REGULATING POO

Public and Private Waste Disposal in the Floodplain.

Mike Prough, Jersey County Code Administrator

Paul Osman, Illinois Office of Water Resources

The Local Ordinance Regulates:

- **Construction of new buildings**
- **Addition or substantial improvements to existing buildings**
- **Manufactured (mobile) homes and RVs**
- **Subdivisions or commercial developments**
- **Storage of materials**
- **Fill, grading, excavating**
- **Fences, culverts, bridges, roads**
- **Utilities**
- **Waste and water systems,**
- **And ANYTHING else that changes the floodplain**

Public Waste Disposal

"Stuff" flows downhill.

Therefore...

Most are located in or near a floodplain.

Public Waste Disposal

What Do FEMA and Local Floodplain Regulations Say?

"Public sanitary sewer systems and water supply systems shall be located and constructed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters".

Public Waste Disposal

IL EPA Regulations:

Operational during 25 year flood event?

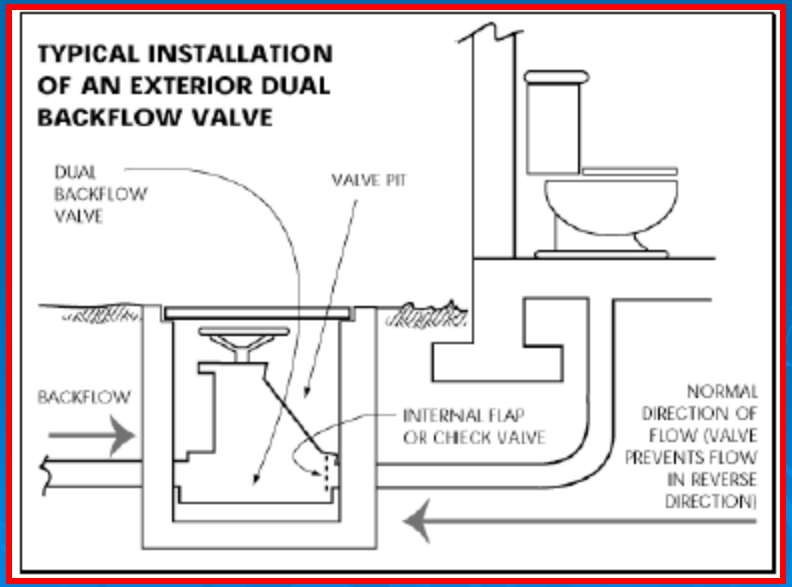
NFIP and Local Regulations:

100 year flood protection requirement

State Model Ordinance: 500 year protection

Private/on-site Waste Disposal

- Private On-Site Utilities: On site waste disposal systems such as septic tanks and septic fields should be protected.
- How?
- Backflow valves, watertight enclosures, platforms above the BFE, sealed tanks?



Private/on-site Waste Disposal

What Do FEMA and Local Floodplain Regulations Say?

New and replacement on-site sanitary sewer lines or waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding. Manholes or other above ground openings located below the flood protection elevation shall be watertight.

Private/on-site Waste Disposal

What does the state say?

Private Sewage Disposal Licensing Act (225 ILCS 225) and Code (77 IL Administrative Code Part 905)

j) Drainage: A private sewage disposal system shall not be located in areas where surface waters will accumulate. Provisions shall be made to minimize the flow of surface water over the private sewage system. Examples of such provisions would be the use of dikes, embankments ditches, or flow diverters.

Is there a public health risk of waters moving over the system?

Illinois Department of Public Health letter to all County Public Health Departments (Oct 2009):

A private sewage disposal system shall not be located in areas where surface waters accumulate.

It is a violation of the code to install a new or repair a private sewage disposal system that will be affected or have a pubic health impact on surface waters moving over the property.

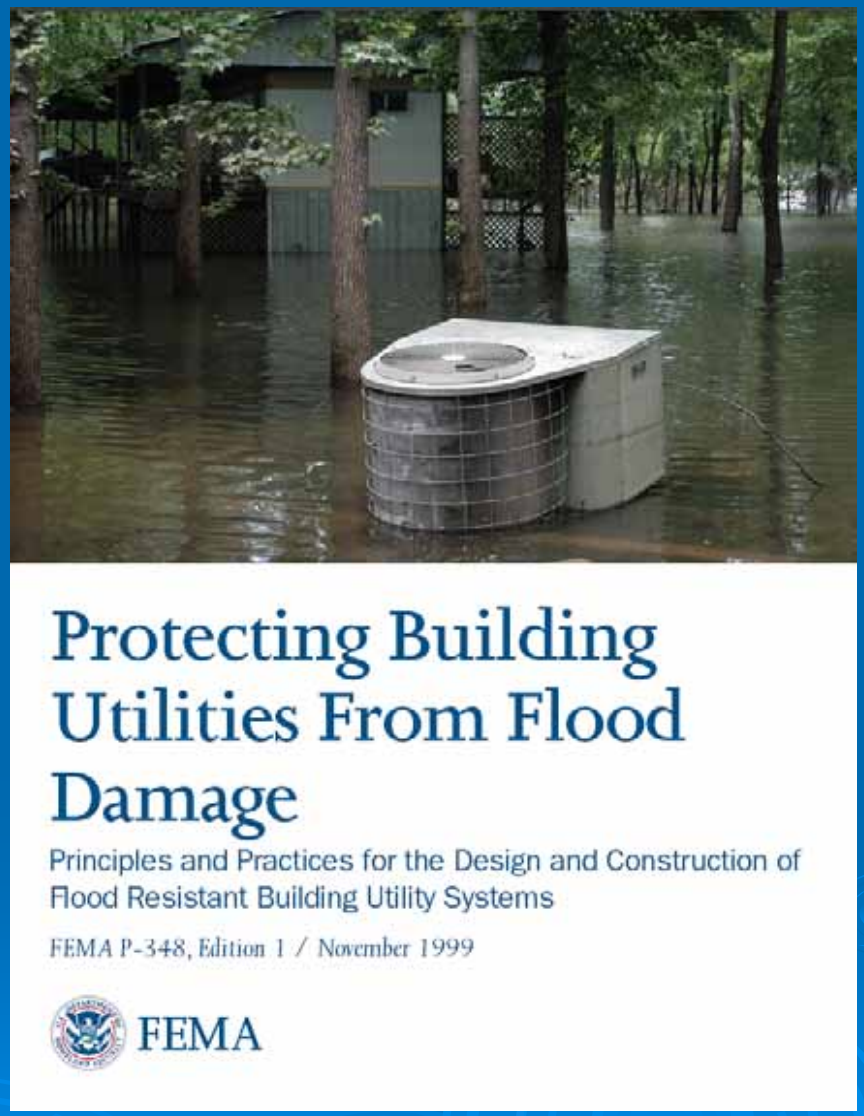
A conventional private sewage system is in a state of failure when it is covered by water.

FEMA Publication 348

A lot of pictures but precious little help on septic design and permitting.

FEMA working on a new Technical Bulletin on septic systems.

www.FEMA.gov



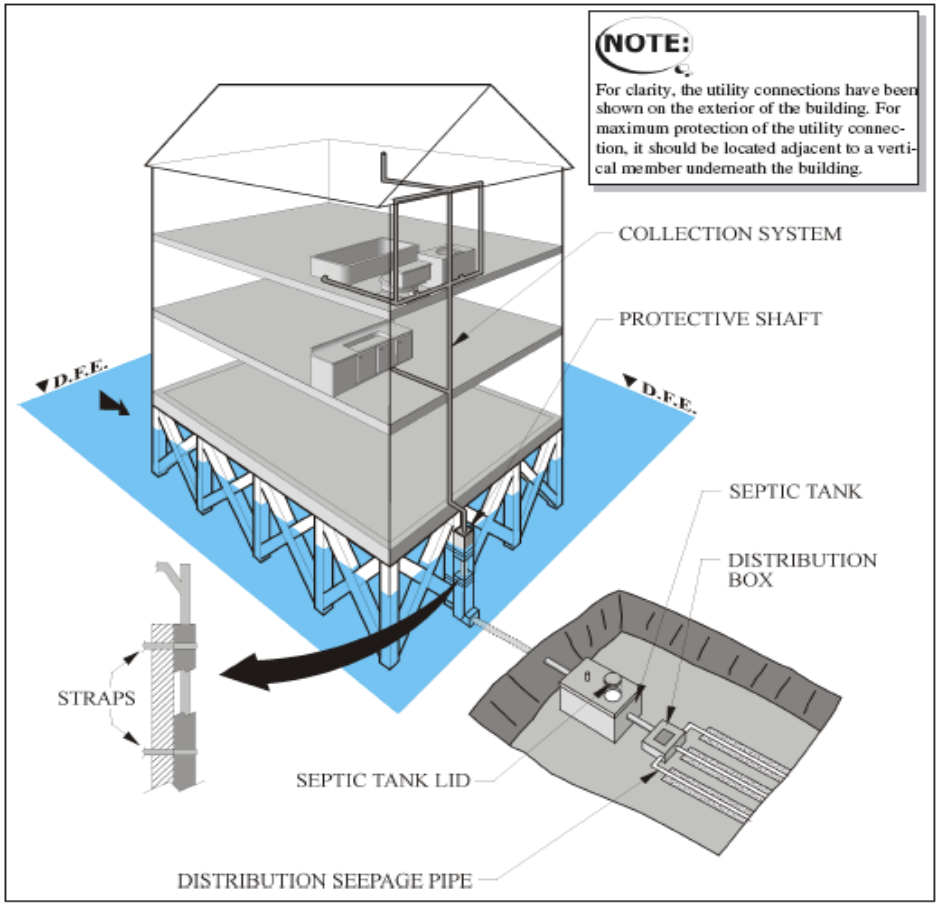


Figure 3.4.3D: The components of a typical on-site sewage management system in a non-velocity flow area

IL Executive Order 2006-5

- In summary:
  - State agencies which:
    - plan, promote, regulate, or permit activities, as well as those which administer grants or loans in the State's floodplain areas, must ensure that all projects meet the standards of the state floodplain regulations or the National Flood Insurance Program (NFIP) whichever is more stringent.
    - New or improved buildings as well as other development activities be protected from damage by the 100-year flood.
    - No construction activities in the floodplain may cause increases in flood heights or damages to other properties.
    - Critical facilities must be protected to the 500-year flood elevation.

Examples of critical facilities where flood protection should be required include:

- **Emergency Services Facilities**
- **Schools**
- **Hospitals**
- **Retirement homes and senior care facilities**
- **Major roads and bridges**
- **Critical utility sites (telephone, electrical, etc.)**
- **Hazardous material storage facilities (chemicals, petrochemicals, hazardous or toxic substances)**

Examples of critical facilities where flood protection is recommended include:

- **Sewage treatment plants**
- **Water treatment plants**
- **Pumping stations**

Federal Executive Order 11988

- Federally funded or permitted floodplain development activities must:
  - Follow an 8 Step review procedure.
  - No alternative
  - Ensure compliance with NFIP flood protection regulations

Local ordinances and Executive Order 2006-5

•Construction of new or substantially improved critical facilities shall be located outside the limits of the floodplain.

•

•Construction of new critical facilities shall be permissible within the floodplain if no feasible alternative site is available.

•

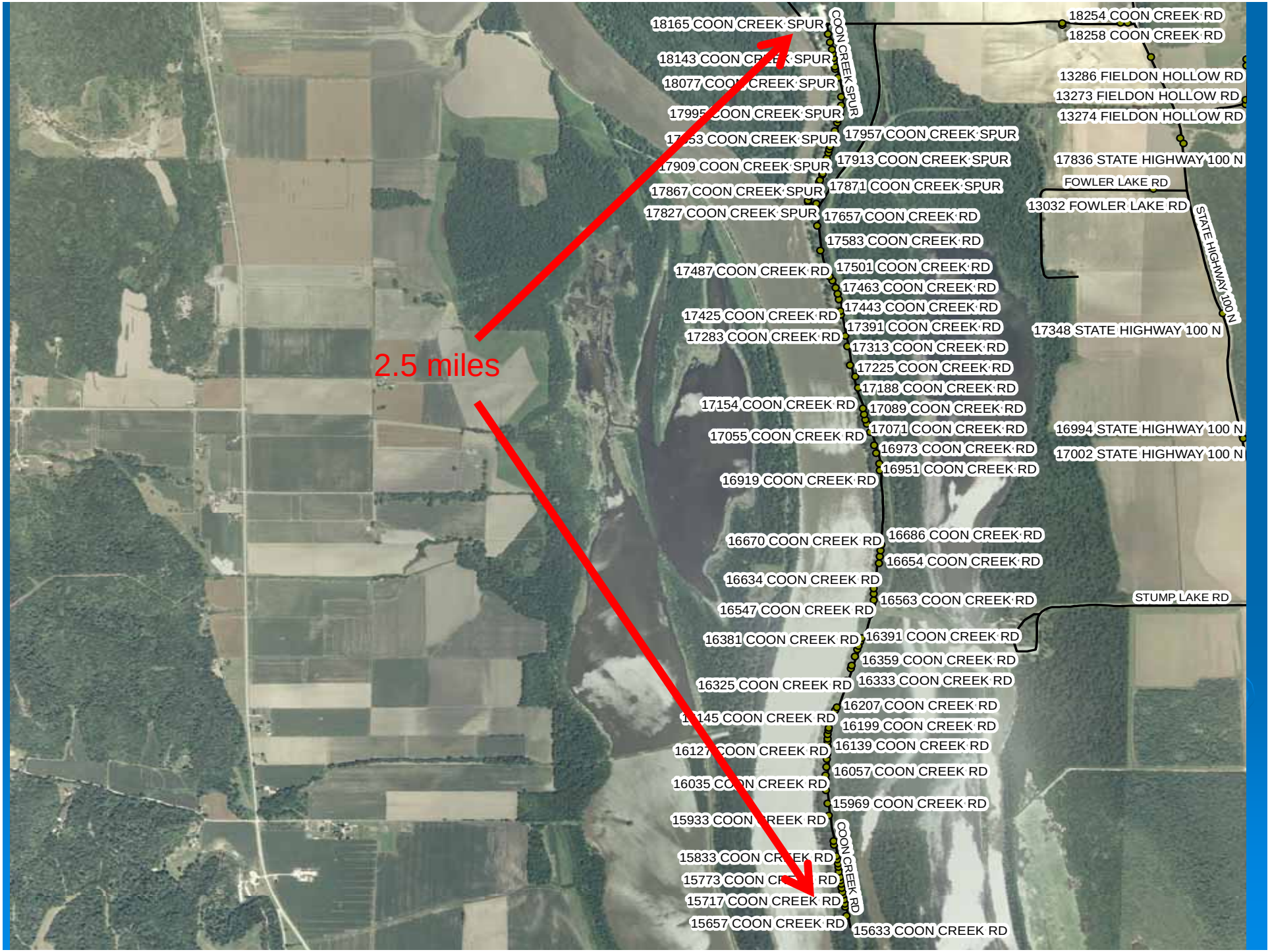
•Critical facilities constructed within the floodplain shall have the lowest floor (including basement) elevated or structurally dry floodproofed to the 500-year flood frequency elevation.

• Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

•Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities.

On-Site Waste Disposal in the Floodplain

Mike Prough
Jersey County Code Administrator


2.5 miles
18165 COON CREEK SPUR
COON CREEK SPUR
18143 COON CREEK SPUR
18077 COON CREEK SPUR
17995 COON CREEK SPUR
17953 COON CREEK SPUR
17909 COON CREEK SPUR
17867 COON CREEK SPUR
17827 COON CREEK SPUR
17957 COON CREEK SPUR
17913 COON CREEK SPUR
17871 COON CREEK SPUR
17657 COON CREEK RD
17583 COON CREEK RD
17501 COON CREEK RD
17463 COON CREEK RD
17443 COON CREEK RD
17391 COON CREEK RD
17313 COON CREEK RD
17225 COON CREEK RD
17188 COON CREEK RD
17089 COON CREEK RD
17071 COON CREEK RD
16973 COON CREEK RD
16951 COON CREEK RD
17487 COON CREEK RD
17425 COON CREEK RD
17283 COON CREEK RD
17154 COON CREEK RD
17055 COON CREEK RD
16919 COON CREEK RD
16686 COON CREEK RD
16654 COON CREEK RD
16563 COON CREEK RD
16391 COON CREEK RD
16359 COON CREEK RD
16333 COON CREEK RD
16207 COON CREEK RD
16199 COON CREEK RD
16139 COON CREEK RD
16057 COON CREEK RD
15969 COON CREEK RD
16670 COON CREEK RD
16634 COON CREEK RD
16547 COON CREEK RD
16381 COON CREEK RD
16325 COON CREEK RD
16145 COON CREEK RD
16127 COON CREEK RD
16035 COON CREEK RD
15933 COON CREEK RD
15833 COON CREEK RD
15773 COON CREEK RD
15717 COON CREEK RD
15657 COON CREEK RD
COON CREEK RD
15633 COON CREEK RD
18254 COON CREEK RD
18258 COON CREEK RD
13286 FIELDON HOLLOW RD
13273 FIELDON HOLLOW RD
13274 FIELDON HOLLOW RD
17836 STATE HIGHWAY 100 N
FOWLER LAKE RD
13032 FOWLER LAKE RD
STATE HIGHWAY 100 N
17348 STATE HIGHWAY 100 N
16994 STATE HIGHWAY 100 N
17002 STATE HIGHWAY 100 N
STUMP LAKE RD

Jersey County Flood Plain Ordinance

- e. Ensure that water supply and waste disposal systems meet the Public Health standards of Section 9;
- FROM SECTION 9
- (*a. Public health standards must be met for all floodplain development. In addition to the*
- *requirements of Sections 6 and 7, the following standards apply:*
- *i. No development in the floodplain shall include locating or storing chemicals, explosives,*
- *buoyant materials, flammable liquids, pollutants, or other hazardous or toxic materials*
- *below the flood protection elevation unless such materials are stored in a floodproofed*
- *and anchored storage tank and certified by a professional engineer or floodproofed*
- *building constructed according to the requirements of Section 7 of this ordinance.)*
- *iv. New and replacement on-site sanitary sewer lines or waste disposal systems shall be*
- *located and constructed to avoid impairment to them or contamination from them during flooding. Manholes or other above ground openings located below the flood protection*
- *elevation shall be watertight.)*

Flooded Septic Systems Are Failed Septic Systems

Illinois Department of PUBLIC HEALTH

Pat Quinn, Governor
Damon T. Arnold, M.D., M.P.H., Director

525-535 West Jefferson Street • Springfield, Illinois 62761-0001 • www.idph.state.il.us

TO: Local Health Departments
Environmental Health Directors
Units of Local Government

FROM: Chad Moorman, LEHP
Program Manager
Private Sewage Disposal Program

DATE: October 30, 2009

SUBJECT: Private Sewage Disposal Systems in areas subject to flooding and surface water.

As annual flooding is impacting many areas within the State, some areas multiple times each year, the Department would like to reiterate and clarify how this relates to the Private Sewage Disposal Licensing Act (225 ILCS 225) and Code (77 IL. Administrative Code Part 905) and the use of private sewage disposal systems. The Code is very specific with regards to the use of a private sewage disposal system in an area subject to flooding or having surface water flowing over the private sewage disposal system. Section 905.20 of the Code states the following:

j)1) Drainage. A private sewage disposal system shall not be located in areas where surface water will accumulate. Provisions shall be made to minimize flow of surface water over the private sewage system. Examples of such provisions would be the use of dikes, embankments, ditches or flow diverters.

It is a violation of the code if affective measures, such as those stated within the Code, are not utilized to minimize the flow of surface water over a private sewage disposal system located in an area prone to surface water. It also is a violation of the Code to install a new or repair a private sewage disposal system or component of a system that will be affected or have a public health impact on the surface waters moving over the property. A conventional private sewage disposal system is in a state of failure when it is covered by surface water, this has been documented by numerous evaluations and studies. The main concern expressed to the Department during floods is the severe public health threat from the discharge of untreated sewage. When the soil is saturated and there is standing water over a conventional subsurface seepage private sewage disposal system, it cannot operate as designed, and there is a high potential for a discharge from the system that will contaminate surface and/or groundwater.

The number of properties that are affected varies from county to county. Many counties, as part of their floodplain requirements within their local ordinances or as part of the National Flood Insurance Program (NFIP), have tried to reduce the number of structures in these areas through federal assistance. As the counties are evaluating sites to see if they are in violation of local,

state and federal regulations, the Department would like to provide alternatives or options to the use of a conventional subsurface private sewage disposal system that can be affected by the flow of surface water over the property. These options may allow for the continued use of the property and achieve compliance with regulations. Many of the properties in question are approved for use as seasonal or provisional occupancy, but some are being utilized as a permanent residence. Within the current code in Section 905.130 g) Incinerator Toilets & h) Compost Toilets, are options that could be utilized if a structure is elevated. These two options can be elevated or located within the elevated structure.

With recent changes to the Private Sewage Disposal Licensing Act we also are able to evaluate alternative technology not prescriptive to the code. One of these alternatives is a designed and sealed water tight holding tank or other seal watertight compartments or tanks that will not be impacted by or impact surface waters. If a system can be designed and certified by an Illinois licensed Professional Engineer, the Department can issue an acceptance on a case-by-case basis. The alternative private sewage disposal system must be designed and constructed so that it will not be impacted by the hydraulic pressure of the surface water or discharge the contents of the system. The Department is open to the review of alternatives and technologies to achieve compliance and allow continued use of the structures.

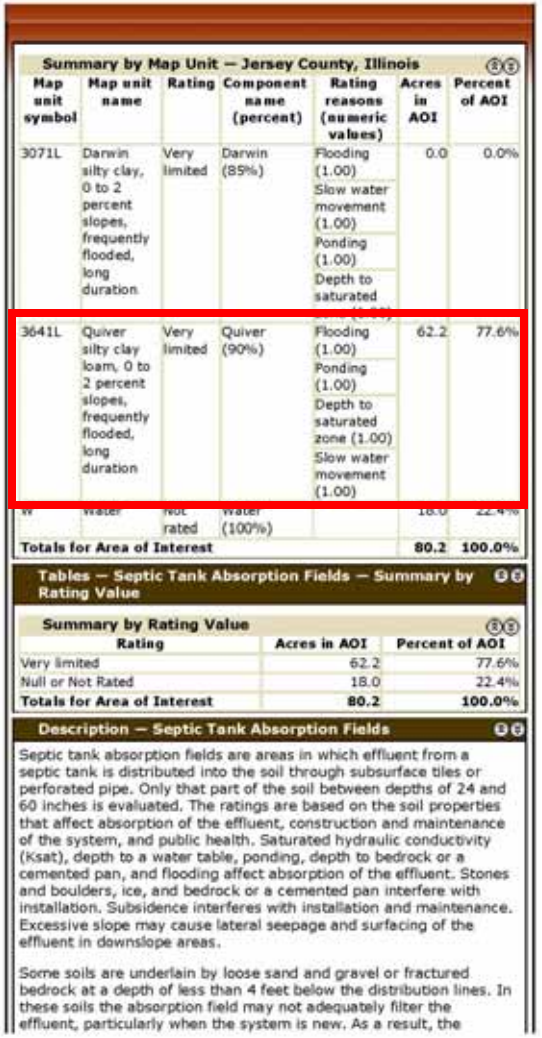
If a property is located in an area implementing a measure to minimize the flow of surface water across the private sewage disposal system and do to a malfunction of the measures the system is covered by surface water, the Department in conjunction with its agent(s) can evaluate the system to see if it can be utilized based on the following conditions:

1. The surface water has receded.
2. The soils are draining as prior to the event.
3. Inspection and evaluation to see if the private sewage disposal system was inundated with debris or silt from the surface water.
4. Repairs of the measure utilized to minimize the flow of surface water are completed.

If you have additional questions, please contact me at the Division of Environmental Health at 217-524-4137, TTY (hearing impaired use only) 800-547-0466 or chad.moorman@illinois.gov.

cc: Regional Offices

NRCS Soils Data



Summary by Map Unit — Jersey County, Illinois

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3071L	Darwin silty clay, 0 to 2 percent slopes, frequently flooded, long duration	Very limited	Darwin (85%)	Flooding (1.00) Slow water movement (1.00) Ponding (1.00) Depth to saturated	0.0	0.0%
3641L	Quiver silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	Very limited	Quiver (90%)	Flooding (1.00) Ponding (1.00) Depth to saturated zone (1.00) Slow water movement (1.00)	62.2	77.6%
W	Water	Not rated	Water (100%)		18.0	22.4%
Totals for Area of Interest					**80.2**	**100.0%**

Tables — Septic Tank Absorption Fields — Summary by Rating Value

Summary by Rating Value

Rating	Acres in AOI	Percent of AOI
Very limited	62.2	77.6%
Null or Not Rated	18.0	22.4%
Totals for Area of Interest	**80.2**	**100.0%**

Description — Septic Tank Absorption Fields

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating Options — Septic Tank Absorption Fields

Overview of the Jersey County Un-incorporated Floodplain As of March 7, 2011

- There were a total of 445 structures in the un-incorporated Jersey County Floodplain. Since 2002 there have been a total of 108 cabins demolished and 46 elevated totaling 291 cabins mitigated.
- Out of the 291 cabins there were 79 repetitive loss and 18 severe repetitive losses that were removed from FEMA's list.
- After the 2008 flood, 116 septic systems were deemed failed by IDPH and Jersey County Environmental Health Dept. Since 2008, 39 flood proof septic systems have been installed and the additional 77 are to be installed.
- Private septic replacement eligible for Illinois Disaster Assistance Program grant funds. Jersey County had 17 private systems replaced totaling $132,600.00.


Plumbing exiting cabin


Plumbing continuing to exit building


The plumbing has left the building


Remains of barrel used as a septic tank

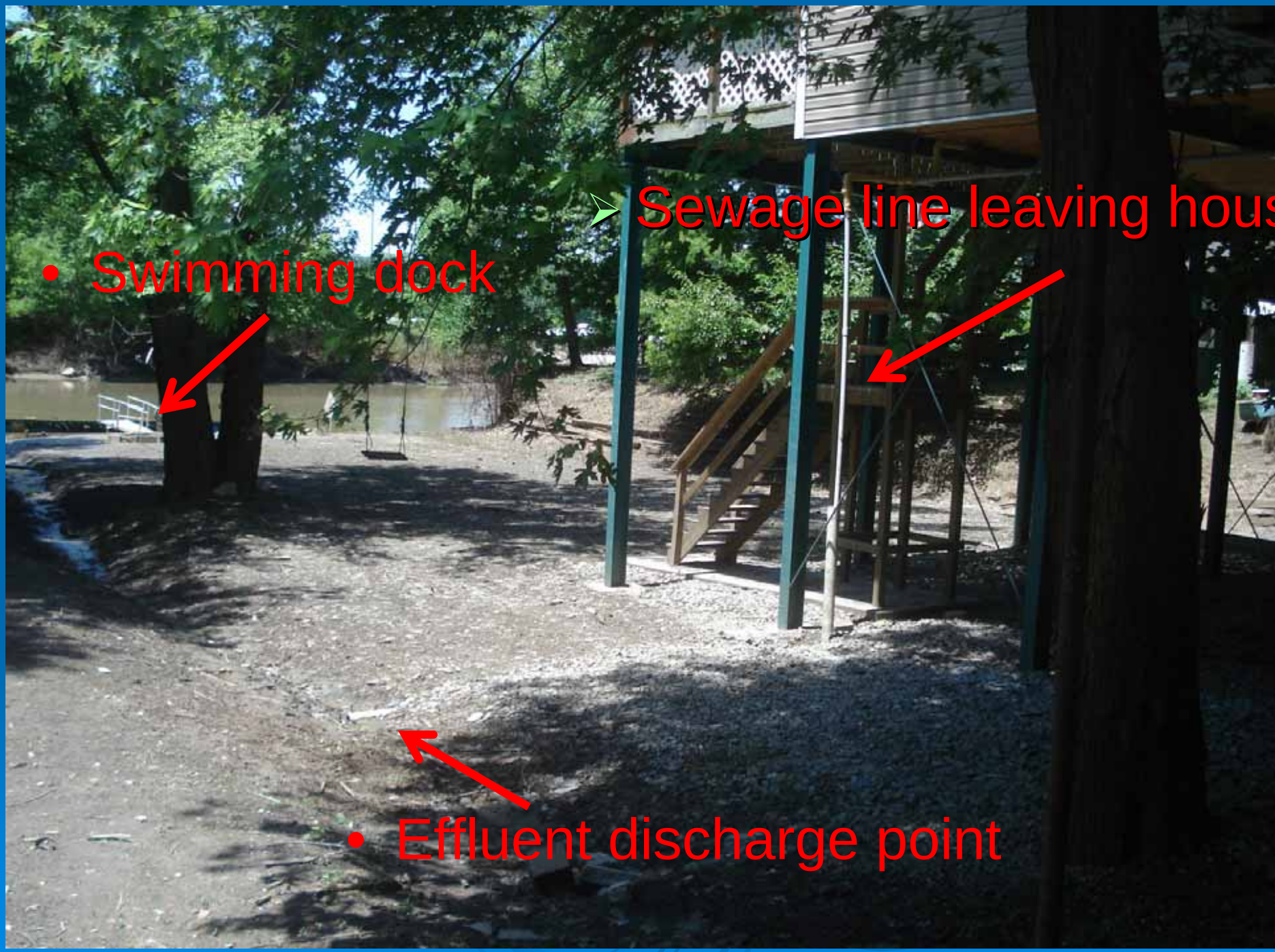

Old oil drum used as septic tank


Sewage from oil drum used as septic tank

- Plastic drum with holes

- Septic tank in front of traditional laterals in the floodplain

- Untreated direct discharge to river


Sewage line leaving hous
Swimming dock
Effluent discharge point


Unknown 6” reduced to 4” lines discharging to rivers


Aerobic Treatment Unit at Temporary Use Cabin

Water Sewage Setback

Flood Proof Design?

4 of 5

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

O.M.B. NO. 1660-0008
Expires March 31, 2012

National Flood Insurance Program

FLOODPROOFING CERTIFICATE

FOR NON-RESIDENTIAL STRUCTURES

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not allow a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME	FOR INSURANCE COMPANY USE
CAGLE, PAMELA	
STREET ADDRESS (including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER	POLICY NUMBER
11441 LOCKHAVEN	
OTHER DESCRIPTION (Lot no., Block #, Subdivision, etc.)	COMPANY NAIC NUMBER

CITY	STATE	ZIP CODE
GODFREY	ILLINOIS	62035

SECTION I - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (In AO Zone, Use Depth)
170312	17083C0300	D	APRIL 2, 2009	AE	437

SECTION II - FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Floodproofing Design Elevation Information:

Building is floodproofed to an elevation of N/A (septic tank) feet NAVD, (e.g. 1988 North American Vertical Datum, the same as that on the FIRM.)

Height of floodproofing on the building above the lowest adjacent grade is N/A feet.

(NOTE: For insurance rating purposes the building's floodproofed design elevation must be at least one foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium.)

SECTION III - CERTIFICATION (By Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:

I certify that, based upon development and/or review of structural design, specifications, and plans for construction, the design and methods of construction are in accordance with accepted standards of practice for meeting the following provisions:

The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated above, with walls that are substantially impermeable to the passage of water.

All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

I certify that the information on this certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the U.S. Code, Section 1001.

CERTIFIER'S NAME	LICENSE NUMBER (or Affix Seal)	
ROBERT J. MANAS, P.E.	IL 062-052157	
TITLE	COMPANY NAME	
VICE PRESIDENT	FENEGHAN AND ASSOCIATES, P.C.	
ADDRESS	CITY	STATE / ZIP CODE
1304 STATE HIGHWAY 67	JERSEYVILLE	ILLINOIS 62052
SIGNATURE Robert J. Manas	DATE 4/29/10	PHONE 618-498-6416

ROBERT J. MANAS 062-052157 REGISTERED PROFESSIONAL ENGINEER STATE OF ILLINOIS

Copies should be made of this Certificate for: 1) community official, 2) insurance agent/company, and 3) building owner.

FEMA Form 81-65, Mar 09 — Replaces all previous editions — FEMA Use Only


10.20.2009 13:41


10.28.2009 13:17


10.14.2010 15:39


11.12.2010 12:17


01.06.2011 14:25

Quotes From the Floodplain

- “How am I supposed to put a septic tank in. Every time I dig a hole deeper than 3’ it fills up with water”
- “There is nothing wrong with my septic tank. Even during a flood my toilets flush just fine.”

IDNR/OWR Point of Contact:

Paul Osman, CFM

Floodplain Programs Manager/NFIP Coordinator

Illinois Office of Water Resources

One Natural Resources Way

Springfield, IL 62702

(217) 782-4428 **paul.osman@illinois.gov**