO
7A. Previous PFI#: _____ Previous FUP#: _____

Environmental Quality Division

8. Is this an existing system? ☐ YES ☐ NO
8A. Is this a Conventional Septic? ☐ YES ☐ NO, Alternative System? ☐ YES ☐ NO
9. Septic Tank Size: _____ Manufacturer: _____
10. Septic Contractor: _____ License #: _____
    Or Owner / Builder: ☐ YES ☐ NO

Number of bedrooms:_____

Number of fixture units:_____

Planning & Zoning Division

12. Zoning: _____

BAL DUE $_____

Note: Must provide scaled construction drawings for Development Services application

GENERAL INFORMATION

1 Project Name

Project Name

2 Applicant (person responsible for overall compliance)

(Check One) ☐ Owner ☐ Operator

3 Site Information

Location of proposed tank site

Latitude _____º _____‘ _____“ N Longitude _____º _____‘ _____“ W

Legal Description of Property _____.

Water Supply (check one):

- ☐ Public Water
- ☐ Private Well *See Note may require letter
- ☐ Haul Water *See Note may require letter

Wash or drainage easement: If system is proposed within the 50-foot setback required by the Aquifer Protection Permit, a letter must be obtained from the appropriate flood plain administrator allowing a reduction of the setback.

If applicable a letter from floodplain administrator must be included in the application packet.

4 Existing Environmental Permits

List any other federal or state environmental permits issued for or needed by the facility, including any individual permit, Groundwater Quality Protection Permit, or Notice of Disposal that may have previously authorized the discharge (attach additional pages if necessary).

5 Review Fees

- ☐ Standard Review Fee (See Instructions)
- ☐ Request for priority review for this NOI and include failed NAWT Inspection report.

SUPPLEMENTAL INFORMATION

6 Information and Submission Requirements (Check All Completed Items)

- ☐ Site Investigation Report per A.A.C. R18-9-A309(B)(1)
- ☐ Plot Plan per A.A.C. R18-9-A309(B)(2)

7 Design Flow and Strength of Wastewater

A) Design flow per A.A.C. R18-9-A309(B)(3) _____gallons per day. Soil Absorption Rate (SAR) _____gallons per day.

B) The expected strength of the wastewater (if the strength exceeds the levels for typical sewage) is attached? ☐ Yes

☐ **Residential**

For single family dwelling, a list of the number of bedrooms and plumbing fixtures and corresponding unit flows used to calculate the design flow of the facility per A.A.C. R18-9-A314

Wastewater Source	Number	Unit Flows used to calculate the design flow of the facility
Bedrooms		
Plumbing Fixtures		

☐ **Commercial** (or dwelling over 8 bedrooms or 56 fixture units)

For a dwelling other than for a single family, a list of each wastewater source and corresponding unit flows used to calculate the design flow of the facility. (See Table 1)

Wastewater Source	Number	Unit Flows used to calculate the design flow of the facility

8 List of Materials and Components

A list of material and components for constructing the onsite wastewater treatment facility is attached? ☐ Yes

*Public Water note: If no public water is available, and system is located less than 50 ft. from any property line, applicant must obtain an agreement from the owners of any affected undeveloped adjacent property to limit the location of any new well on their property to at

least 100 feet from the proposed treatment works and primary and reserve disposal works. The agreement must be recorded appropriately, and the documentation must be approved by the Department.

9 Selected General Permits (Check All General Permits that Are being Applied for)

☐ **Alternative Request(s) are attached (A.A.C. R18-9-A312(G))**

Please indicate how many A312G requests are attached _____ .

☐ **4.02 Septic Tank with Disposal by Trench, Bed, Chamber Technology, or EZ Flow. Less than 3,000 Gallons per Day (GPD) Daily Flow**

A) This on-site wastewater treatment facility consists of a conventional septic tank system and disposal field sized for a design flow of_____gallons per day. The septic tank conveys wastewater to a disposal field consisting of (check one):
   1. ☐ Trench
      a. ☐ Filled with aggregate [A.A.C. R18-9-101(1)], or
      b. ☐ Filled with crushed, recycled concrete [A.A.C. R18-9-E302(C)(2)(d)]
   2. ☐ Bed
   3. ☐ Chamber technology
   4. ☐ EZFlow

B) The date the system is expected to start operation_____.

C) The sewage to the septic tank has the characteristics of ☐ Typical household sewage or ☐ Typical household sewage and _____

D) This on-site wastewater treatment facility is for (check one):
   ☐ Conventional septic tank system serving a single-family residence.
   ☐ Conventional septic tank system serving other than a single-family residence.

☐ **4.03 Composting Toilet, Less than 3,000 GPD Daily Flow (Please select from Product List)**

A) Composting toilet system manufacturer name _____

B) Composting toilet system manufacturer address _____

C) A copy of the manufacturer's warranty, and the specifications for installation, operation, and maintenance has been provided? ☐ Yes

D) The product model number _____

E) Calculations for the composting rate, capacity, and waste accumulation volume are attached? ☐ Yes

F) Documentation of listing by a national listing organization indicating that the composting toilet meets the stated manufacturer's specifications for loading, treatment performance, and operation has been attached (unless the composting toilet is listed under R18-9-A309(E) or is a component of a reference design approved by the Department)? ☐ Yes

G) Describe the vector control method.

H) Describe the planned method and frequency for disposing of the composted human excrement residue.

_____

I) Describe the planned method for disposing of the drainage from the composting unit.

_____

J) The number of bedrooms in the dwelling or persons served on a daily basis, as applicable. _____

K) What is the corresponding design flow of the disposal works for the wastewater? _____

L) The results from soil evaluation or percolation testing that adequately characterize the soils into which the wastewater will be dispersed and the locations of soil evaluation and percolation testing on the site plan have been provided? ☐ Yes

M) The design for the disposal including the location of the interceptor, the location and configuration of the trench or bed used for wastewater dispersal, the location of connecting wastewater pipelines, and the location of the reserve area has been provided? ☐ Yes

☐ **4.04 Pressure Distribution System, Less than 3,000 GPD Daily Flow**

A) A copy of operation, maintenance, and warranty materials for the principal components has been attached? ☐ Yes

B) A copy of dosing specifications, including pump curves, dispersing component curves, and float switch settings is attached? ☐ Yes

☐ **4.05 Gravelless Trench, Less than 3,000 GPD Daily Flow**

A) The soil absorption area that would be required if a conventional disposal trench filled with aggregate was used at the site? ☐ Yes

B) The configuration and size of the proposed gravelless disposal field is attached? ☐ Yes

C) The manufacturer's installation instructions and warranty of performance for absorbing wastewater into the native soil is attached? ☐ Yes

☐ **4.06 Natural Seal Evaporative Bed, Less than 3,000 GPD daily Flow**

A) Capillary rise potential test results for the media used to fill the evapotranspiration bed, unless sand meeting a D50 of 0.1 millimeter (50 percent by weight of grains equal to or smaller than 0.1 millimeter) is used? ☐ Yes

B) Water mass balance calculations were used to size the evapotranspiration bed? ☐ Yes

☐ **4.07 Lined Evapotranspiration Bed, Less than 3,000 GPD Daily Flow**

A) Capillary rise potential test results for the media used to fill the evapotranspiration bed, unless sand meeting a D50 of 0.1 millimeter (50 percent by weight of grains equal to or smaller than 0.1 millimeter) is used? ☐ Yes

B) Water mass balance calculations were used to size the evapotranspiration bed? ☐ Yes

☐ **4.08 Wisconsin Mound, Less than 3,000 GPD Daily Flow**

A) Specifications for the internal wastewater distribution system media proposed for use in the mound are attached? ☐ Yes

B) Two scaled or dimensioned cross sections of the mound (one of the shortest basal area footprint dimension and one of the lengthwise dimension) are attached? ☐ Yes

C) Design calculations following the "Wisconsin Mound Soil Absorption System: Siting, Design, and Construction Manual," published by the University of Wisconsin - Madison, January 1990 Edition have been provided? ☐ Yes

☐ **4.09 Engineered Pad, Less than 3,000 GPD Daily Flow**

A) Design materials and construction specifications for the engineered pad system are attached? ☐ Yes

☐ **4.10 Intermittent Sand Filter, Less than 3,000 GPD Daily Flow**

A) Specifications for the media proposed for use as the sand filter are attached? ☐ Yes

☐ **4.11 Peat Filter, Less than 3,000 GPD Daily Flow (Please select from Product List)**

A) Specifications for the peat media proposed for use in the filter or provided in the peat module, including the porosity, surface area, and moisture content are attached? ☐ Yes

B) A statement indicating whether the peat is air dried, and whether the peat is from sphagnum moss or bog cotton is attached? Yes ☐

C) A description of the degree of decomposition is attached? ☐ Yes

D) Specifications for installing the peat media are attached? ☐ Yes

E) If a peat module is used, the name and address of the manufacturer, the model number, and a copy of the manufacturer's warranty are attached? ☐ Yes

☐ **4.12 Textile Filter, Less than 3,000 GPD Daily Flow (Please select from Product List)**

A) Filter manufacturer name _____

B) Filter manufacturer address _____

C) Filter model number _____

D) A copy of the manufacturer's filter warranty is attached? ☐ Yes

E) If the system is for nitrogen reduction to 15 milligrams per liter, five-month arithmetic mean, specifications on the nitrogen reduction performance of the filter system, and corroborating third-party test data is attached? ☐ Yes

F) The manufacturer's operation and maintenance recommendations to achieve a 20-year life are attached? ☐ Yes

G) If a pump or aerator is required for proper operation, the pump or aerator model number and a copy of the manufacturer's warranty is attached? ☐ Yes

H) The design report has demonstrated there is adequate storage for untreated wastewater above the high operating level for a 24-hour period per AAC R18-9-E312 (B)(4)(e)? ☐ Yes

I) The design provides fail-safe wastewater controls or operational processes to prevent the release of inadequately treated wastewater per AAC R18-9-E312 (B)(4)(g)? ☐ Yes

☐ **4.13 Denitrifying System Using Separated Wastewater Streams, Less than 3,000 GPD Daily Flow**

☐ **4.14 Sewage Vault, Less than 3,000 GPD Daily Flow**

☐ **4.15 Aerobic System, Less than 3,000 GPD Daily Flow (Please select from Product List)**

A) Aerobic system manufacturer name _____

B) Aerobic system manufacturer address _____

C) Aerobic system model number _____

D) Evidence of performance specified in AAC R18-9-E315(B) has been attached? ☐ Yes

E) A copy of the manufacturer's warranty and operation and maintenance recommendations to achieve performance for a 20-year life has been attached? ☐ Yes

F) If the aerobic system will be used for nitrogen removal from the wastewater, has evidence of a valid product listing under R18-9-E309(E) indicating nitrogen removal performance, or specifications and third-party test data corroborating nitrogen reduction to the intended level been provided? ☐ Yes

G) A list of pretreatment components needed to meet performance requirements has been attached? ☐ Yes
H) The design report has demonstrated there is adequate storage for untreated wastewater above the high operating level for a 24-hour period per AAC R18-9-E312 (B)(4)(e)? ☐ Yes
I) The design provides fail-safe wastewater controls or operational processes to prevent the release of inadequately treated wastewater per AAC R18-9-E312 (B)(4)(g)? ☐ Yes

☐ **4.16 Nitrate-Reactive Media Filter, Less than 3,000 GPD Daily Flow (Please select from Product List)**

A) Filter manufacturer name _____
B) Filter manufacturer address _____
C) Filter model number _____
D) The manufacturer's requirements for pretreated wastewater supplied to the nitrate-reactive media filter have been attached? Yes ☐
E) The manufacturer's specifications for design, installation, and operation for the nitrate-reactive media filter system and appurtenances have been attached? ☐ Yes
F) The manufacturer's warranty for the nitrate-reactive media filter system and appurtenances has been attached? ☐ Yes
G) The manufacturer's operation and maintenance recommendations to achieve a 20-year operational life for the nitrate-reactive media filter system and appurtenances have been attached? ☐ Yes
H) The manufacturer name and model number for all appurtenances that significantly contribute to achieving the performance have been attached? ☐ Yes

☐ **4.17 Cap System, Less than 3,000 GPD Daily Flow**

A) The specifications for the proposed cap fill material have been attached? ☐ Yes

☐ **4.18 Constructed Wetlands, Less than 3,000 GPD Design Flow**

☐ **4.19 Sand Lined Trench, Less than 3,000 GPD Design Flow**

A) Specifications for the proposed media in the trench are attached? ☐ Yes

☐ **4.20 Disinfection Devices, Less than 3,000 GPD Design Flow**

☐ **4.21 Surface Disposal, Less than 3,000 GPD Design Flow**

☐ **4.22 Subsurface Drip Irrigation, Less than 3,000 GPD Design Flow**

A) Documentation of the pretreatment method proposed to achieve the wastewater criteria specified in AAC R18-9- A322(B)(1), such as the type of pretreatment system and the manufacturer's warranty is attached? ☐ Yes
B) Initial filter and drip irrigation flushing settings are attached? ☐ Yes
C) Calculations of the site evaporation rate are attached? ☐ Yes
D) If supplemental irrigation water is introduced to the subsurface drip irrigation disposal works, an identification of the cross-connection controls, backflow controls, and supplemental water sources are attached? ☐ Yes

10 Additional On-site Requirements (for Type 4.03 through 4.22 General Permits)

A) For a facility that includes treatment or disposal works permitted under a Type 4.03 to 4.22 General Aquifer Protection Permits (A.A.C. R18-9-E303 through R18-9-E323):
1) Construction quality drawings that show the items listed in A.A.C. R18-9-A309(B)(6)(a) is attached? ☐ Yes
2) Per A.A.C R18-9-A309(B)(6)(b) and R18-9-A313(B), a draft operation and maintenance manual for the on-site wastewater treatment facility consisting of the tasks and schedules for operating and maintaining performance over a 20-year operational life is attached? ☐ Yes

11 Alternative treatment works or disposal works

☐ Owner has provided signed statement form acknowledging use of an alternative treatment works or disposal works in lieu of a conventional treatment works or disposal works.

12 Certification (to be completed by Applicant on Permit Application Worksheet)

I,_____, certify that this Notice of Intent to Discharge and all attachments were prepared under my direction or authorization and all information is, to the best of my knowledge, true, accurate and complete. I also certify that the on-site wastewater treatment facility described in this form is or will be designed, constructed, and operated in accordance with the terms and conditions the General Aquifer Protection Permit(s) (A.A.C. R18-9-E302 through R18-9-E323) and applicable requirements of Arizona Revised Statutes Title 49, Chapter 2, and Arizona Administrative Code Title 18, Chapter 9 regarding Aquifer Protection Permits. I am aware that there are significant penalties for submitting false information including permit revocation as well as the possibility of fine and imprisonment for knowing violations.

_____ _____

Signature Date

FOR RESIDENTIAL USE

FIXTURE COUNT CALCULATION CHART

Use the fixture count chart below to determine the total number of fixture units in the home. **Check the corresponding box on the system design flow chart based on your fixture count or number of bedrooms *whichever is greater*.** The box that is checked is the row where you'll find your minimum tank size and system design flow. Enter the information at the bottom of the page, and submit this form with your application.

Residential Fixture Type	Existing # Fixtures	Proposed # Fixtures	Multiply by	Fixture Units	Equals	Total # PROPOSED Fixtures
Bathtub			x	2	=	
Bidet			x	2	=	
Dishwasher, outside kitchen			x	2	=	
Clothes washer			x	2	=	
Utility tub or sink separate from clothes washer			x	2	=	
Kitchen Sink (may include dishwasher)			x	2	=	
Shower, single stall			x	2	=	
Sink, bar			x	1	=	
Sink, service			x	3	=	
Lavatory, single or double (bathroom sink)			x	1	=	
*Toilet, 1.6 gallons per flush (gpf)			x	3	=	
*Toilet, 1.6 - 3.2 gpf			x	4	=	
*Toilet >3.2 gpf			x	6	=	
				FIXTURE COUNT TOTAL	=	
				Physical # Bedrooms	=	

*Toilets currently available in Arizona are 1.6 gallons per flush. Older fixtures may not use the same amount of gallons per flush.

SYSTEM DESIGN FLOW CHART

✓	No. of Bedrooms	Fixture Count	Minimum Tank Size (gallons)	System Design Flow (gpd)
☐	1	7 or less	1000	150
☐		More than 7 less than 14	1000	300
☐	2	14 or less	1000	300
☐		More than 14 less than 21	1000	450
☐	3	21 or less	1000	450
☐		More than 21 less than 28	1250	600
☐	4	28 or less	1250	600
☐		More than 28 less than 35	1500	750
☐	5	35 or less	1500	750
☐		More than 35 less than 42	2000	900
☐	6	42 or less	2000	900
☐		More than 42 less than 49	2500	1050
☐	7	49 or less	2500	1050
☐		More than 49 less than 56	3000	1200
☐	8*	56 or less	3000	1200
☐		More than 56*	3000	1350

***NOTE: For a single residence with more than 8 bedrooms or more than 56 fixture units, use R18-9-A314 (D) (2) as the basis for determining minimum septic tank size and system design flow.**

For Commercial Use

(or dwelling over 8 bedrooms or 56 fixture units)

Wastewater Source	Applicable Unit	Sewage Design Flow per Applicable Unit.
Airport	Passenger (average daily number) Employee	4 15
Auto Wash	Facility	Per manufacturer, if consistent with this
Bar/Lounge	Seat	30
Barber Shop	Chair	35
Beauty Parlor	Chair	100
Bowling Alley (snack bar only)	Lane	75
Camp Day camp, no cooking facilities Campground, overnight, flush toilets Campground, overnight, flush toilets and Campground, luxury Camp, youth, summer, or seasonal	 Camping unit Camping unit Camping unit Person Person	 30 75 150 100-150 50
Church Without kitchen With kitchen	 Person (maximum attendance) Person (maximum attendance)	 5 7
Country Club	Resident Member Nonresident Member	100 10
Dance Hall	Patron	5
Dental Office	Chair	500
Dog Kennel	Animal, maximum occupancy	15
Dwelling For determining design flow for sewage treatment facilities under R18-9-B202(A)(9)(a) and sewage collection systems under R18-9-E301(D) and R18-9- B301(K), excluding peaking factor.	Person	80
Dwelling For on-site wastewater treatment facilities per R18-9- E302 through R18-9-E323: Apartment Building 1 bedroom 2 bedroom 3 bedroom 4 bedroom Seasonal or Summer Dwelling (with recorded seasonal occupancy restriction) Single Family Dwellings Other than Single Family Dwelling, the greater flow value based on: Bedroom count 1-2 bedrooms Each bedroom over 2 Fixture count	 Apartment Apartment Apartment Apartment Resident see R18-9-A314(D)(1) Bedroom Bedroom Fixture unit	 100 see R18-9-A314(D)(1) 300 150 25
Fire Station	Employee	45
Hospital All flows Kitchen waste only Laundry waste only	 Bed Bed Bed	 250 25 40
Hotel/motel Without kitchen With kitchen	 Bed (2 person) Bed (2 person)	 50 60

Industrial facility		
Without showers	Employee	25
With showers	Employee	35
Cafeteria, add	Employee	5
Institutions		
Resident	Person	75
Nursing home	Person	125
Rest home	Person	125
Laundry		50
Self service	Wash cycle	Per manufacturer, if consistent with this Chapter
Commercial	Washing machine	
Office Building	Employee	20
Park (temporary use)		
Picnic, with showers, flush toilets	Parking space	40
Picnic, with flush toilets only	Parking space	20
Recreational vehicle, no water or sewer	Vehicle space	75
Recreational vehicle, with water and sewer connections	Vehicle space	100
Mobile home/Trailer	Space	250
Restaurant/Cafeteria	Employee	20
With toilet, add	Customer	7
Kitchen waste, add	Meal	6
Garbage disposal, add	Meal	1
Cocktail lounge, add	Customer	2
Kitchen waste disposal service, add	Meal	2
Restroom, public	Toilet	200
School		
Staff and office	Person	20
Elementary, add	Student	15
Middle and High, add	Student	20
with gym & showers, add	Student	5
with cafeteria, add	Student	3
Boarding, total flow	Person	100
Service Station with toilets	First bay	1000
	Each additional bay	500
Shopping Center, no food or laundry	Square foot of retail space	0.1
Store	Employee	20
Public restroom, add	Square foot of retail space	0.1
Swimming Pool, Public	Person	10
Theater		
Indoor	Seat	5
Drive-in	Car space	10

Note: Unit flow rates published in standard texts, literature sources, or relevant area or regional studies are considered by the Department, if appropriate to the project.

DISPOSAL FIELD DESIGN/CONFIGURATION

Trench or Gravity Bed

PROJECTED SEWAGE FLOW: _____ g.p.d. / SOIL ABSORBTION RATE (SAR): _____

ABSORPTION AREA: _____

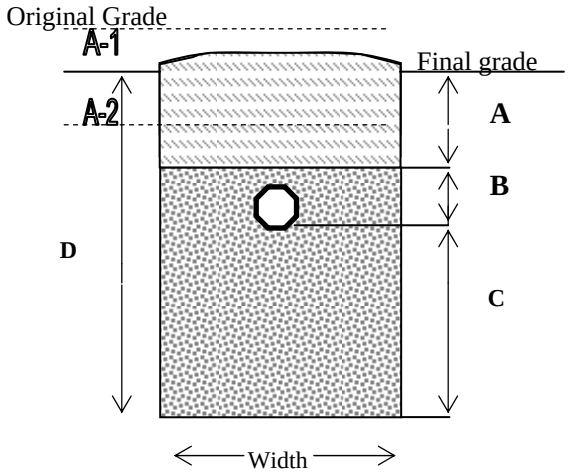
Trench Configuration

Please indicate vertical depths using inches.

A. Backfill to final grade …….. _____
   A-1 [Graded soil area, state using a (-) sign] _____
   A-2 [Fill or topsoil, state using a (+) sign] _____
B. Distribution pipe w/ 2" of rock _____
C. Aggregate depth (effective depth) _____

D. Total trench depth _____

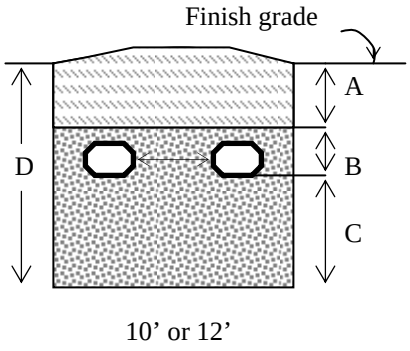
Trench width _____
Total length of trench _____ (ft.)



Gravity Beds

A. Backfill _____
B. Distribution line with 2" of aggregate material _____
C. Aggregate depth _____
D. Total Bed depth _____
   (Gravity Bed **shall** be less than 5' total depth)

Trench width 10' or 12' (circle one)
Distance between pipes 4' or 6' **(**circle one)
Total length of Bed _____



Infiltrator Chamber Worksheet

Permit/File #: _____ Designed by: _____ Date: _____

FIXTURE COUNT CALCULATION CHART					
FIXTURE TYPE	*UNIT*		*# OF FIXTURES*		*TOTAL FIXTURE UNITS*
Bath Tub	**2**	X		=	
Bidet	2	X		=	
Clothes Washer	**2**	X		=	
Dishwasher (separate from kitchen)	2	X		=	
Lavatory (bathroom sink), single	**1**	X		=	
Lavatory, double in master bedroom	**1**	X		=	
Shower, single stall	**2**	X		=	
Sink, bar	**1**	X		=	
Sink, kitchen (including dishwasher)	**2**	X		=	
Sink, service	3	X		=	
Utility Tub or Sink	**2**	X		=	
Water Closet (toilet), 1.6 GPF	**3**	X		=	
Water Closet (toilet), >1.6 – 3.2 GPF	4	X		=	
Water Closet (toilet), >3.2 GPF	6	X		=	
				TOTAL FIXTURE UNITS:	

Items in BOLD are the most commonly used fixtures

"Bedroom" means, for the purposes of determining design flow for an on-site wastewater treatment facility for a dwelling, any room that has:

a) Floor space of at least 70 square feet in area, excluding closets;
b) Ceiling height of at least 7 feet;
c) Electrical service and ventilation;
d) A closet or an area where a closet could be constructed;
e) At least one window capable of being opened and used for emergency egress; and
f) A method of entry and exit into the room which allows it to be considered distinct from other rooms in the dwelling to afford a level of privacy customarily expected for such a room.

Bedroom/Equivalent Worksheet	
Room Type	*Number of Rooms*
Bedroom	
Den	
Office	
Other:	
Other:	
Other:	
Total:	

TYPE OF CHAMBER (CHECK ONE): **QUICK4 PLUS STANDARD LP** ☐ **QUICK4 HIGH CAPACITY** ☐ **ARC 36LP** ☐ **ARC 36 HC** ☐

TANK SIZE (*from Septic System Sizing Chart*) = _____

DESIGN FLOW (*from Septic System Sizing Chart*) = _____

PERCOLATION RATE
(*from the Soils Report or Disposal Area Calculation Table*) = _____

SOIL ABSORPTION RATE
(*from the Soils Report or Disposal Area Calculation Table*) = _____

TOTAL SQUARE FOOTAGE REQUIRED
(*divide DESIGN FLOW by SAR or use Design Flow Calculation Table*) = _____

- QUICK4 PLUS STANDARD LP — divisor is **24.62** per unit
- QUICK4 HIGH CAPACITY — divisor is **28.40** per unit
- ARC 36LP — divisor is **29.75** per unit
- ARC 36 HC — divisor is **34.43** per unit

DIVISOR USED (provided and recommended by manufacturer) = _____

TOTAL NUMBER OF CHAMBERS *(divide the TOTAL SQUARE FOOTAGE by the DIVISOR)* = _____

TOTAL LINEAR LENGTH OF TRENCH REQUIRED *(multiply NUMBER of CHAMBERS by CHAMBER LENGTH:QUICK 4 = 4',ARC 36 = 5' per chamber)* = _____

Proposed Number of Trenches	
Proposed Number of Chambers per Trench	
Proposed Width of each Trench	3
Proposed Length of each Trench	
Proposed Overall Depth of each Trench	
Separation Between Trench Edges	5

- The maximum length for any disposal field is 100'. If the total linear length of trench is greater than 100', use a distribution box to divide the total length into multiple trenches of equal length to distribute the effluent more effectively throughout the disposal field.
- The separation between the chamber trench walls is a minimum of 5'.
- For contoured installations, chambers can swivel up to 10 degrees, left or right.

Prinsco Chamber Worksheet

Permit/File #: _____ Designed by: _____ Date: _____

FIXTURE COUNT CALCULATION CHART					
FIXTURE TYPE	*UNIT*		*# OF FIXTURES*		*TOTAL FIXTURE UNITS*
Bath Tub	**2**	X		=	
Bidet	2	X		=	
Clothes Washer	**2**	X		=	
Dishwasher (separate from kitchen)	2	X		=	
Lavatory (bathroom sink), single	**1**	X		=	
Lavatory, double in master bedroom	**1**	X		=	
Shower, single stall	**2**	X		=	
Sink, bar	**1**	X		=	
Sink, kitchen (including dishwasher)	**2**	X		=	
Sink, service	3	X		=	
Utility Tub or Sink	**2**	X		=	
Water Closet (toilet), 1.6 GPF	**3**	X		=	
Water Closet (toilet), >1.6 – 3.2 GPF	4	X		=	
Water Closet (toilet), >3.2 GPF	6	X		=	
				TOTAL FIXTURE UNITS:	

Items in BOLD are the most commonly used fixtures

"Bedroom" means, for the purposes of determining design flow for an on-site wastewater treatment facility for a dwelling, any room that has:

a) Floor space of at least 70 square feet in area, excluding closets;
b) Ceiling height of at least 7 feet;
c) Electrical service and ventilation;
d) A closet or an area where a closet could be constructed;
e) At least one window capable of being opened and used for emergency egress; and
f) A method of entry and exit into the room which allows it to be considered distinct from other rooms in the dwelling to afford a level of privacy customarily expected for such a room.

Bedroom/Equivalent Worksheet	
Room Type	*Number of Rooms*
Bedroom	
Den	
Office	
Other:	
Other:	
Other:	
Total:	

TYPE OF CHAMBER (CHECK ONE): **PRINSCO PRO436LP** ☐ **PRINSCO PRO436** ☐ **PRINSCO PRO436HC** ☐

TANK SIZE (*from Septic System Sizing Chart*) = _____

DESIGN FLOW (*from Septic System Sizing Chart*) = _____

PERCOLATION RATE
(*from the Soils Report or Disposal Area Calculation Table*) = _____

SOIL ABSORPTION RATE
(*from the Soils Report or Disposal Area Calculation Table*) = _____

TOTAL SQUARE FOOTAGE REQUIRED
(*divide DESIGN FLOW by SAR or use Design Flow Calculation Table*) = _____

- Prinsco Pro436LP — divisor is **24.73** per unit
- Prinsco Pro436 — divisor is **26.07** per unit
- Prinsco Pro436HC — divisor is **28.53** per unit

DIVISOR USED (provided and recommended by manufacturer) = _____

TOTAL NUMBER OF CHAMBERS *(divide the TOTAL SQUARE FOOTAGE by the DIVISOR)* = _____

TOTAL LINEAR LENGTH OF TRENCH REQUIRED *(multiply NUMBER of CHAMBERS by CHAMBER LENGTH: Prinsco Pro436 = 4' per chamber)* = _____

Proposed Number of Trenches	
Proposed Number of Chambers per Trench	
Proposed Width of each Trench	3
Proposed Length of each Trench	
Proposed Overall Depth of each Trench	
Separation Between Trench Edges	5

- The maximum length for any disposal field is 100'. If the total linear length of trench is greater than 100', use a distribution box to divide the total length into multiple trenches of equal length to distribute the effluent more effectively throughout the disposal field.
- The separation between the chamber trench walls is a minimum of 5'.
- For contoured installations, chambers can swivel up to 10 degrees, left or right.

EZflow EPS Aggregate System Worksheet

FIXTURE COUNT CALCULATION CHART					
FIXTURE TYPE	*UNIT*		*# OF FIXTURES*		*TOTAL FIXTURE UNITS*
Bath Tub	**2**	X		=	
Bidet	2	X		=	
Clothes Washer	**2**	X		=	
Dishwasher (separate from kitchen)	2	X		=	
Lavatory (bathroom sink), single	**1**	X		=	
Lavatory, double in master bedroom	**1**	X		=	
Shower, single stall	**2**	X		=	
Sink, bar	**1**	X		=	
Sink, kitchen (including dishwasher)	**2**	X		=	
Sink, service	3	X		=	
Utility Tub or Sink	**2**	X		=	
Water Closet (toilet), 1.6 GPF	**3**	X		=	
Water Closet (toilet), >1.6 – 3.2 GPF	4	X		=	
Water Closet (toilet), >3.2 GPF	6	X		=	
				TOTAL FIXTURE UNITS:	

Items in BOLD are the most commonly used fixtures

"Bedroom" means, for the purposes of determining design flow for an on-site wastewater treatment facility for a dwelling, any room that has:

a) Floor space of at least 70 square feet in area, excluding closets;
b) Ceiling height of at least 7 feet;
c) Electrical service and ventilation;
d) A closet or an area where a closet could be constructed;
e) At least one window capable of being opened and used for emergency egress; and
f) A method of entry and exit into the room which allows it to be considered distinct from other rooms in the dwelling to afford a level of privacy customarily expected for such a room.

Bedroom/Equivalent Worksheet	
Room Type	*Number of Rooms*
Bedroom	
Den	
Office	
Other:	
Other:	
Other:	
Total:	

TRENCHES HAVE A MAXIMUM OVERALL DEPTH OF FIVE (5) FEET ABOVE DEPTH OF TEST HOLE

TANK SIZE (*from Septic System Sizing Chart*) = _____

DESIGN FLOW (*from Septic System Sizing Chart*) = _____

PERCOLATION RATE (*from the Soils Report or Disposal Area Calculation Table*) = _____

SOIL ABSORPTION RATE (*from the Soils Report or Disposal Area Calculation Table*) = _____

TOTAL SQUARE FOOTAGE REQUIRED (*divide DESIGN FLOW by SAR or use Design Flow Calculation Table)* = _____

EZFLOW CONFIGURATION *(refer to EZFLOW Design Table; select from drop down list)* =

DIVISOR USED (refer to EZFLOW Design Table) = _____

TOTAL LINEAR LENGTH OF TRENCH REQUIRED (*divide TOTAL SQUARE FOOTAGE by DIVISOR***)** = _____

Proposed Number of Trenches _____

Proposed Length of each Trench _____

Proposed Width of each Trench _____

Proposed Overall Depth of each Trench _____

Separation Between Trench Edges _____

- The maximum length for any disposal field is 100'. If the total linear length of trench is greater than 100', use a distribution box to divide the total length into multiple trenches of equal length to distribute the effluent more effectively throughout the disposal field.
- The separation between the trench walls is a minimum of 5' or twice the effective depth, whichever is greater.

Permit/File #: _____ **Designed by:** _____ **Date:** _____

ON-SITE WASTEWATER SYSTEM
PLOT PLAN

(for 4.02 General Permit only. 4.02-4.22 must provide construction quality drawings)

Address:	☐ **North Arrow shown**
Assessor Parcel:	☐ **Boundaries of property shown on plan**
Legal Description:	☐ **Proposed/existing systems, dwellings, buildings, driveways, swimming pools, tennis courts, wells, ponds, and any paved, concrete or water feature, shown.**
	☐ **Slopes and cut banks greater than 15%, retaining walls and other constructed features shown**
	☐ **Any feature less than 200 ft. from facility and reserve area that constrains the location due to setback limitations shown**
	☐ **Topography shown with contour intervals, showing original and post-installation grades**
Property Size (in acres):	☐ **EXACT LOCATION of all soils testing and percolation sites**
Engineer's Scale (max 1"=60'):	☐ **Location of the treatment and disposal works, pipelines, reserve area**
Permit Number:	☐ **Location of any public sewer if less than 400 ft. from property line**

Proper construction and installation of this system shall follow all applicable Federal, State, County and City laws. Mohave county disclaims any responsibility of the construction, installation, errors or omissions involved with this system and the sole responsibility for any of the above is with the owner or his/her contractor (s) and/or agents (s). The as-built drawing is provided for ease and convenience to locate the system in the future and not for construction purposes.

The information within the plot plan submitted is true and accurate to the best of my knowledge;

_____ Date: _____

Signature Title

MOHAVE COUNTY
DEVELOPMENT SERVICES

P. O. Box 7000 Kingman, Arizona 86402-7000 3250 E. Kino Ave, Kingman www.mohave.gov Telephone (928) 757-0903

SEWER AVAILABILITY INFORMATION SHEET

Service Provider/Company Name:	Submitted by:		
	Telephone:		
	Fax:		
Date:			
Name of Property Owner:			
Location Address:			
Subdivision:	Tract:	Block:	Lot:
Assessor Parcel Number:			

Indicate below what type of project will be constructed on the above mentioned property:

☐ Residential (Single Family Only)	
☐ Commercial/Multi-family	Estimate flow rate in gallons per day:
☐ Industrial	Estimate flow rate in gallons per day:

Flood Zone:

Applicant Signature:

Per an inquiry with the above-referenced service provider regarding the availability of sanitary sewer to serve the above-referenced location, sewer is available at property:

☐ Yes, sewer is available and will be connected to
☐ No, sewer connection exceeds fees of R18-9-A309(A)(5)(b) (Engineers/Contractor's Estimate req.)
☐ N/A, no sewer service provider in subdivision

DISCLAIMER: For North Kingman / New Kingman Addition / Butler: if property is greater than 100' but less than 500' from City of Kingman Sewer, opting to use on an onsite wastewater system may result in the City of Kingman denying water service should an existing water meter not exist on the property at the time of septic permit issuance.

Does this property have an existing water meter: ☐ YES ☐ NO

Distance to sewer: feet

Comments: _____

Sewer Provider Representative Signature:

MOHAVE COUNTY
DEVELOPMENT SERVICES

P. O. Box 7000 Kingman, Arizona 86402-7000 3250 E. Kino Ave, Kingman www.mohave.gov Telephone (928) 757-0903

Scott Holtry
Department Director

J. David Strahl
County Manager

TEMPORARY INDIVIDUAL WASTE DISPOSAL SYSTEM ACKNOWLEDGEMENT

I, _____, the owner of property located in the

_____Subdivision, Tract_____, Block_____, Lot_____,

understand that the onsite wastewater treatment and disposal system being installed to service the above-described property is a temporary system. In the event that sewer becomes available to this property and if the system is damaged, fails, or is otherwise rendered inoperable or in need of expansion I hereby acknowledge that I will be required to abandon such system in a method approved by the Mohave County Environmental Quality Department, and connect to the municipal sewer system servicing the property in accordance with the requirements of Ariz. Admin. Code § R18-9-A309.A.5.

The Mohave County Development Services Department, Environmental Quality/Waste Management Division is to be notified prior to abandonment of the system.

ASSESSOR'S PARCEL #_____

_____ _____

SIGNATURE OF PROPERTY OWNER DATE

MOHAVE COUNTY
DEVELOPMENT SERVICES

Mailing Address: P. O. Box 7000, Kingman, Arizona 86402-7000

Owner's Authorization to Apply for Permits

Authorization DOES NOT allow the authorized applicant to conduct installation, construction, or any other type of contracting services.

If utilizing a contractor, permit application must include contractor's AZ ROC License #.

Property Information

Date Received _____

Assessor Parcel Number _____ Parcel Size _____

Site Address _____

Legal Description _____

Property Owner

Name _____ Email _____

Phone _____ Mailing Address _____

Authorized Applicant (Not contractor, unless AZ ROC license # is listed on permit application)

Name _____ Email _____

Phone _____ Mailing Address _____

Effective Period

This authorization is: (select one) ☐for a single permit to _____

☐in effect until removed in writing

Signature(s)

_____

_____

Notary (REQUIRED)

State of _____

County of _____

This document was signed before me this _____ (date) by

_____

(name(s) of person(s) signing).

The person(s) personally appeared before me and presented identification to establish his or identity as required by law.

_____

Signature of Notary

Public My Commission expires _____

MOHAVE COUNTY DEVELOPMENT SERVICES
DIVISION OF ENVIRONMENTAL QUALITY

P. O. Box 7000 Kingman, Arizona 86402-7000 3250 E. Kino Ave, Kingman www.mohavecounty.us Telephone (928) 757-0903

Scott Holtry
Department Director

J. David Strahl
County Manager

Individuals Pre-Qualified to perform **Site Investigations** in **Mohave County**

The individuals/companies have met the qualifications to perform site evaluations in Mohave County by providing proper credentials/certifications. This listing is provided as a courtesy only and in no way constitutes a recommendation from this department.

ADVANCED CIVIL SOLUTIONS, LLC.
Edward Rajnovich, Engineer
3234 E McVicar Ave
Kingman, AZ 86409
(702) 274-4973
advancedcivilsolutions@outlook.com

ALLIANCE CONSULTING
Deloss S. Hammon, P.E.
2303 N. Coral Canyon Blvd #201
Washington, UT 84780
(435) 673-8060
dsh@allianceconsulting.us

ANNETTE COOK, R.S PERC'S PLUS
PO Box 6068
Kingman, AZ 86402
(928) 727-0687 - CELL
cookannette777@gmail.com

ARQ ENGINEERING
Sandra Morse
4440 S. Highway 95, Suite A
Fort Mohave, AZ 86426
(928) 758-3333
sandym@arqllc.com

ARROYO ENGINEERING
CONSULTANTS, INC
AARON C HASTINGS
1328 Echo Creek St.
Henderson, NV 89052
(702) 241-5339
aaron@aec-nv.com

GEOTECHNICAL TESTING
SERVICES
Christopher D. Volksen
1509 S. 270 E. 8
St. George, UT 84790
(435) 628-9536

BROWN CONSULTING ENGINEERS
Steve Kamlowsky, PE
163 West 1600 South #5 St. George,
UT 84770 (435) 628-4700
steve@browncivil.com

CANAAN PEAKS ENGINEERING
Brian Zitting PO Box 841515
Hildale, UT 84784
(435) 467-1069
cpeemailservice@gmail.com

CIVIL WORKS ENGINEERING
Jed Noble (928) 279-4833
jed@civilworksengineering.com

DANIEL CAPARROS
21448 N 75TH Ave, STE 9,
Glendale AZ 85308
(623) 776-5757
dcaparros@vlpartners.net

DANIEL R BULLOCH
750 W Pioneer Blvd
Mesquite, NV 89027
(435) 592-2222
bullochdanny@gmail.com

ENVIROTEC
Claude Baker PO Box 10877
Prescott, AZ 86304
(928) 445-9611
Cvb44999@gmail.com

GEOSCIENCE ASSOCIATES LLC
853 S. Ty Road
Kingman, AZ 86401
702-970-4378
mitchg@geohydroenv.com
www.geohydroenv.com

IRON ROCK ENGINEERING
Sandy-Office Manager
460 E. 300 S.
Kanab, UT 84741
(435) 644-2031
sandy@ireng.net

KEVIN B. KISSLER
1120 W. University Ave. Ste 200
(970) 676-1677
Kevin@EarthArtEngineering.com

LANDMARK TESTING &
ENGINEERING
Kent R. Nelson
795 E Factory Drive St. George, UT
84790 (435) 986-0566
kent@landmarktesting.com

MOHAVE ENGINEERING ASSOC.
Peter Profitt, P.E. 2153 Gordon Dr.
Ste. I Kingman, AZ 86409
(928) 753-2627
pprofitt@meaiaz.com

NEPTUNE SERVICES PLLC
Jason K. Garner, P.E.
(928) 224-8380
jason@neptuneservicesaz.com

SAGUARO SOILS &
SEPTIC DESIGN LLC
Pauline Higginbotham, RS/REHS
(218) 556-1287
saguaroseptic@gmail.com

RACHELLE D. STALLARD, R.S.
7130 E Thrush Lane
Prescott Valley, AZ 86314
(928) 699-1001
marvinred4@gmail.com

SUNLAND AND ASSOCIATES LLC
Bruce H. Bosshard PE
2169 Swanson Ave. Suite 10
Lake Havasu City, AZ 86403
928 377-6229
hugo@sunlandengineering.net

STEPHEN DALDRUP R.S.
17396 W Jefferson St
(510) 230-8662
sdaldrup@yahoo.com

STRYTEK ENGINEERING
Russell Strytek
2428 Ashfork Ave.
Kingman, AZ 86401
(928) 757-0150
info@strytekengineering.com

SUNRISE ENGINEERING, INC.
Joseph Phillips, P.E.
11 North 300 West
Washington, UT 84780
(435) 652-8450

TIM WEISS
7150 Placid street
Las Vegas, NV 89119
(702) 365-1001
tim.weiss@gesnevada.com

ARIZONA PERCS & EXCAVATION
Walker Mooneyham R.S.
9130 E Browns Scenic Trl
Kingman AZ 86401
(626) 826-5307
walkermooneyham@icloud.com

WESTERN TECHNOLOGIES
Jacob Quinlan
2400 E. Huntington Dr. Flagstaff, AZ 86004
(928) 525-6782
jquinlan@rma-western.com

WESTERN TECHNOLOGIES
Gregory Burr
2400 E. Huntington Dr. Flagstaff, AZ 86004
(928) 774-8700
gburr@rma-western.com

ADVANCED ENVIRONMENTAL SYSTEMS LLC
Kaitlin Kimbrough RS
26150 N Pierce Ferry Rd
Meadview, AZ 86444
(702) 271-4766 Cell
(928) 880-5501 Office
Kimbroughkaitlin@aes.earth
www.aes.earth

-

APPENDIX A

Example Design for a Conventional Septic Tank Disposal Field and Draft List of Materials, Components, and Equipment

System Design Inputs

1. Proposed system is for a 3-bedroom home.
2. Fixture count in house is 25.
3. Percolation tests per Arizona Administrative Code R18-9-A310(F) show that the soil percolation rate is 25.0 min/in.
4. No surface or subsurface limiting conditions are identified at the site.
5. Inlet to septic tank will be 15 ft from building drain.

Disposal Trench Design Based on Inputs

1. Design flow is 600 gal/day based on table at R18-9-A314(4)(a)(i). *[450 gal/day for a 3-bedroom house plus another 150 gal/day for fixture count more than 21]*
2. Design liquid capacity of septic tank is 1250 gallons based on same table.
3. SAR is 0.40 gal/day/ft^2, using the table at R18-9-A312(D)(2) based on the tested percolation rate of 25.0 min/in.
4. Trench is designed to be 2 ft wide, with 4 ft of sidewalls below disposal pipe.
5. Based on selected trench configuration, the trench absorption area is 10 square feet per linear foot of trench. *[(4 ft + 2 ft + 4 ft) x 1 ft in length]*
6. Wastewater loading in trench is 4.0 gal/day per linear foot *[10 ft^2/linear ft x 0.40 gal/day/ft2]*
7. Trench length, therefore, is 150 linear feet. *[600 gal/day ÷ 4 gal/day/linear ft]*
8. Decision is made to construct two parallel 75' trenches served by distribution box. Distribution box is located 5 ft from septic tank and each trench will be constructed after a 10 ft run of pipe from distribution box.
9. Total volume of aggregate in the disposal field is 50.00 cubic yards.
   a. 44.44 yd^3 beneath disposal pipe
      [4 ft x 2 ft x 150 ft ÷ 27 ft^3/yd^3 = 44.44 yd^3]
   b. 5.56 yd^3 around and above disposal pipe
      [(4 in of pipe height + 2 in above pipe = 0.5 ft) x 2ft x 150 ft ÷ 27 ft^3/yd^3 = 5.56 yd^3]
10. Total volume of pea gravel bedding below septic tank is 1.5 yd^3 based on typical manufacturer's specification of 6 in of fill below septic tank, typical dimensions for 1250-gal septic tank of 10.25 ft x 5.25 ft, and 0.5 ft over dig of hole on each side [((10.25 ft + 0.5 ft + 0.5 ft) x (5.25 ft + 0.5 ft + 0.5 ft) = 70.31 ft^2) x 0.5 ft ÷ *27 ft^3/yd^3 = 1.30 yd^3, say 1.5 yd^3]*

Based on the above design, the following is a model list of materials for submittal with the Notice of Intent to Discharge:

List of Materials, Components, and Equipment

1	**ea**	**1250-gallon septic tank with effluent filter meeting the requirements of Arizona Administrative Code (A.A.C.) R18-9-A314.**
2	**ea**	**Riser with cover, [brand/model] or equivalent, meeting the requirements of A.A.C. R18-9-A314(1)(d).**
1.5	**yd^3**	**Pea gravel or equivalent bedding for septic tank per manufacturer's handling and installation instructions required by R18-9-A314(3)(d)(2).**
15	**ft**	**Sewer line pipe, DMV, Schedule 40, ASTM F891, and fittings.***
50	**yd^3**	**Aggregate meeting A.A.C. R18-9-101(1).**
25	**feet**	**Distribution pipe (thin wall), PVC, 4-inch, ASTM D2729, and fittings.*** *[5 ft + 10 ft + 10 ft]*
150	**feet**	**Disposal pipe (thin wall), PVC, 4-inch, perforated, ASTM D2729, and fittings.***
1	**ea**	**Distribution box with seals, minimum of 2 outlet holes, [brand/model] or equivalent.**
150	**feet**	**Geotextile, minimum 24-inch wide, [brand/model] or equivalent.**

*Typical pipe specifications that might be used in disposal field installations:

1. Normal solid PVC "thin wall" pipe
   a. PVC distribution pipe, 3-inch, ASTM D2729
   b. PVC distribution pipe, 4-inch, ASTM D2729
2. Perforated PVC "thin wall" pipe
   a. PVC disposal pipe, perforated, 3-inch, ASTM D2729
   b. PVC disposal pipe, perforated, 4-inch, ASTM D2729
3. Schedule 40 PVC DWV (drain, waste, and vent) pipe
   a. DWV, Schedule 40, 3-inch, ASTM F891
   b. DWV, Schedule 40, 4-inch, ASTM F891
4. Solid black ABS Schedule 40 pipe
   a. ABS distribution pipe, Schedule 40, 3-inch, ASTM F628
   b. ABS distribution pipe, Schedule 40, 4-inch, ASTM F628
5. SDR-35 "high strength" pipe
   a. SDR-35 distribution pipe, 3-inch, ASTM D3034
   b. SDR-35 distribution pipe, 4-inch, ASTM D3034

APPENDIX B

INFORMATION NEEDED ON ON-SITE WASTEWATER PLAN

(Please refer to example)

1. Property lines – include all distances and exact angles
2. Show scale on plan (e.g. 1"=20')
3. Show percolation test /soil evaluation locations – system must be installed in area of site evaluation.
4. Indicate "North" with an arrow
5. Streets adjacent to your property. Indicate your complete address as well as the legal description.
6. Structures (existing and proposed) including, but not limited to, mobiles, site built homes, garages, awnings, porches, decks, pools, entryways, barns, sheds, fences and retaining walls.
7. Indicate distances from the on-site system to any:
   a. slopes
   b. structures
   c. property lines
   d. easements
   e. wells
   f. rivers
   g. reservoirs
   h. water mains and domestic water lines
   i. driveways
   j. swimming pools
8. Maintain all setbacks as required by Aquifer Protection Permit R-18-9-A312(C). A list is available at the DS counter.
9. Show location of septic tank, distribution box (if applicable), leach lines and 100% reserve area.
   a. Give exact length, width and effective depth of leach field.
   b. If using more than one line, even distribution must be obtained through installation of a distribution box.
   c. 90° Angles in the leach field are not permitted.
   d. Flow must be through the head of the leach field to ensure even distribution.
10. Size the system correctly. Use the appropriate Soil Absorption Rate [SAR- provided to you by your site evaluator or you may find it in the Aquifer Protection Permit R18-9-A312 (D)].

DEFICIENCIES DURING REVIEW

Should there be any deficiencies found during the review process, the Development Services Department (DS) will immediately deny application and contact the applicant via letter or fax stating the reasons for denial. A resubmittal fee may apply to denied applications.

DESIGN OF SYSTEM

The Development Services (DS) Staff cannot design on-site wastewater systems. Should you need help with design, refer to the Aquifer Protection Permits or contact a designer. The Development Services Staff will review applications, and issue *Construction Authorizations* and *Discharge Authorizations* only.

SYSTEMS INSTALLED PRIOR TO APPLICATION APPROVAL

Should the DS Staff discover an on-site system that was installed before a *Construction Authorization* was issued (application approved), the system will be red-tagged and a fee will apply in addition to the application/permit fee.

MODIFICATIONS TO SYSTEM

Should the DS Staff inspect a system that was installed contrary to what was approved on the application **without notification**, a red tag will be issued and a fee may be applied for changes. This fee will include the review of modifications made to the system and one final inspection to be paid before a yellow tag is issued.

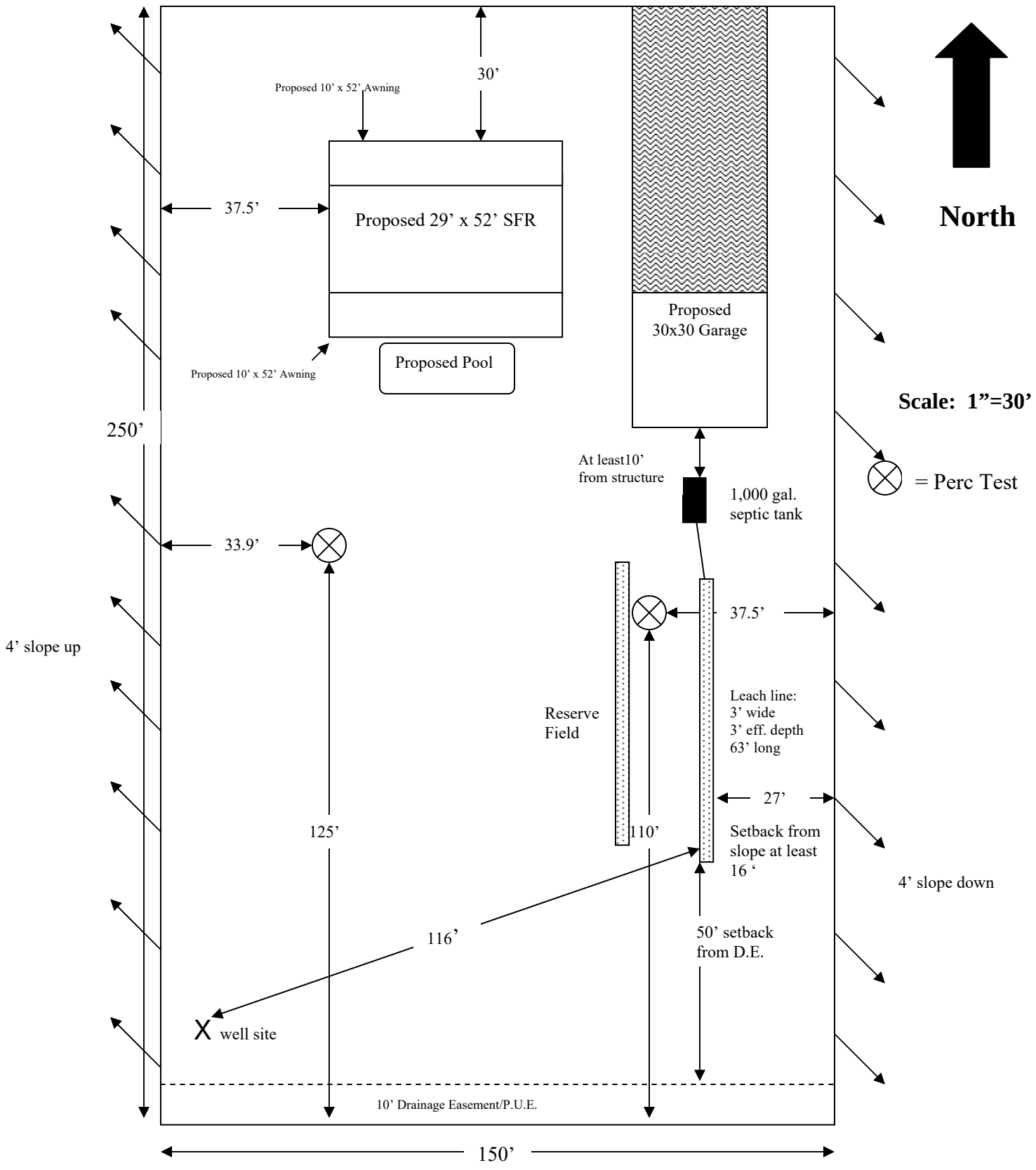
CONSTRUCTION INSPECTION DEFICIENCIES

If the DS staff are called for an inspection and the system is, in any way, installed incorrectly, a fee will be charged for each additional inspection required, after the second red tag. The fee will be payable prior to the additional inspection.

APPENDIX B

Mohave County On-Site Wastewater Example Plot Plan

12345 Environmental Quality Way



Legal Description:
Assessor’s Parcel Number (APN): 123-45-678
Subdivision: Healthy People
Tract 1234 **Lot** 56 - **Block** A

APPENDIX C

C. Setbacks. The following setbacks apply unless the Department:
1. Specifies alternative setbacks under Article 3, Part E of this Chapter;
2. Approves a different setback under the procedure specified in subsection (G); or
3. Establishes a more stringent setback on a site or area specific basis to ensure compliance with water quality standards.

Features Requiring Setbacks	Setback For An On-Site Wastewater Treatment Facility, Including Reserve Area (In Feet)	Special Provisions
1. Building	10	Includes porches, decks, and steps (covered or uncovered), breezeways, roofed patios, carports, covered walks, and similar structures and appurtenances.
2. Property line shared with any adjoining lot or parcel not served by a common drinking water system* or an existing water well	50	A person may reduce the setback to a minimum of 5 feet from the property line if: a. The owners of any affected undeveloped adjacent properties agree, as evidenced by an appropriately recorded document, to limit the location of any new well on their property to at least 100 feet from the proposed treatment works and primary and reserve disposal works; and b. The arrangements and documentation are approved by the Department.
3. All other property lines	5	None
4. Public or private water supply well	100	None
5. Perennial or intermittent stream	100	Measured horizontally from the high water line of the peak streamflow from a 10-year, 24-hour rainfall event.
6. Lake, reservoir, or canal	100	Measured horizontally from the high water line from a 10-year, 24-hour rainfall event at the lake or reservoir.
7. Drinking water intake from a surface water source (includes an open water body, downslope spring or a well tapping streamside saturated alluvium)	200	Measured horizontally from the on-site wastewater treatment facility to the structure or mechanism for withdrawing raw water such as a pipe inlet, grate, pump, intake or diversion box, spring box, well, or similar structure.
8. Wash or drainage easement with a drainage area of more than 20 acres	50	Measured horizontally from the nearest edge of the defined natural channel bank or drainage easement boundary. A person may reduce the setback to 25 feet if natural or constructed erosion protection is approved by the appropriate flood plain administrator.
9. Water main or branch water line	10	None
10. Domestic service water line	5	Measured horizontally between the water line and the wastewater pipe, except that the following are allowed: a. A water line may cross above a wastewater pipe if the crossing angle is between 45 and 90 degrees and the vertical separation distance is 1 foot or more. b. A water line may parallel a wastewater pipe with a horizontal separation distance of 1 foot to 5 feet if the bottom of the water line is 1 foot or more above the top of the waste- water pipe and is in a separate trench or on a bench in the same trench.

11. Downslopes or cut banks greater than 15 percent, culverts, and ditches from:		
a. Treatment works components	10	Measured horizontally from the bottom of the treatment works component to the closest point of daylighting on the surface.
b. Trench, bed, chamber technology, or gravel less trench with:		Measured horizontally from the bottom of the lowest point of the disposal pipe or drip lines, as applicable, to the closest point of daylighting on the surface.
i. No limiting subsurface condition specified in R18-9-A310(D)(2),	20	
ii. A limiting subsurface condition.	50	
c. Subsurface drip lines.	3	Measured horizontally from the bottom of the lowest point of the disposal pipe or drip lines, as applicable, to the closest point of daylighting on the surface.
12. Driveway	5	Measured horizontally to the nearest edge of an onsite wastewater treatment facility excavation. A person may place a properly reinforced and protected wastewater treatment facility, except for disposal works, at any location relative to a driveway if access openings, risers, and covers carry the design load and are protected from inflow.
13. Swimming pool excavation	5	Except if soil loading or stability concerns indicate the need for a greater separation distance.
14. Easement (except drainage easement)	5	None
15. Earth fissures	100	None
* A "common drinking water system" means a system that currently serves or is under legal obligation to serve the property and may include a drinking water utility, a well-sharing agreement, or other viable water supply agreement.		

APPENDIX D

CHECKLIST:

INSPECTION OF YOUR ON-SITE WASTEWATER SYSTEM

- Discharge Authorization received **(this document, which is a request for inspection is submitted to the Development Services Department at least 24 hours prior to when the inspection is needed).**
- Water Tightness Certification received **(This test is conducted by the person installing the system prior to the inspection request).**
- System has been left uncovered for inspection
- Property Boundaries are visibly marked – four corners
- All required setbacks met, (buildings, easements, drainage easements, washes, driveways, property lines, slopes, etc.)
- Design and construction verified
- Installed tank size as per approved plan
- GPS coordinates taken at the inlet of the tank
- Inlet and Outlet T is stable and level
- Risers, if required, are in place
- Seal around inlet & outlet of septic tank checked to insure water tightness
- Effluent filter in place
- Tank is level
- Five feet of solid pipe between tank and leach field
- Leach field pipe level
- The ends of the leach lines capped and exposed for inspection
- Size of gravel is uniform. ¾" -2 ½" in diameter and clean
- Laterals connecting multiple lines are solid pipe
- If multiple lines present, even distribution is achieved & distribution box present and level
- Sufficient room available for reserve area
- Lot is vacant

What color tag to look for and what you tag indicates:

Yellow tag issued: system can be covered - Final Approval paperwork to follow.

Red tag issued: requirements are not met, contact inspector – Corrections must be made before backfilling.

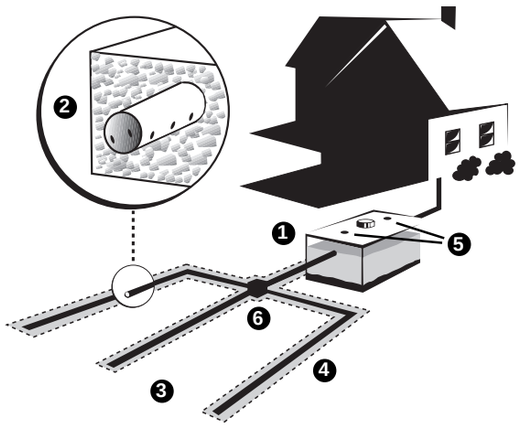
Blue tag issued: all required documents have not been received - If alternative system, Engineer's Certificate of Completion is required.

So . . . now you own a septic system

More than 25 million homes, encompassing almost 25 percent of the U.S. population, dispose of domestic wastewater through onsite (unsewered) systems. According to the American Housing Survey for the United States, in 1993 1.5 (million) out of every 4 (million) new owner-occupied home starts relied upon a form of onsite sewage disposal.

One of the major differences between owning an unsewered versus a sewered home is that unsewered wastewater treatment and disposal systems must be maintained by the homeowner. Treatment and disposal of wastewater should be one of the primary concerns of any homeowner in an unsewered area.

The most common way to treat and dispose of wastewater in rural homes is through the use of an onsite disposal system. The majority of onsite disposal systems in the United States are septic systems.



1. septic tank
2. 4" perforated pipe
3. absorption field
4. crushed rock or gravel lined trench
5. inspection ports
6. distribution box

Typical Septic System **Fig. 1**

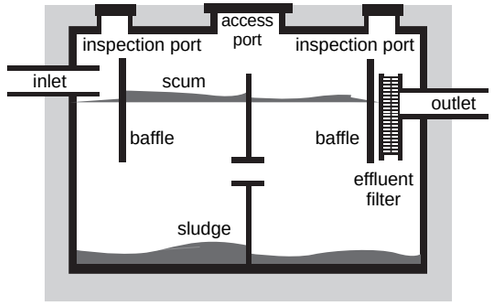
HOW IT WORKS

A typical septic system contains two major components: a septic tank and the absorption field (see Figure 1). Often, a distribution box is included as part of the system to separate the septic tank effluent evenly into a network of distribution lines that make up the absorption field. The septic tank is usually made of concrete, fiberglass, or plastic, is typically buried and should be watertight. All septic tanks have baffles (or tees) at the inlet and outlet to insure proper flow patterns (see Figure 2). Most septic tanks are single compartment; however, a number of states require two-compartment tanks or two single compartment tanks in series.

While typically designed to hold a minimum of 750–1000 gallons of sewage, the size of the tank may vary depending upon the number of bedrooms in the home and state and local regulatory requirements. The primary purpose of the septic tank is to separate the solids from the liquids and to promote partial breakdown of contaminants by microorganisms naturally present in the wastewater. The solids, known as sludge, collect on the bottom of the tank, while the scum floats on the top of the liquid. The sludge and scum remain in the tank and should be pumped out periodically (see Figure 2).

Solids that are allowed to pass from the septic tank may clog the absorption field. Keeping solids out of the absorption field not only prevents clogging, but also reduces potentially expensive repair or replacement costs and helps ensure the ability of the soil to effectively treat the septic tank effluent. Therefore, an additional safeguard in keeping solids out of the absorption field is the use of effluent filters on the outlet of the septic tank (see Figure 2).

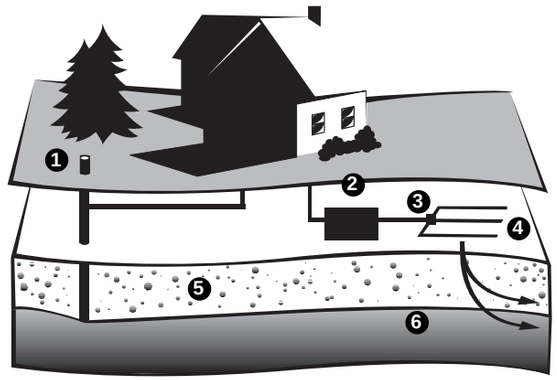
The wastewater (effluent) coming out of the septic tank may contain many potentially disease-causing microorganisms and pollutants (i.e., nitrates, phosphates, chlorides). The effluent is passed on to the absorption field through a connecting pipe or distribution box. The absorption field is also known as the soil drainfield, the disposal field, or the leachfield. The absorption field contains a series of underground perforated pipes, as indicated in Figure 1, that are



Cross-section of a two-compartment septic tank **Fig. 2**

sometimes connected in a closed loop system, as illustrated on the front cover, or some other proprietary distribution system

The effluent is distributed through the perforated pipes, exits through the holes in the pipes, and trickles through the rock or gravel where it is stored until absorbed by the soil. The absorption field, which is located in the unsaturated zone of the soil, treats the wastewater through physical, chemical, and biological processes. The soil also acts as a natural buffer to filter out many of the harmful bacteria, viruses, and excessive nutrients, effectively treating the wastewater as it passes through the unsaturated zone before it reaches the groundwater (see Figure 3).



1. drinking water well
2. septic tank
3. distribution box
4. absorption field
5. soil absorption (unsaturated zone)
6. groundwater (saturated zone)

Wastewater treatment and disposal in soil **Fig. 3**

Wastewater contains nutrients, such as nitrates and phosphates, that in excessive amounts may pollute nearby waterways and groundwater supplies. Excessive nutrients in drinking water supplies can be harmful to human health and can degrade lakes and streams by enhancing weed growth and algal blooms. However, the soil can retain many of these nutrients, which are eventually taken up by nearby vegetation.

What to Put In, What to Keep Out

- Direct all wastewater from your home into the septic tank. This includes all sink, bath, shower, toilet, washing machine and dishwasher wastewaters. Any of these waters can contain disease-causing microorganisms or environmental pollutants.

- Keep roof drains, basement sump pump drains, and other rainwater or surface water drainage systems away from the absorption field. Flooding of the absorption field with excessive water will keep the soil from naturally cleansing the wastewater, which can lead to groundwater and/or nearby surface water pollution.

- Conserve water to avoid overloading the septic system. Be sure to repair any leaky faucets or toilets. Use low-flow fixtures.

- Do not use caustic drain openers for a clogged drain. Instead, use boiling water or a drain snake to open clogs.

- Do not use septic tank additives, commercial septic tank cleansers, yeast, sugar, etc. These products are not necessary and some may be harmful to your system.

- Use commercial bathroom cleaners and laundry detergents in moderation. Many people prefer to clean their toilets, sinks, showers, and tubs with a mild detergent or baking soda.

continued . . .

APPENDIX E

- Check with your local regulatory agency if you have a garbage disposal unit to make sure that your septic system can accommodate this additional waste.

- Check with your local regulatory agency before allowing water softener backwash to enter your septic tank.

- Your septic system is not a trash can. Do not put grease, disposable diapers, sanitary napkins, tampons, condoms, paper towels, plastics, cat litter, latex paint, pesticides, or other hazardous chemicals into your system.

- Keep records of repairs, pumpings, inspections, permits issued, and other system maintenance activities.

- Learn the location of your septic system. Keep a sketch of it handy with your maintenance record for service visits.

- Have your septic system inspected every 1–2 years and pumped periodically (usually every 3–5 years) by a licensed inspector/ contractor.

- Plant only grass over and near your septic system. Roots from nearby trees or shrubs may clog and damage the absorption field.

- Do not drive or park over any part of your septic system. This can compact the soil and crush your system.

In summary, understanding how your septic system works and adhering to these few simple rules will ensure that your septic system is a safe and economical method for treating and disposing of your wastewater onsite.



For more information regarding the care of your septic system, contact your local health department.

More information about septic systems is available from the National Small Flows Clearinghouse (NSFC) through other brochures in this series:

Groundwater protection and your septic system, Item #**WWBRPE21**

The care and feeding of your septic system, Item #**WWBRPE18**

For more information about this or other NSFC products, please contact us by writing to:
National Small Flows Clearinghouse
West Virginia University
P.O. Box 6064
Morgantown, WV 26506-6064
or phone:
(800) 624-8301, (304) 293-4191
or fax: (304) 293-3161

www.nsfc.wvu.edu

Helping America's small communities meet their wastewater needs

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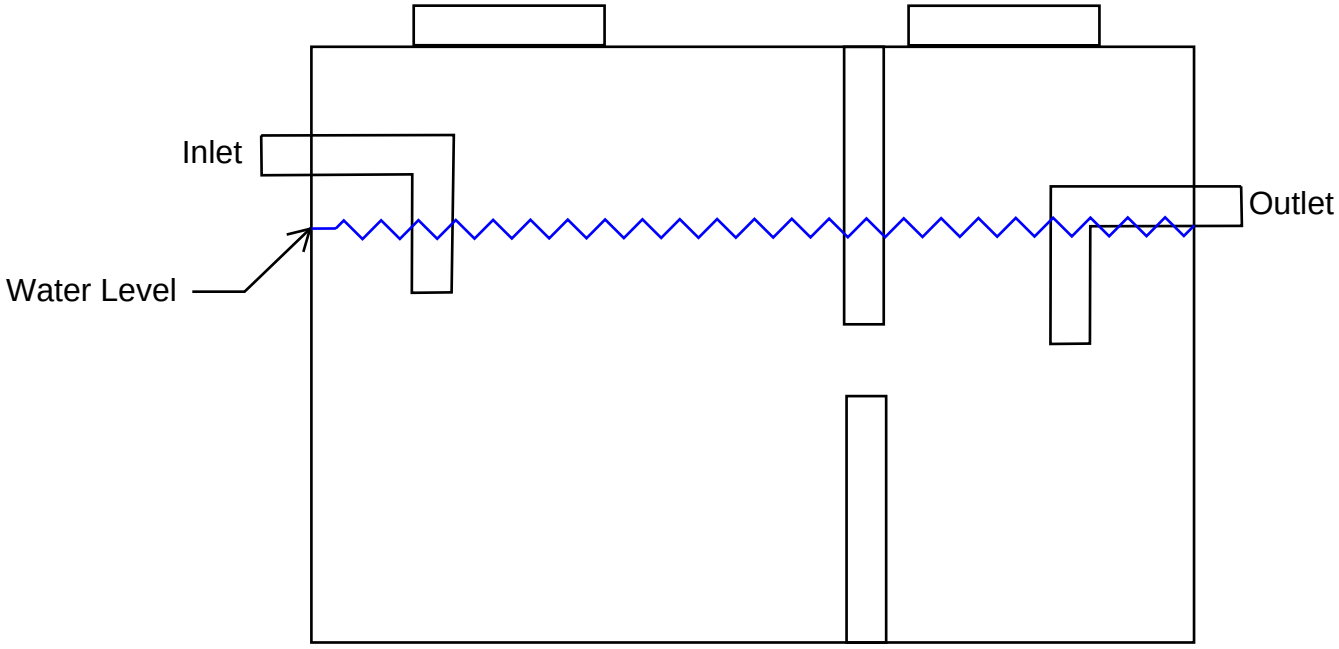
So . . . now you own a septic system

One in a series of three brochures designed to aid you in caring for your septic system.



APPENDIX F

WATER TIGHTNESS TEST INSTRUCTIONS



R18-9-A314(5)(d):

The septic tank is tested for watertightness after installation by the water test described in subsections (5)(d)(i) and (5)(d)(ii) and repaired or replaced, if necessary.

i. The septic tank is filled with clean water, as specified in R18-9-A310(A), to the invert of the outlet and the water left standing in the tank for 24 hours and:

(1) After 24 hours, the tank is refilled to the invert, if necessary;

(2) The initial water level and time is recorded; and

(3) After one hour, water level and time is recorded.

ii. The tank passes the water test if the water level does not drop over the one-hour period. Any visible leak of flowing water is considered a failure. A damp or wet spot that is not flowing is not considered a failure.

Diagram not to scale