Case Study: Stormwater Outreach

Dave Ward
Snohomish County Public Works
Surface Water Management
Fun with Pet Waste

Dave Ward
Snohomish County
Public Works
Surface Water Management

Pet Waste Management Research and Tools
Snohomish County Surface Water Management
Washington State Department of Ecology
Yikes!

**Everett** receives about 36 inches rain per year.
Each acre receives about 1 million gallons of rain.

**Monroe** receives about 53 inches of rain per year.
Each acre receives about 1.5 million gallons of rain.

**Index** receives about 110 inches rain per year.
Each acre receives about 3 million gallons of rain.
Fecal coliform bacteria machine
*Ancylostoma* sp. egg and larva

Can survive outside host 3-4 weeks in larval stage.

Puppies are a significant source of infection. Prompt removal of dog and cat feces greatly reduces risk of human infection.
Toxocara canis eggs

CDC reports 300,000 human cases annually, 90% of waterborne origin.

Survival outside a host can exceed 6 months – up to four years in soil.
Giardia lamblia cysts
a.k.a. Giardia duodenalis
a.k.a. Giardia intestinalis

CDC reports 2 million human cases annually, 90% of waterborne origin.

Survival outside is indeterminate. Resistant to drying, chlorination, and temperature extremes. Can survive for months in water.
Cryptosporidium parvum cysts

CDC reports 300,000 human cases annually, 90% of waterborne origin.

Survival outside a host can exceed 6 months.
Campylobacter jejuni

*Campylobacter* is one of the most common bacterial causes of diarrheal illness in the United States. About 15 cases are diagnosed annually for each 100,000 persons.
Escherichia coli

Can survive up to four months in feces.

One strain, O157:H7, causes an estimated 73,000 human cases of infection, and 61 deaths in the United States annually.

Most cases are associated with contaminated food, however infection can occur after swimming in or drinking contaminated surface water.
Snohomish County Dog Population
Dogs per Acre
Based on INSOURCE 2004 Data

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Not suitable for swimming or wading

Not suitable for swimming
Formative Research

1. Reviewed pet waste programs in North America, Europe, Australia, New Zealand
2. Reviewed pet waste management research
3. Inventoried pet-oriented businesses
4. Inventoried pet waste cleanup and disposal products
5. Inventoried off-leash areas
6. Conducted focus groups of County residents
7. Conducted a public opinion survey of County residents
8. Analyzed Snohomish County’s pet and human demographics
9. Identified problem areas using demographic and water quality data
37.4% of Washington households have dogs

American Veterinary Medical Association 2002 data
1.5 dogs per dog-owning household in Washington

American Veterinary Medical Association 2002 data

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Estimated Countywide Dog Population

224,852 Snohomish County households
0.374 Households with dogs
1.5 Dogs per dog-owning household

126,141 Dogs in Snohomish County

U.S. Census Bureau 2000 data
American Veterinary Medical Association 2002 data
Estimated Countywide Pet Population

126,141 Dogs

206,773 Cats

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Estimated Waste Production

126,000 dogs produce roughly 2.7 times as much solid waste as 206,000 cats

Snohomish County 2005 data
Estimated Waste Production

126,000 Dogs

32,000 People

Snohomish County 2005 data
Nearly all pet waste programs:

- Are based on primary sanitation program models (not water quality models)
- Emphasize pet waste management in public places – parks, sidewalks, parkways, etc.
Portion of Dog Waste Dropped in Yards and On Walks
Snohomish County Public Works 2004 Data

Percentage of dog owners (n=366)

- All in yard: 40%
- Most in yard: 38%
- Half and half: 10%
- Most on walks: 6%
- All on walks: 2%
Nearly all pet waste programs:

• Are based on primary sanitation program models (not water quality models)
• Emphasize pet waste management in public places – parks, sidewalks, parkways, etc.
DISPOSAL

The Usual Recommendations

- Flush the waste down the toilet
- Bury the waste
- Use digesters or composting devices
- Bag the waste and place it in the trash

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Focus Groups
Telephone Survey
Safe kids
Safe pets
Clean yards
Clean shoes

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Dog Waste is Not Fertilizer
Dog Waste is Raw Sewage

Photo: Dave Ward, Snohomish County
Target Audience Analysis

- **Desired Behavior**: Pick-up regularly and dispose in trash
- **Partial Behavior**: Pick-up regularly but do not dispose properly
- **Contrary Behavior**: Pick-up irregularly or not at all

**Reinforce behavior**
- Frequent
- Infrequent

**Correct behavior**
- Frequent
- Infrequent

**Introduce behavior**

**Target Audience Analysis**

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Target Audience Analysis

Desired Behavior
40,669 households

Partial Behavior
29,410 households

Contrary Behavior
14,017 households

Reinforce behavior
Correct behavior
Introduce behavior

Target Audience Analysis

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Scoop the poop, bag it, place it in the trash
Pet Waste Pilot Program

Formative Research
- Audience Research
- Message Development
- Program Design
- Evaluation Strategy

Body of Program
- Implement Communications
- Test Methodologies
- Aggressive Monitoring
- Evaluation of Methodologies

Dissemination of Outputs
- Distribute to Public Agencies

Program Outputs
- Methodology
- Theoretical Foundation
- Evaluative Foundation
- Communication Tools
- Proven Results
Pet Waste Pilot Program

Formative Research
Audience Research
Message Development
Program Design
Evaluation Strategy

Body of Program
Implement Communications
Test Methodologies
Aggressive Monitoring
Evaluation of Methodologies

Program Outputs
Methodology
Theoretical Foundation
Evaluative Foundation
Communication Tools
Proven Results

Dissemination of Outputs
Distribute to Public Agencies
Excuse me.
Can we talk?

More than 126,000 dogs live in Snohomish County.
That’s an entire city’s worth of untreated raw sewage sitting in our backyards.

Scoop the poop,
bag it,
and place it in the trash.

Clean yards. Clean streams. (And clean paws!)

101 REASONS TO PICK UP PET WASTE:
NUMBER 75
Dog Poetry

If taking care of number two
is number one to you,
then picking up your doggy doo
should matter lots to you.

Doogies don't just fade away
or fertilize the grass;
lawn sausages will keep for weeks
releasing noxious gas.

About the time you think they're gone
they've only just begun,
emitting bad bacteria
and foul things one by one.

Cam-py-lo-bac-ter-i-a
and E. co-li are bad;
Giardia may sound like fun
But it will make you sad.

The rains, they come and wash the dung
just as it turns ripe,
down a swirling storm drain
and out into a pipe.

The pipe goes on for miles and miles
or further it may seem,
and then it pumps the poopie out
right into a stream!

Nuggets don't belong in streams
where salmon try to swim;
some day that fish could be your meal
on a hungry whim.

So scoop the poop and bag it
and place it in the trash:
your doggy doo reflects on you,
It's what your puppy passed!

More than 126,000 dogs live in Snohomish County.
That's an entire city's worth of untreated raw sewage sitting in our backyards.

Scoop the poop, bag it,
and place it in the trash

Clean yards. Clean streams. (And clean shoes!)

101 REASONS TO PICK UP PET WASTE:
NUMBER 91
Scoop the poop, bag it, and place it in the trash.

Dogs can't flush!

Dogs can't flush! Do not put in drain. Dogs can make a mess of the plumbing in your home.

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School days are here...

Aging is great:

It's the American Way
Scoop the poop, bag it, and place it in the trash.

Enjoy your holiday the healthy way!

Happy Thanksgiving
Don't let your dog be a turkey.

Put chute in not just an embarrassment for your dog. It's a health issue for your whole family.

Scoop the poop, bag it, and place it in the trash.

What's the problem with 20 tons of dog poop?

That's like an entire city's raw sewage sitting in our backyards!

Harmful organisms can be transmitted from dog waste to children. Some can persist for weeks in your yard, affecting the health of your family and pets.

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Over 20 tons of dog waste are dropped in Snohomish County every day!

Some things last longer than you think...

Scoop the poop, bag it, and place it in the trash.

Over 20 tons of dog waste are dropped in Snohomish County every day!

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This is a BEHAVIOR CHANGE program, not an education program
Program Evaluation and Monitoring

- **Activities produce outcomes**
- **Outcomes have impacts**
- **Impacts are assumed to produce the desired result**

**MONITORING MEASURES**

- Implementation Monitoring
- Activity Measures
- Was the activity implemented as designed?

- Effectiveness Monitoring
- Outcome Measures
- Did the activity produce the desired outcome?

- Validation Monitoring
- Impact Measures
- Did the outcome yield the desired result, i.e., was our assumption valid?

**DESIRED RESULT**

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Communications Strategy

Direct Communication

Change Agent

Vectors

Activity Clubs
Veterinarians
Pet Stores
Schools
4-H

Target Audience

Children
Communications Strategy

Direct Communication

- Activity Clubs
- Veterinarians
- Pet Stores
- Schools
- AD

Vectors

Target Audience

Children
BEHAVIOR CHANGE
Have Fun!!

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Even if it smells like a rose, it’s still sewage

More than 126,000 dogs live in Snohomish County. That’s an entire city’s worth of untreated raw sewage sitting in our backyards.

Scoop the poop, bag it, and place it in the trash
Clean yards. Clean streams. (And clean shoes!)

101 REASONS TO PICK UP PET WASTE:
NUMBER 7