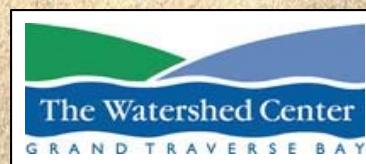


Bacteria, Beaches, and Public Health



Tom Fountain, R.S.
Environmental Health Director
BLDHD

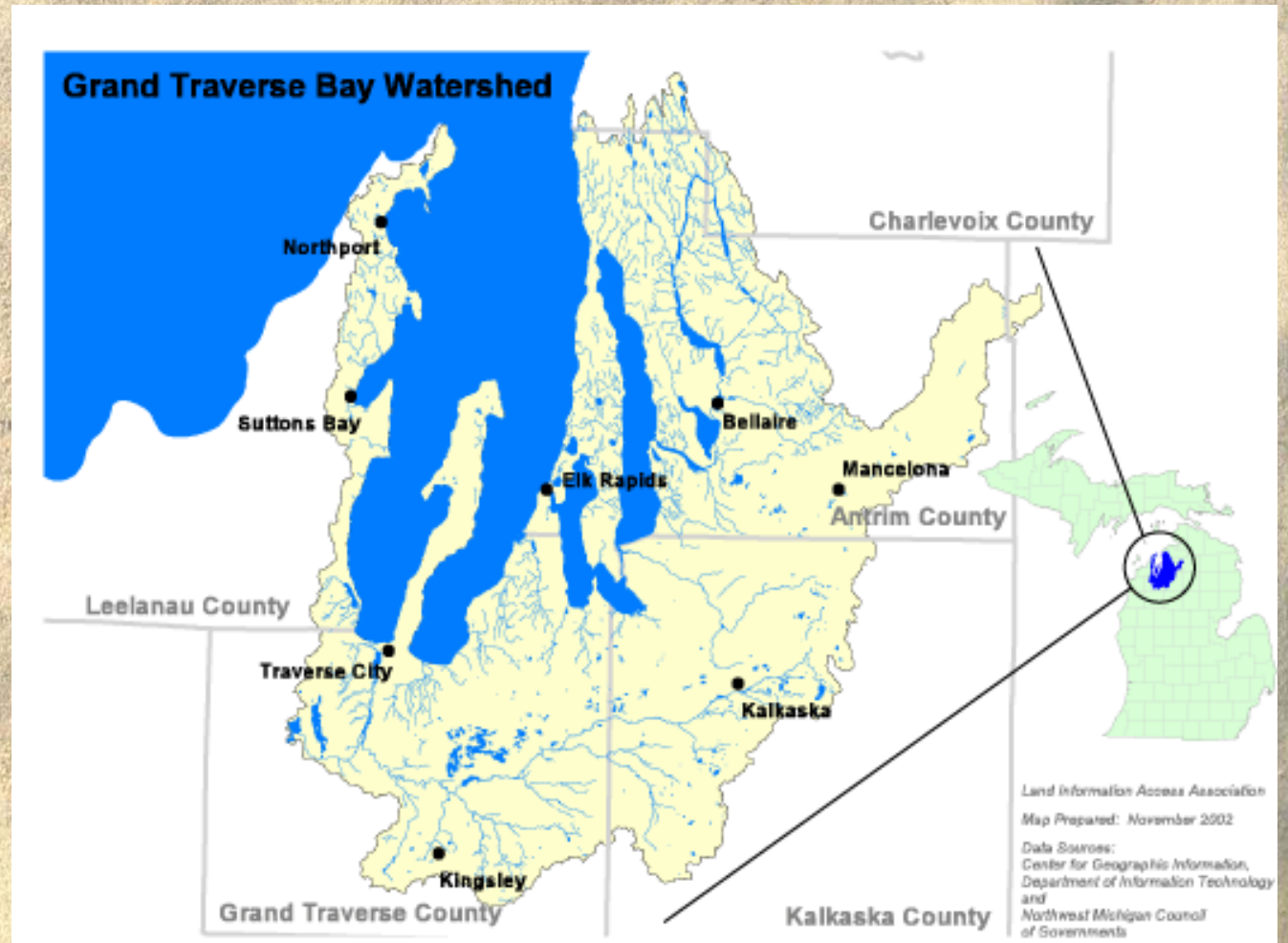


Sarah U'Ren
Program Director
The Watershed Center GT Bay

Our Mission:

The Watershed Center advocates for clean water in Grand Traverse Bay and acts to protect and preserve the Bay's watershed

- 973 square miles
- 132 Miles of Shoreline
- 4 Counties, 44 townships, 11 municipalities



Quality of Life



Health of Water Resources



Local Economy



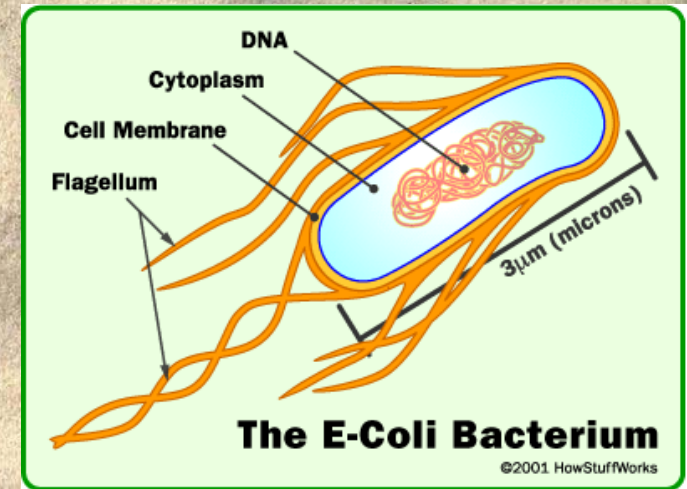
Water-related recreation and tourism are key source of economy in Grand Traverse Region

A close-up photograph of a sandy beach surface. The sand is light-colored and shows several distinct footprints and shadows cast by an unseen person. The texture of the sand is visible, with some small pebbles and debris scattered throughout. The lighting creates soft shadows, suggesting a sunny day.

Pathogens and Bacteria at Beaches

Pathogens and Bacteria

- Pathogens: Organisms that cause disease
bacteria, viruses, protozoa
 - Present in water, hazardous to public health
- E.Coli is commonly measured as indicator of fecal contamination which contains pathogens
 - Kinds measured in recreational water do not generally cause disease
 - Indicator for the presence of other disease causing pathogens
 - EPA studies: When E. coli in fresh water exceeds water quality standards, swimmers are at increased risk of developing gastroenteritis (stomach upsets) from pathogens carried in fecal pollution



Sources of Pathogens and Bacteria at Beaches

- Stormwater is major pathway for E.coli to enter water –
 - Pet waste, ducks/geese, animals in catch basins, parking lot runoff, human waste (leaking sanitary or septic)
 - Storm drain pipes good medium for cultivating bacterial growth
 - Beaches in urban areas frequently located next to or near stormdrain outlets
- Direct illicit connections to surface water and/or discharges to shallow groundwater



Many sources of Pathogen contamination to stormwater runoff



2007 – Great Lakes Beach Sanitary Survey Pilot Project

- Investigated potential sources of contamination at beaches
- Local monitoring shows extremely high E.coli in storm drains
- GTBay beach advisories related to storm events

E.Coli monitoring data (col/100mL collected by TWC for storm drains)

	July 2012	July 2012	Aug 2012	Sept 2012
Bryant Park	61,300	21,430	241,920	198,630
East Bay Park (north)	14,700	19,180	19,350	241,920
Sunset Park	130,000	5,760	111,990	7,890
West End (east)	1,200	1,850	19,180	--
West End (west)	4,400	1,850	5,460	12,740
Suttons Bay – Grove	14,500	1,220	--	--
Suttons Bay – Madison	480,000	41,060	--	--
Suttons Bay – Broadway	10,500	300	--	--

*All these drain outlets are located next to or near public beaches

** Keep in mind a beach water reading of 300 col/100mL spurs an Advisory

Water Quality Standards

MI Water Quality Standards:

Water is considered unsafe for swimming if...

- 300 E. coli per 100mL of water are present in a single sample
- More than 130 E. coli are present in 100mL of water in 5 samples over 30 days



Water quality monitoring sign for GT County beach

Beach Advisory System

Level 1

No tag: E.Coli levels meet MDEQ standards for full body contact

Level 2

Yellow tag: E.Coli levels meet MDEQ standards for wading, fishing, and boating. Contact above the waist not advised.

E.coli measured: 300-999 col/100mL

Level 3

Red tag: E.Coli levels exceed MDEQ standards no body contact advised.

E.coli measured: above 1,000 col/100mL

Level 4

Red tag: Health Alert. E.Coli levels and/or know gross contamination of beach waters. Avoid contact with beach waters.

- Adopted by the Benzie/Leelanau District Health Department
- Post a water quality index on a scale of 1 to 4 each week, depending on the severity of the contamination
- Level 2 or higher → affected surface waters will be monitored until acceptable levels reached

Leelanau County Beaches Tested

Great Lakes Beaches:

- Empire Beach
- Frankfort Beach
- Northport Marina Beach
- Suttons Bay South Shore Park
- Suttons Bay Marina Park Beach
- Greilickville Harbor Park
- Omena Beach (only 2016)



Empire Public Beach

Photo courtesy of Interlochen Public Radio

Inland Lake Beaches:

- South Bar Lake
- Neddow Beach (Lake Leelanau)

FUNDING:

- DEQ BEACH Program
- DEQ Clean Michigan Initiative
- GT Band
- Local townships



Suttons Bay South Shore Park

Photo courtesy of VRBO.com

.... Results

Beach	2016	2015	2014	2013	2012
Empire Beach	0	1	0	0	0
Frankfort Beach	0	0	0	0	0
Northport Marina Beach	1	1	0	0	0
Suttons Bay South Shore Park	2	0	1	0	0
Suttons Bay Marina Park	0	1	1	0	0
Greilickville Harbor Park	2	0	n/a	n/a	n/a

Beach	2016	2015	2014	2013	2012
South Bar Lake	0	0	n/a	0	n/a
Neddows Beach	0	0	n/a	0	n/a

All Level 2 Advisories, no Level 3

A close-up photograph of a sandy beach. The sand is light-colored and shows several distinct footprints, suggesting a path has been walked. The lighting is natural, creating soft shadows and highlights on the sand's surface. The overall texture is grainy and organic.

Reducing Your Risk

Reducing Your Risk – Stormwater Reduction

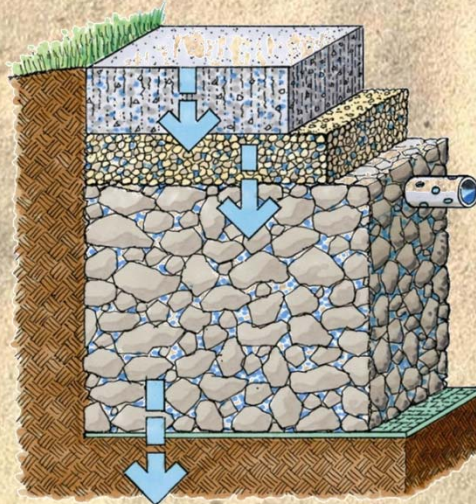
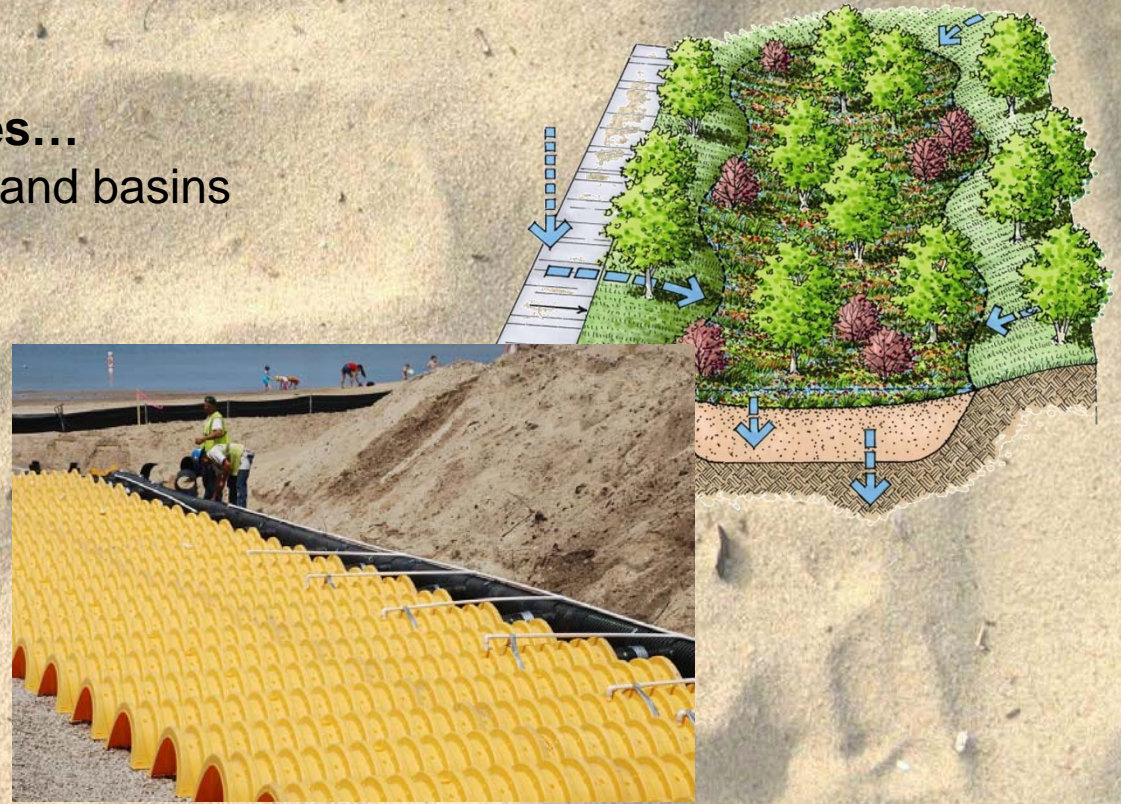
Reduce stormwater runoff from urban areas and your lawn using **“Green Infrastructure”** techniques

- Small-scale stormwater management practices utilized onsite
- Work with nature to reduce runoff and pollutants from a site
- Reducing the amount of stormwater leaving a site, reduces pollutants (like pathogens)



“Green Infrastructure” Includes...

- Bioretention/retention swales and basins
- Rain gardens
- Rain barrels
- Pervious Pavement
- Underground Infiltration
- And more!



Reducing Your Risk – Shoreline Buffers

Install a shoreline buffer or greenbelt to discourage nuisance animals (Canada Geese)



Geese are grazers and love open expansive lawns up to edge of lake

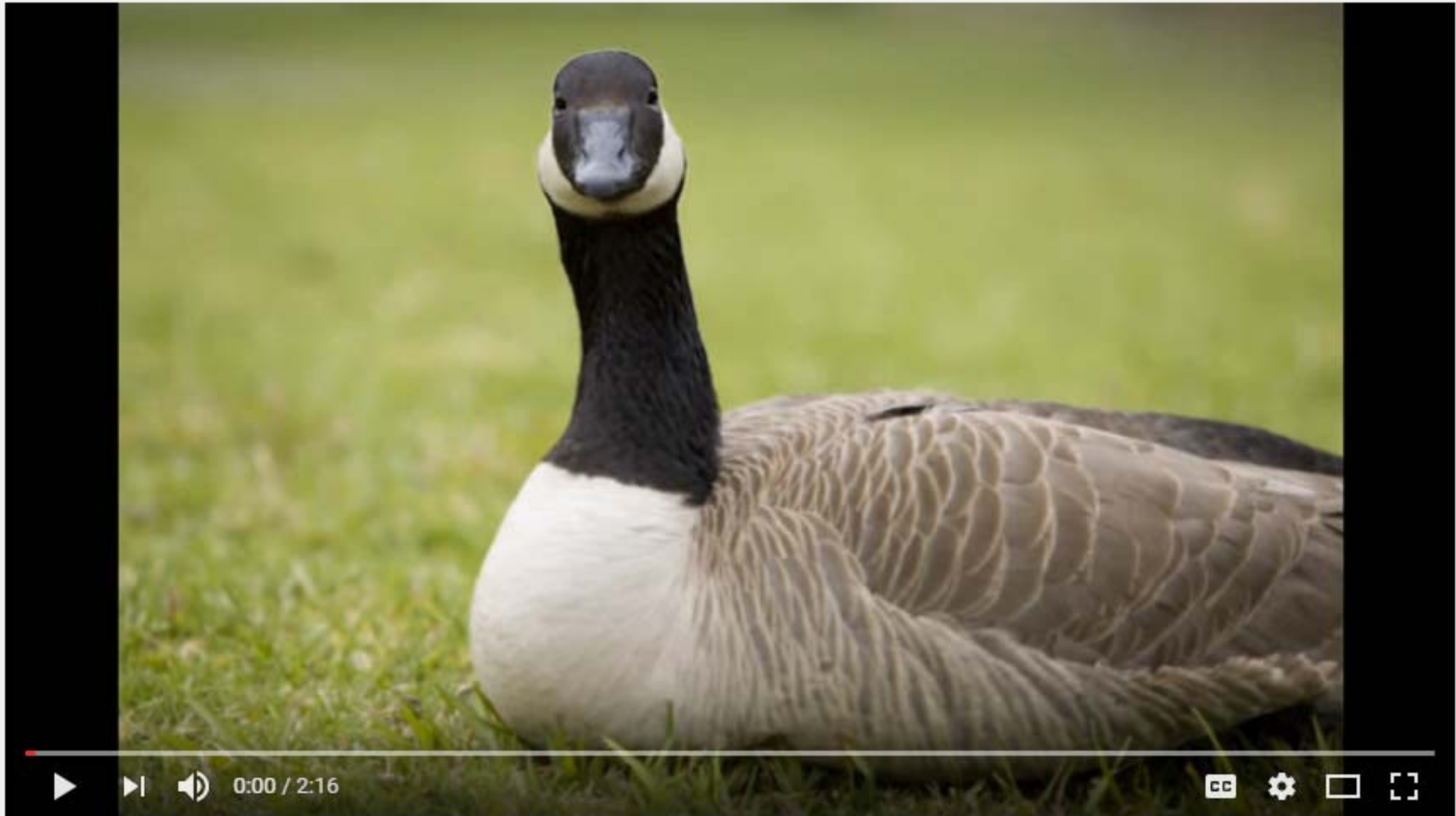
Lawns:

- Provide constant supply of food
- No barriers
- No hiding places for predators
- Droppings contain E.Coli and other harmful bacteria... wash into beach water during rain



A **greenbelt** is simply a strip of natural vegetation such as native plants, tall grasses, shrubs and trees planted between your lawn and the water. Greenbelt gardens are also called **buffers**.





Sebastian the Goose Encourages Natural Shorelines

[You Tube Link for Sebastian the Goose](#)

Reducing Your Risk – Waterfowl Feeding

Don't feed ducks and other waterfowl at your dock or public beach



**You feed 'em on the beach,
they go on the beach.**

Please don't feed waterfowl to help reduce E. Coli.



Healthy Beaches

13272 S. West Bayshore Dr.
Traverse City, MI 49684
935.1514 gtbay.org

Reducing Your Risk – Other Tips

GRAND TRAVERSE BAY WATERSHED

Dig in and help us keep our beaches healthy

E. Coli bacteria in water can indicate the presence of viruses and pathogens that can cause illnesses.

Common sources include animal waste, malfunctioning septic systems and storm drains. When our water becomes infected with E. Coli and other pathogens, it can contaminate our beaches. We test Grand Traverse Bay beaches weekly for E. Coli. Here are easy ways you can help!



WILDLIFE	Don't feed waterfowl. If you feed them on the beach, they go on the beach. Their waste contains E. Coli bacteria.
PETS	Clean up after your pets and dispose of waste in trash.
RESTROOM	Take frequent restroom breaks.
BOATING & RV	Discharge boat and RV waste only at approved disposal sites.
PROPERTY	Properly operate and maintain your septic system.
LITTER	Place litter in trash cans, including cigarette butts.
STORM DRAIN	Don't place anything in storm drains, including litter, cigarette butts and automotive fluids.

THANK YOU FOR HELPING PROTECT OUR UP NORTH WATER QUALITY ~ AND QUALITY OF LIFE!



The Watershed Center advocates for clean water in Grand Traverse Bay and protects and preserves its 978-square-mile watershed. gtbay.org

Reducing Your Risk – Other Tips



WILDLIFE

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BOATING & RV

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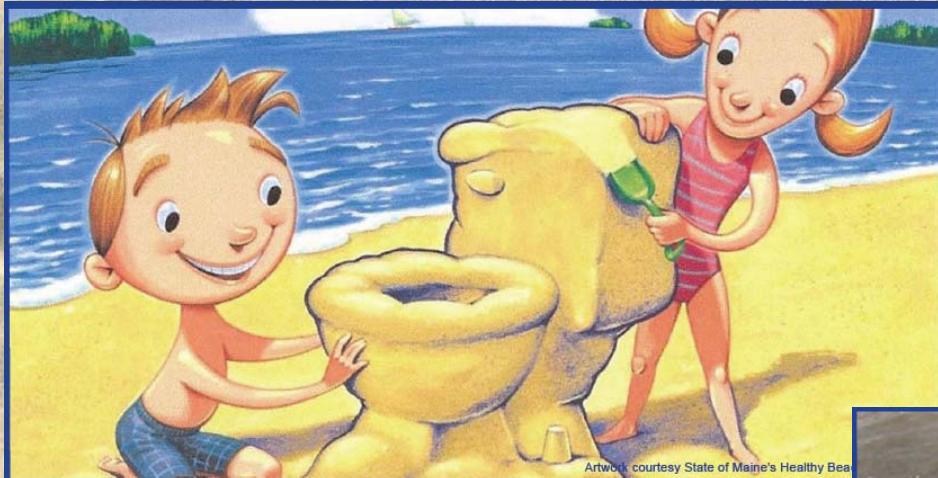
LITTER

Place litter in trash cans, including cigarette butts.

STORM DRAIN

Don't place anything in storm drains, including litter, cigarette butts and automotive fluids.

Reducing Your Risk – Other Ads



Artwork courtesy State of Maine's Healthy Beaches

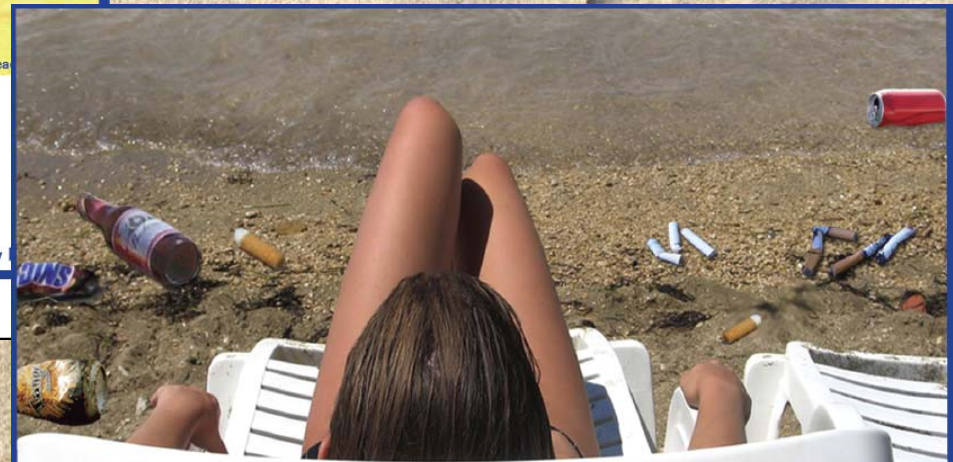
Don't be a Potty Animal at the Beach

Make bathroom breaks your #1 & #2 priorities

gtbay.org



Healthy



Don't Get Trashed at the Beach

Please recycle or throw away your trash

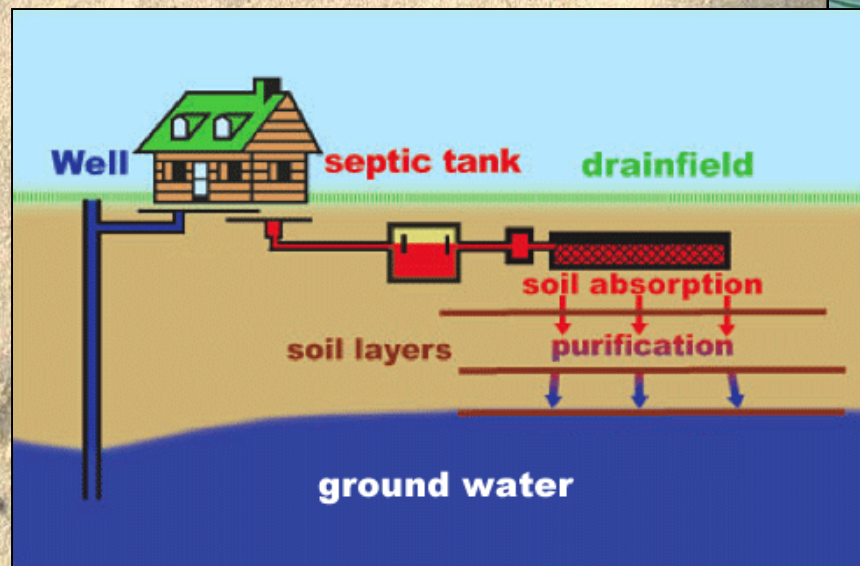
gtbay.org



Healthy Beaches

Reducing Your Risk – Reduce Nutrient Inputs

- Excess nutrients cause excess algae growth
 - Dies off and washed onshore
 - Decomposes and harbors E.coli
 - Attracts other animals
 - Aesthetically unpleasing
 - Nuisance to boating
 - Attractive for kids to play with, unsafe
- Nutrient Sources:
 - Fertilizers
 - Septics (leaking and improperly placed)
 - Stormwater runoff



Questions?

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