

# **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



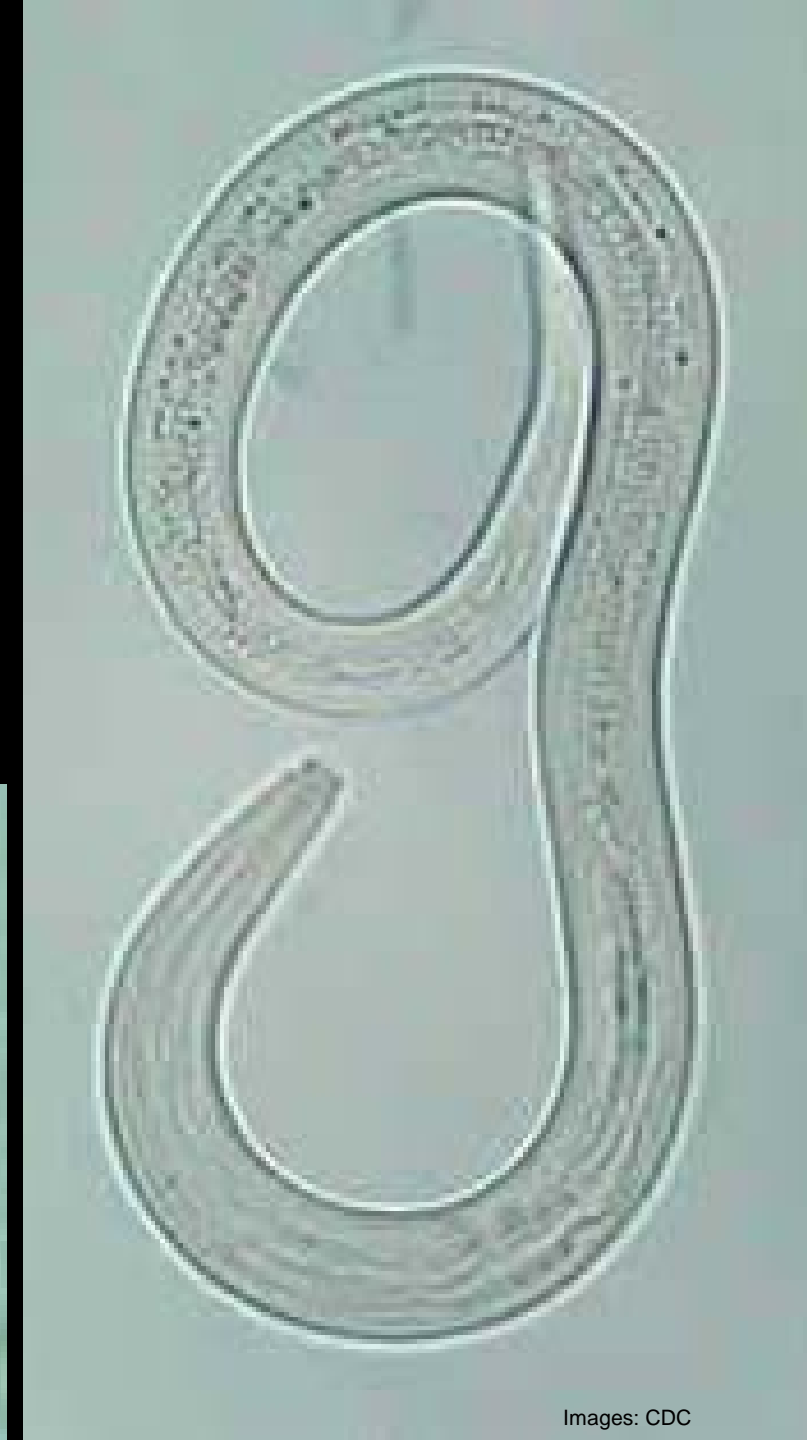
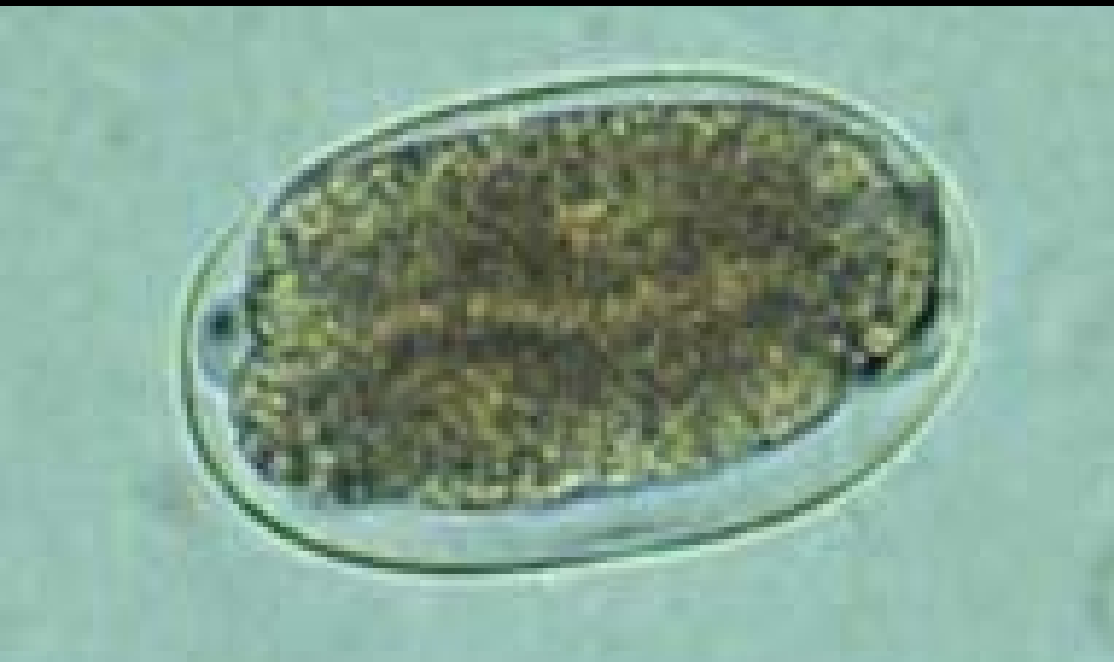


Photo: Dave Ward, Snohomish County

## *Ancylostoma* sp. egg and larva

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

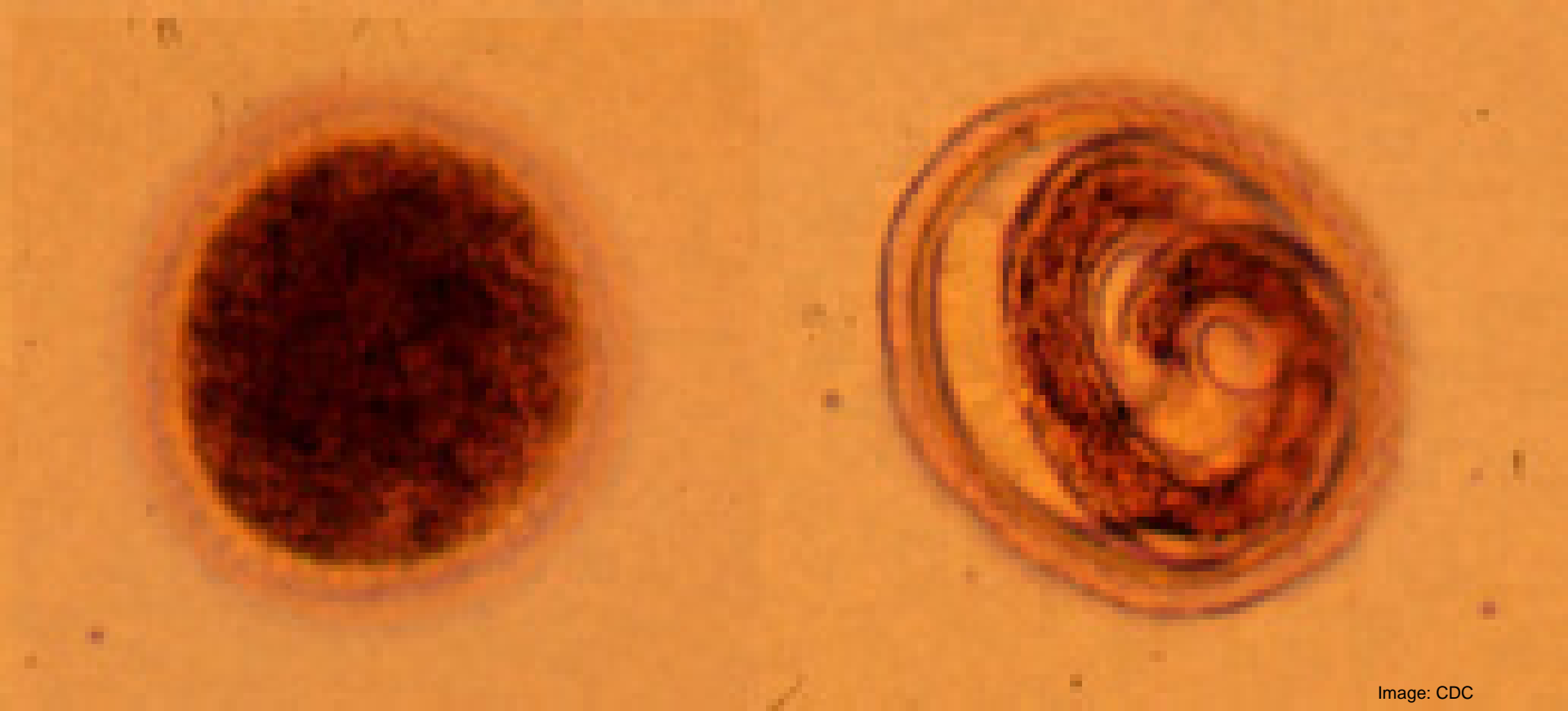
Puppies are a significant source of infection. Prompt removal of dog and cat feces greatly reduces risk of human infection.



## *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.

10  $\mu\text{m}$

A microscopic image showing several Giardia lamblia cysts. The cysts are oval-shaped with a distinct outer shell and internal structures. A white scale bar is located in the lower-left quadrant, labeled '10 μm'. The background is a light, slightly textured grey.

# *Cryptosporidium parvum* cysts

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

Survival outside a host can exceed 6 months.

10  $\mu$ m

A microscopic image showing numerous small, oval-shaped, clear cysts of Cryptosporidium parvum. The cysts are scattered across the field of view. A white horizontal scale bar is located in the lower-left quadrant, with the text "10 μm" positioned above it.

# *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.



Acc.V Spot Magn Det WD Exp  
15.0 kV 4.0 9,951x SE 10.5 1

—|—————| 2 μm

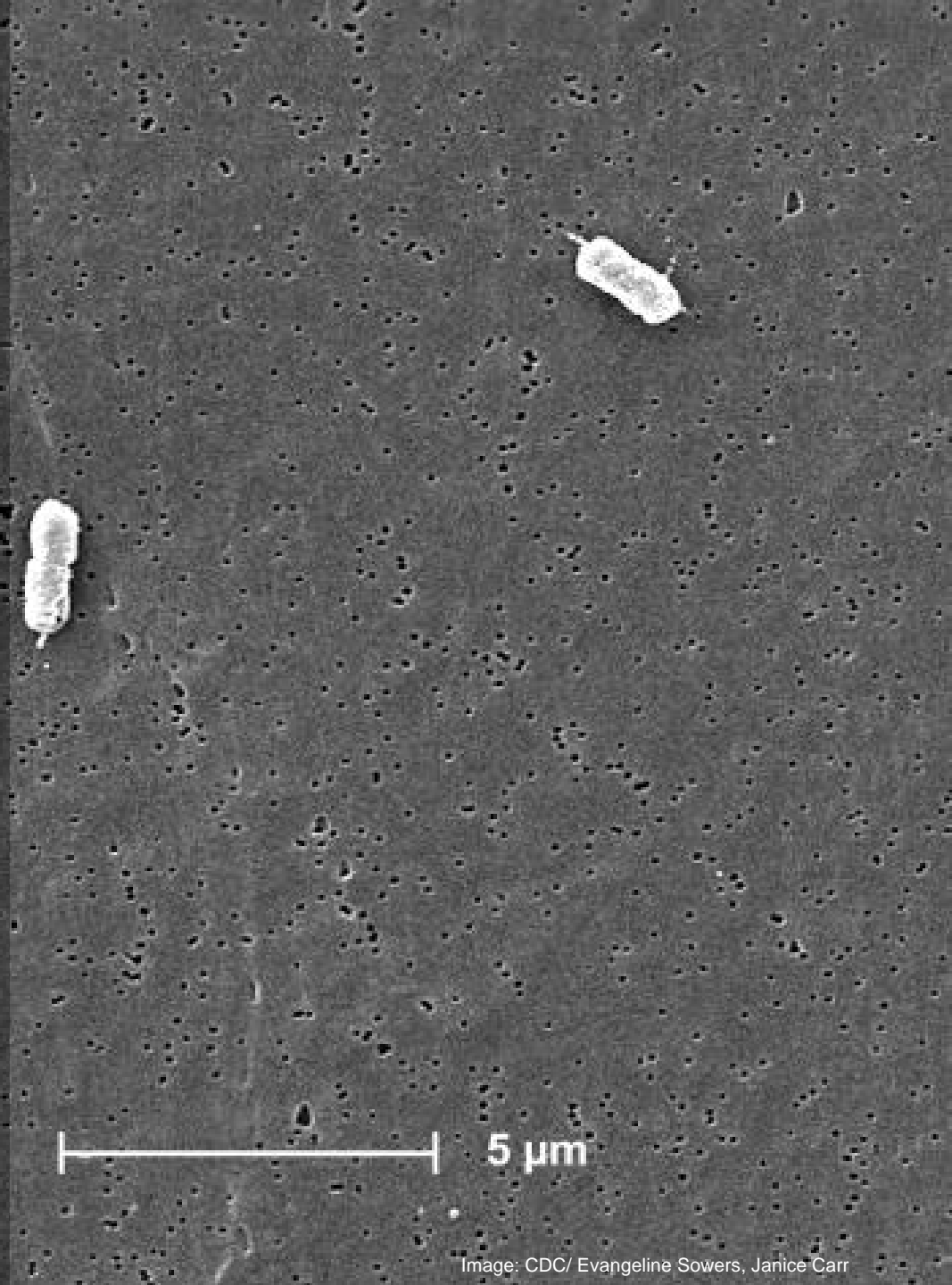
# *Escherichia coli*

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.

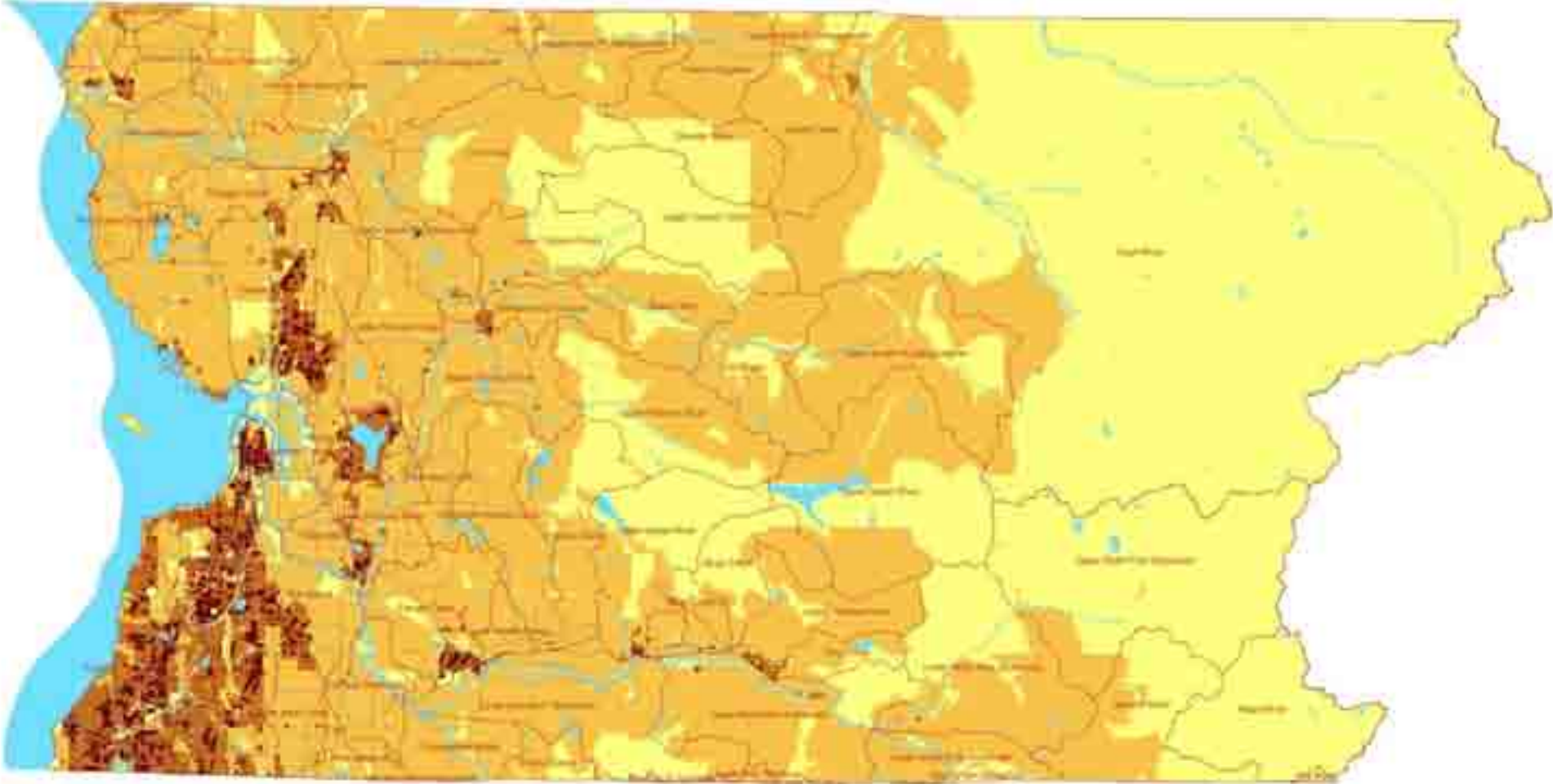
Most cases are associated with contaminated food, however infection can occur after swimming in or drinking contaminated surface water.

c.V	Spot	Magn	Det	WD	Exp
0 kV	3.0	4890x	SE	11.1	3





Photos: Dave Ward, Snohomish County

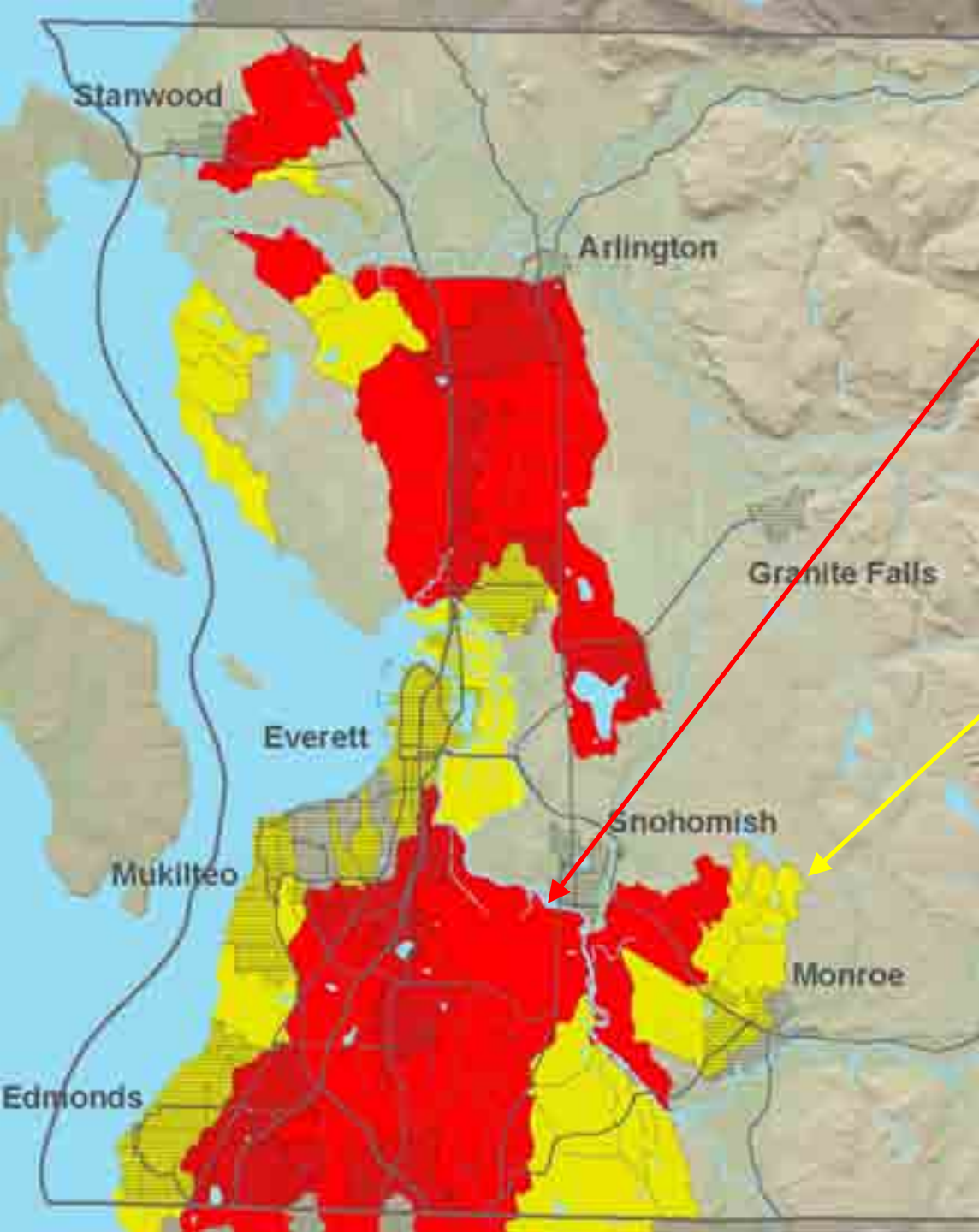


**Snohomish County Dog Population  
Dogs per Acre**  
Based on INSOURCE 2004 Data



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*Washington State Department of Ecology*





**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

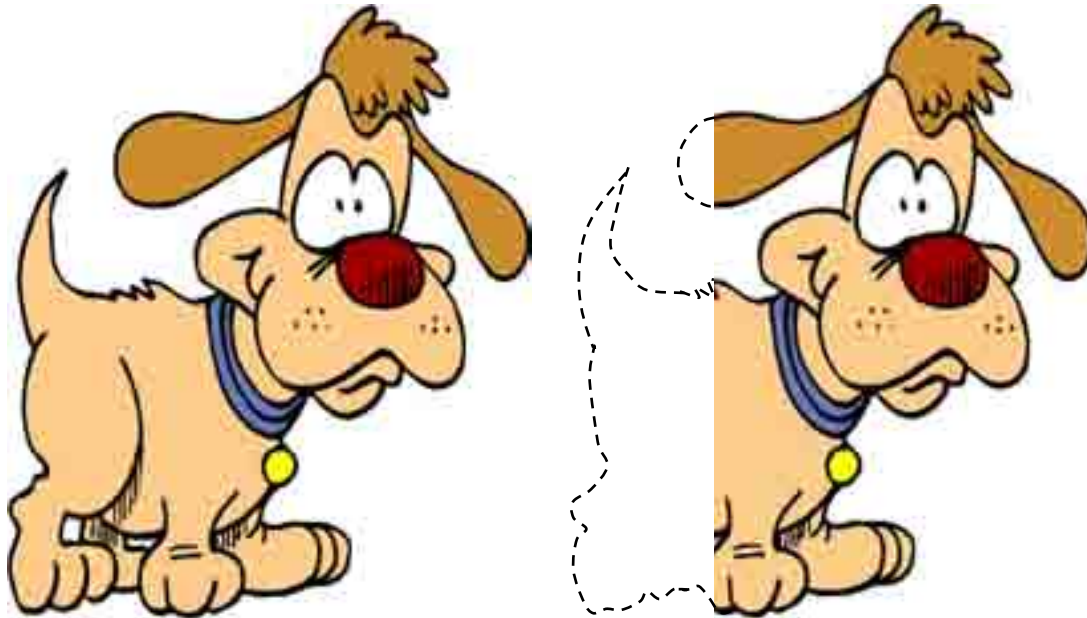
# 37.4% of Washington households have dogs



American Veterinary Medical Association 2002 data

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*Washington State Department of Ecology*

# 1.5 dogs per dog-owning household in Washington



American Veterinary Medical Association 2002 data

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# Estimated Countywide Dog Population

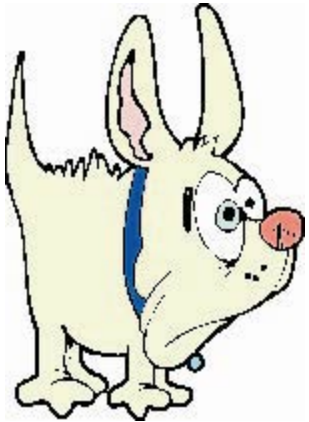
**224,852**    **Snohomish County households**

**0.374**    **Households with dogs**

**X**    **1.5**    **Dogs per dog-owning household**

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**126,141**    **Dogs in Snohomish County**



U.S. Census Bureau 2000 data  
American Veterinary Medical Association 2002 data

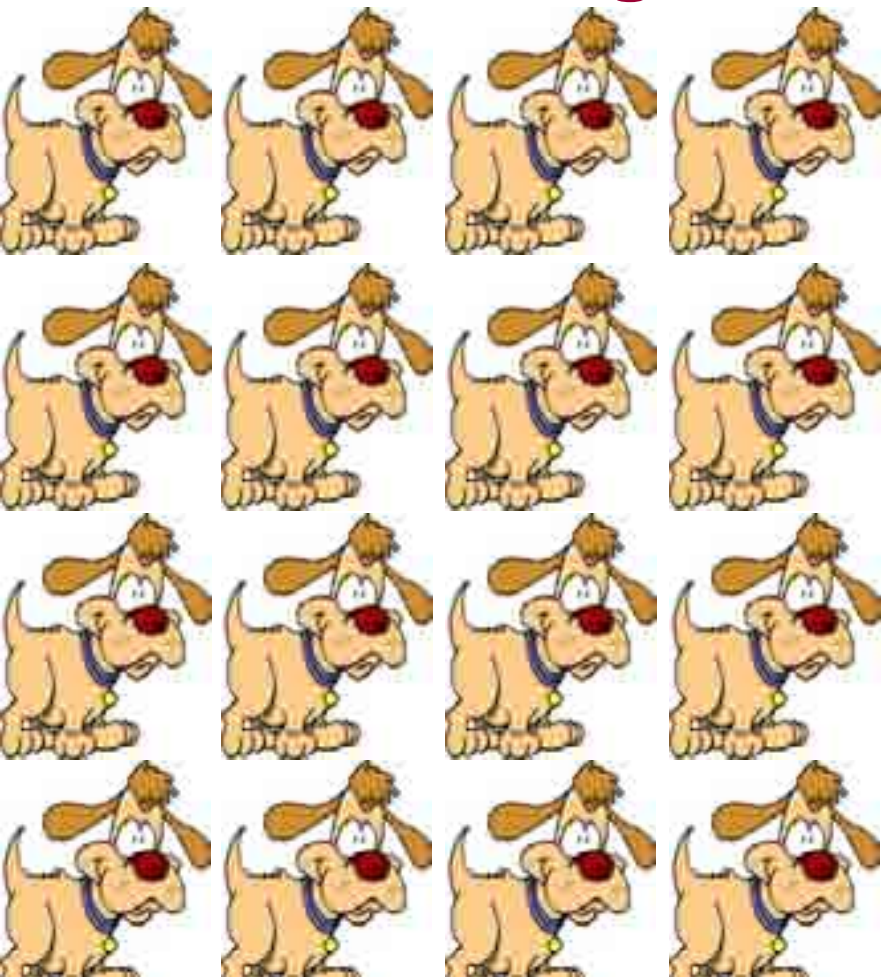
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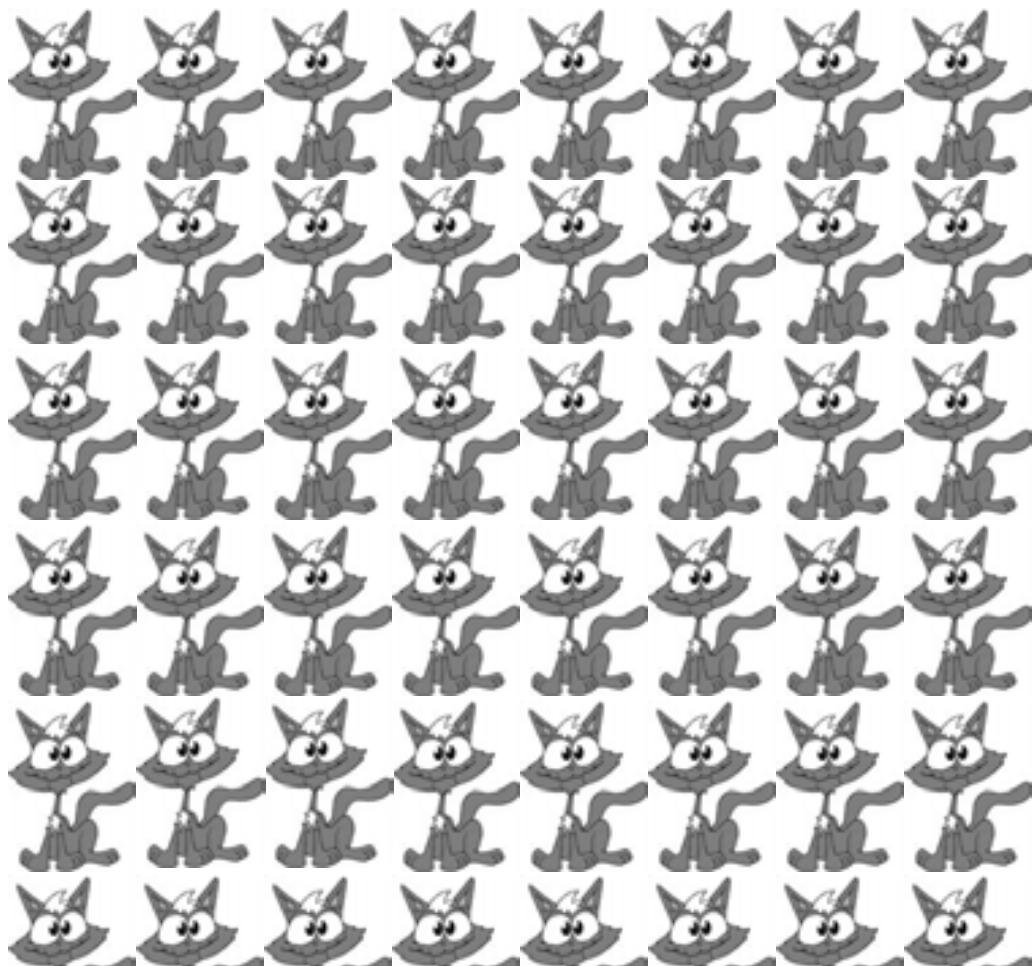
*Washington State Department of Ecology*

# Estimated Countywide Pet Population

**126,141 Dogs**



**206,773 Cats**



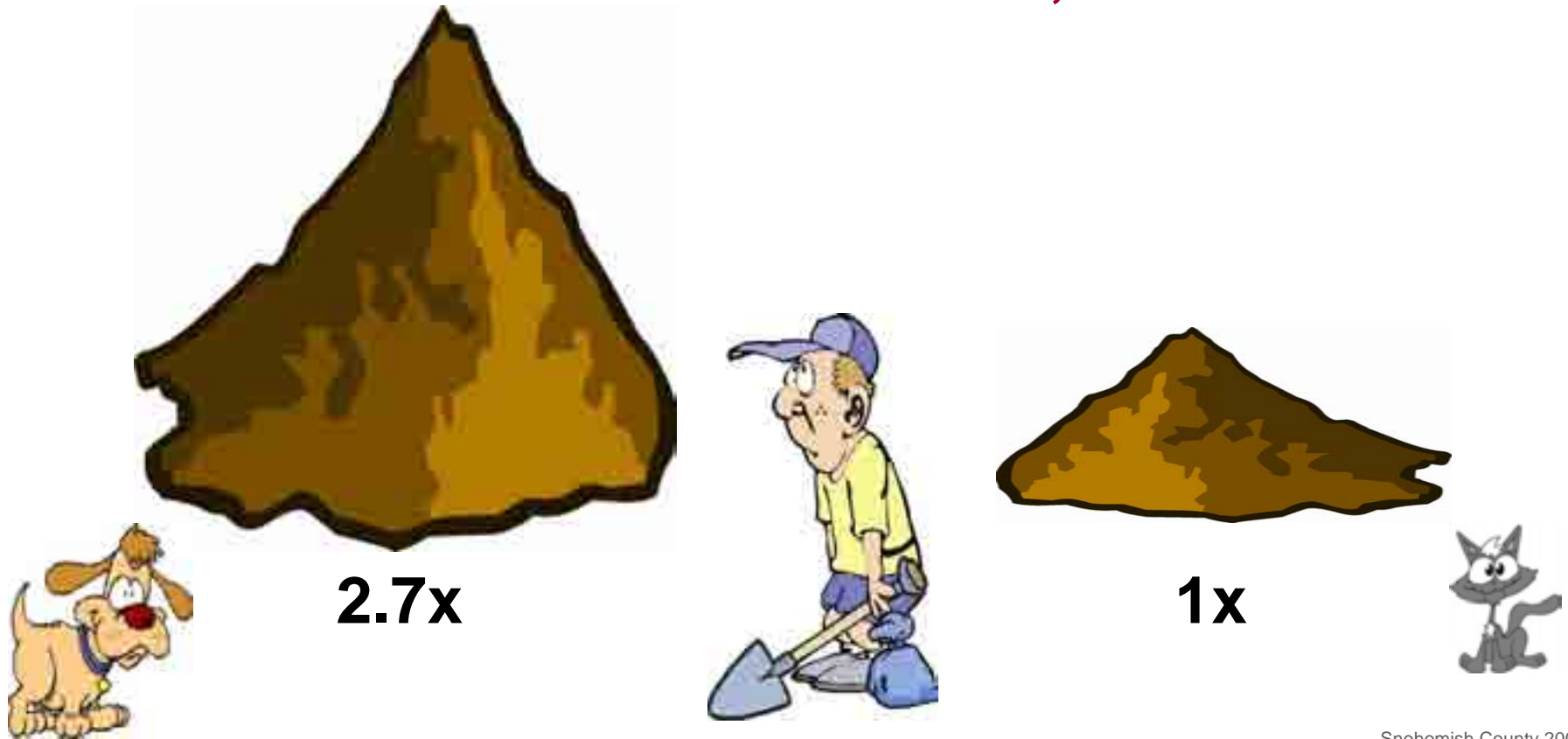
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# Estimated Waste Production

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



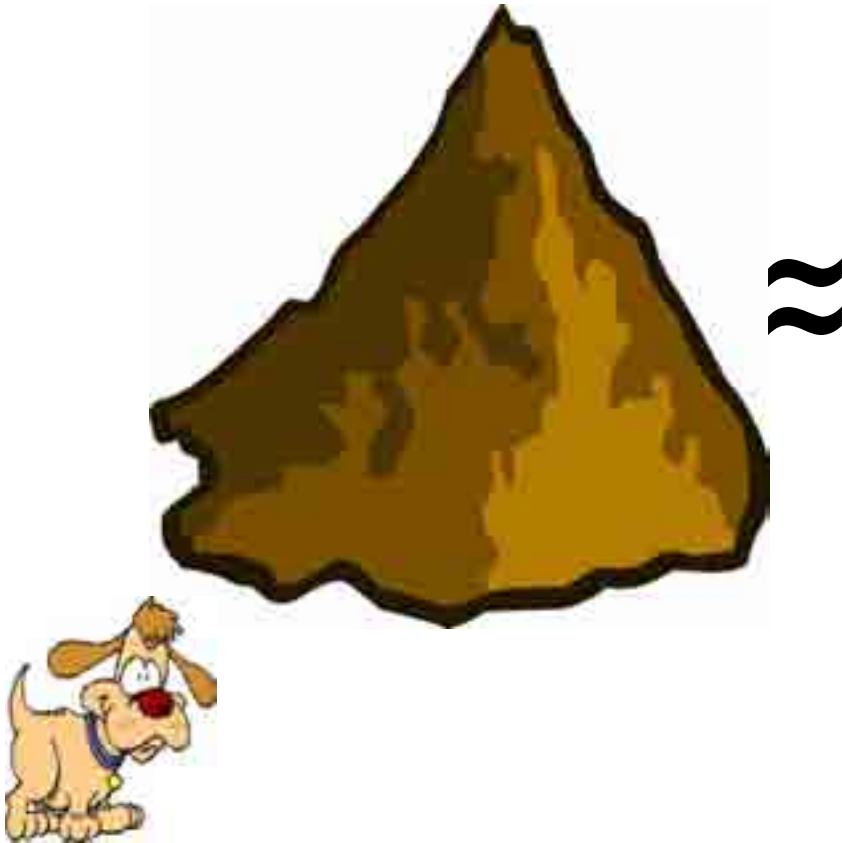
Snohomish County 2005 data

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# Estimated Waste Production

126,000 Dogs

32,000 People



Snohomish County 2005 data

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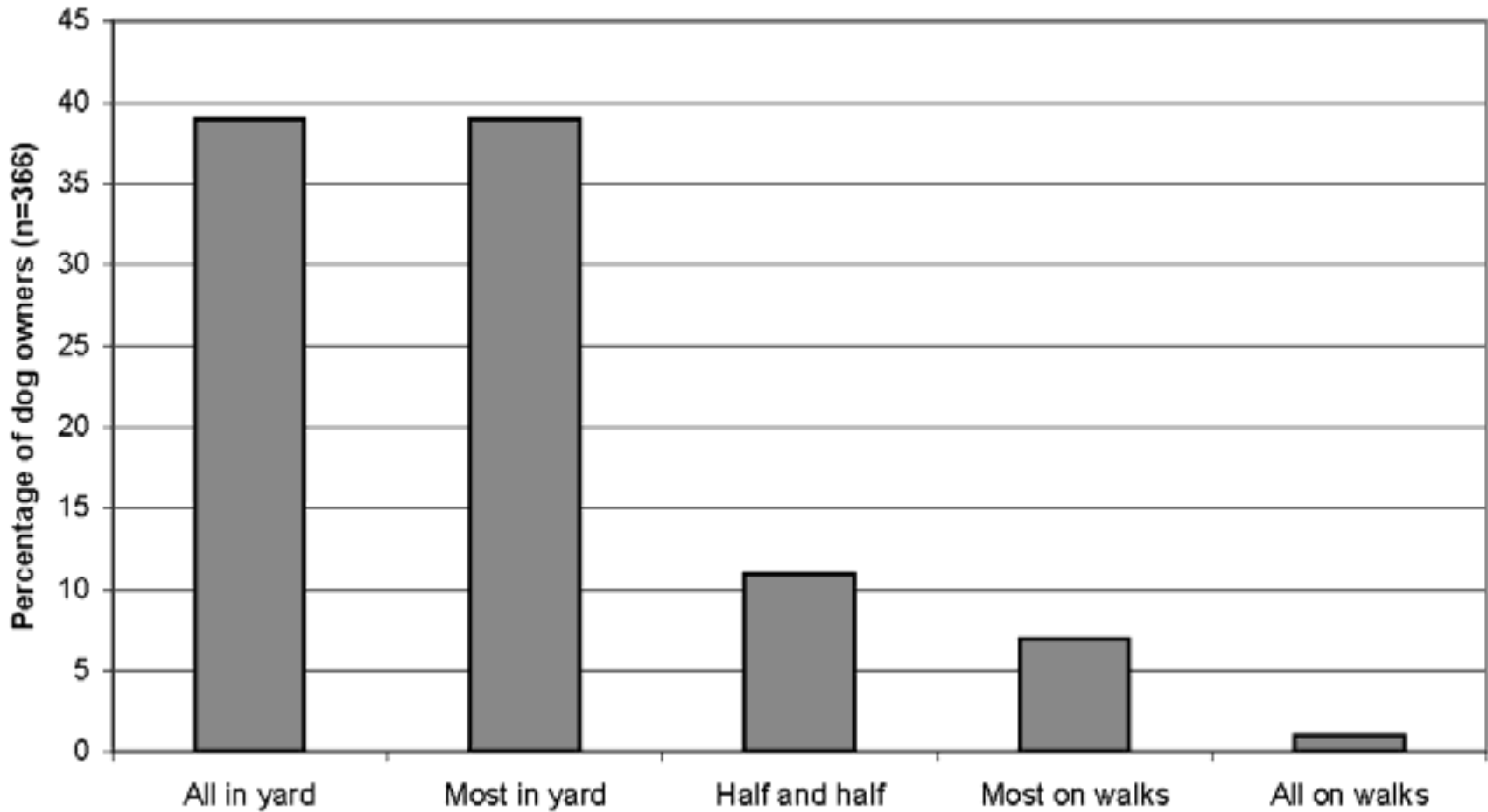
# PROGRAM EMPHASIS

## 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



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# PROGRAM EMPHASIS

Nearly all pet waste programs

- Are based on primary program models (not secondary models)
- Focus on pet waste management in public parks, sidewalks, parkways, etc.

**FOCUS ON BACKYARDS**



Photo: Dave Ward, Snohomish County

# 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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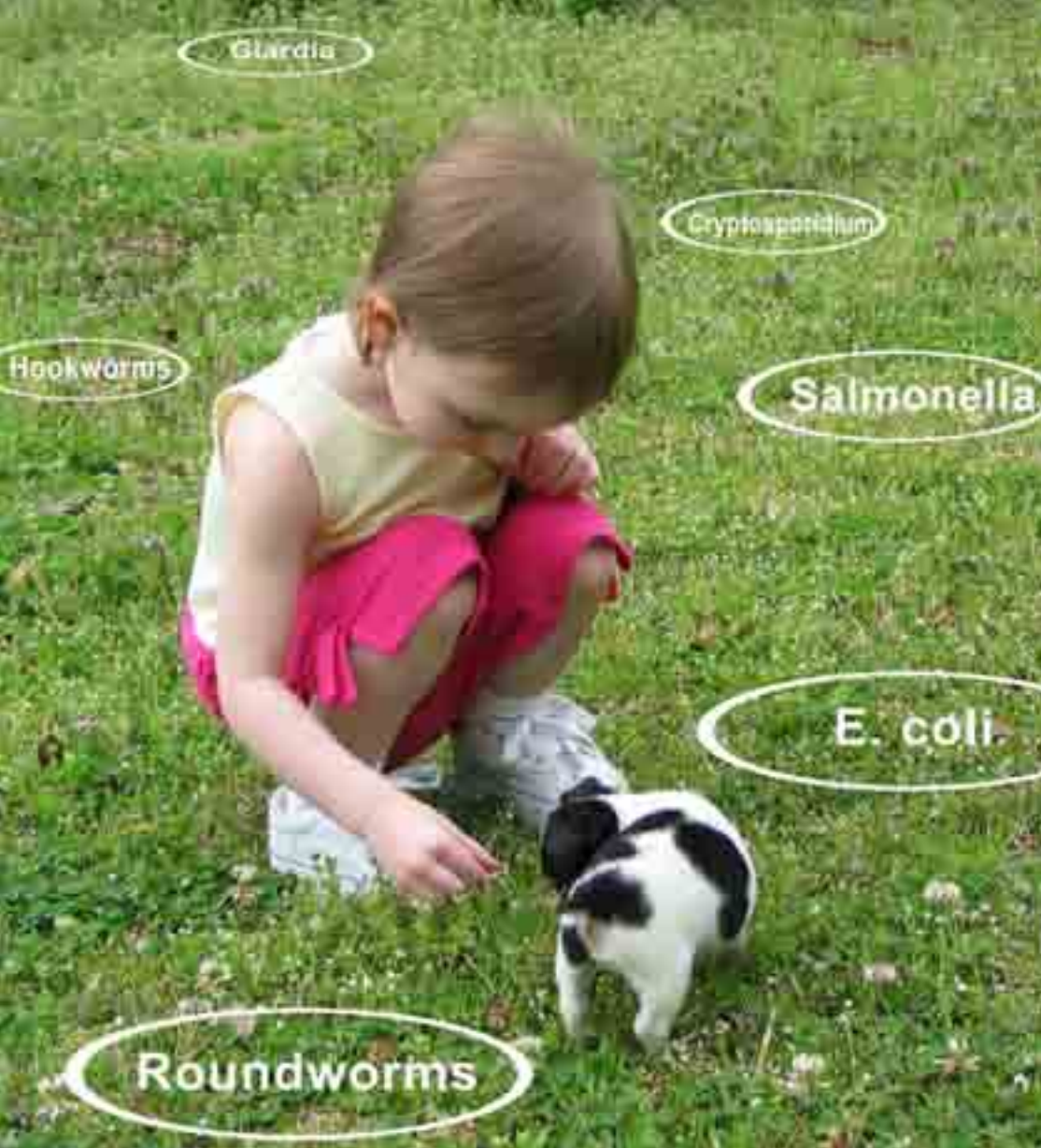
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# Focus Groups



# Telephone Survey





**Safe kids**

**Safe pets**

**Clean yards**

**Clean shoes**

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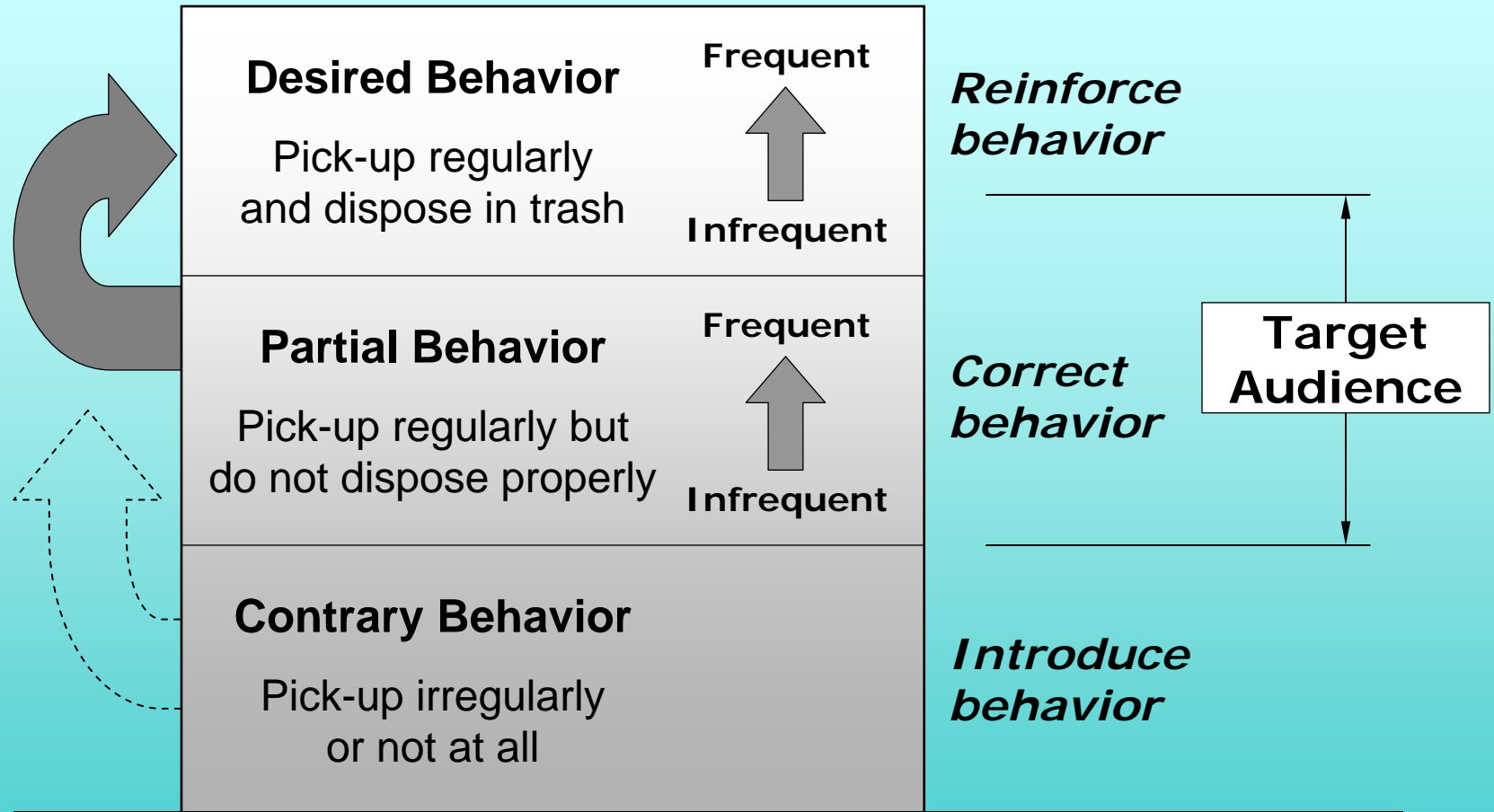
# Dog Waste is Not Fertilizer



# Dog Waste is Raw Sewage



# Target Audience Analysis

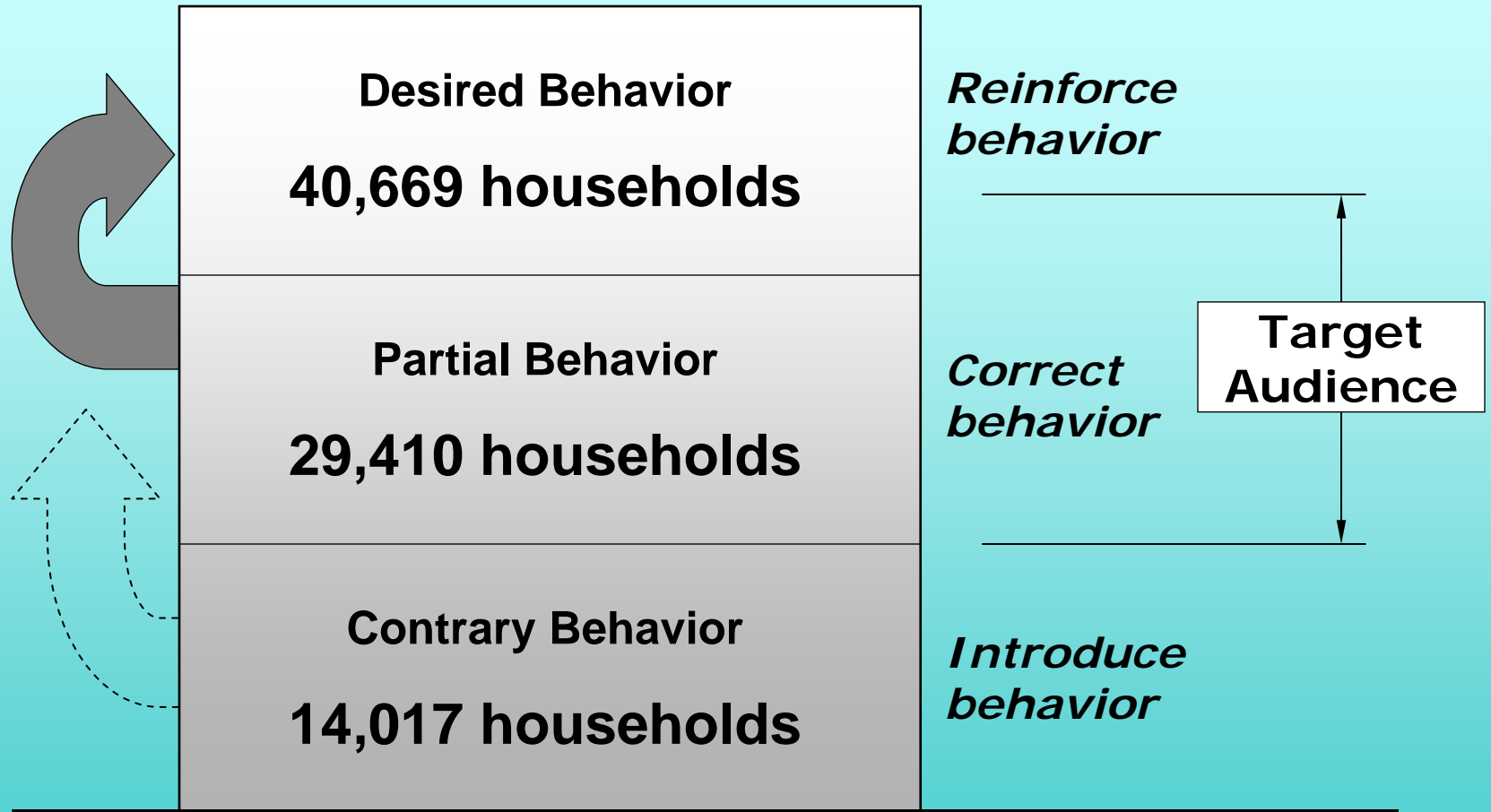


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# Target Audience Analysis



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*Washington State Department of Ecology*

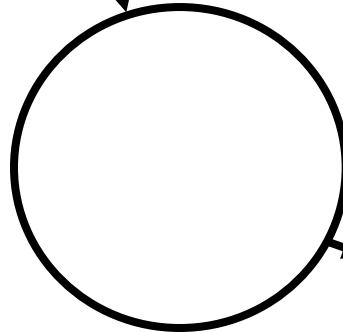
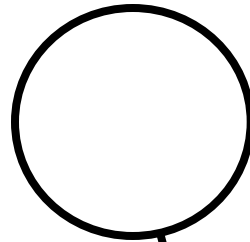
Scoop the poop,  
bag it,  
place it in the trash



# Pet Waste Pilot Program

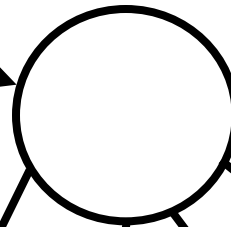
## Formative Research

Audience Research  
Message Development  
Program Design  
Evaluation Strategy



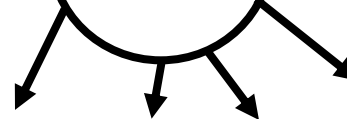
## Body of Program

Implement Communications  
Test Methodologies  
Aggressive Monitoring  
Evaluation of Methodologies



## Program Outputs

Methodology  
Theoretical Foundation  
Evaluative Foundation  
Communication Tools  
Proven Results



## Dissemination of Outputs

Distribute to Public Agencies

# Pet Waste Pilot Program

## Formative Research

Audience Research  
Message Development  
Program Design  
Evaluation Strategy



## Body of Program

Implement Communications  
Test Methodologies  
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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**

  
Snohomish County  
Public Works  
Animal Waste Management  
360-585-6300 [www.sno.wa.gov](http://www.sno.wa.gov)

# 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;  
low-n 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**

**It's the American Way**

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

**Enjoy your holiday the healthy way!**

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

**Happy Thanksgiving**

**Don't let your dog be a turkey**

**Pet waste is not just an embarrassment for your dog, it's a health hazard for your whole family.**

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

**IT'S OKAY!**

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

**Some things last longer than you think**

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

**Dogs can't flush!**

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

**School days are here!**

**But some things dogs will never learn.**

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

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

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

**Surface Water Management**

**Surface Water Management**

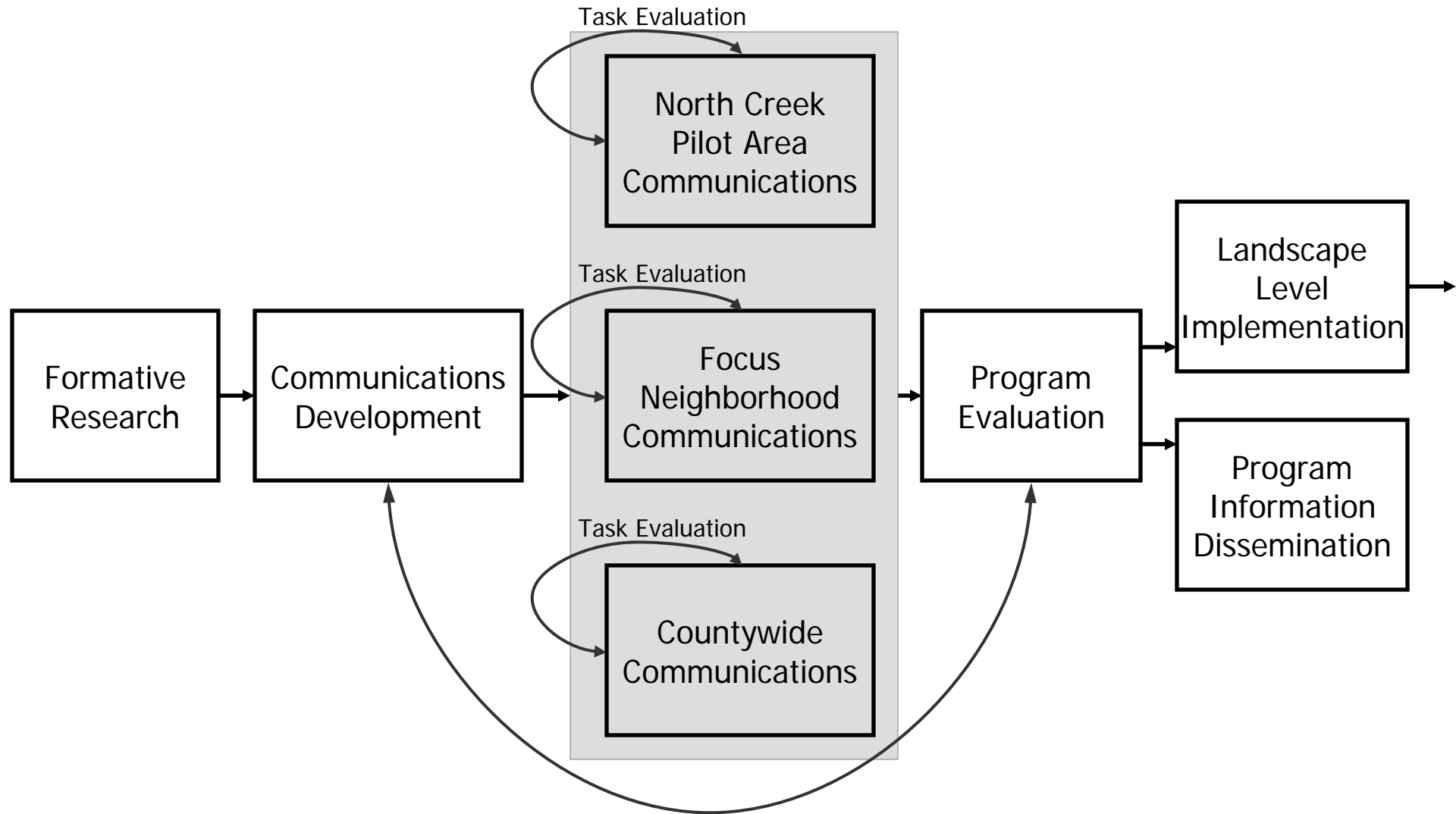
**Surface Water Management**



**This is a  
BEHAVIOR CHANGE  
program,**

**not an education program**

# Program Model

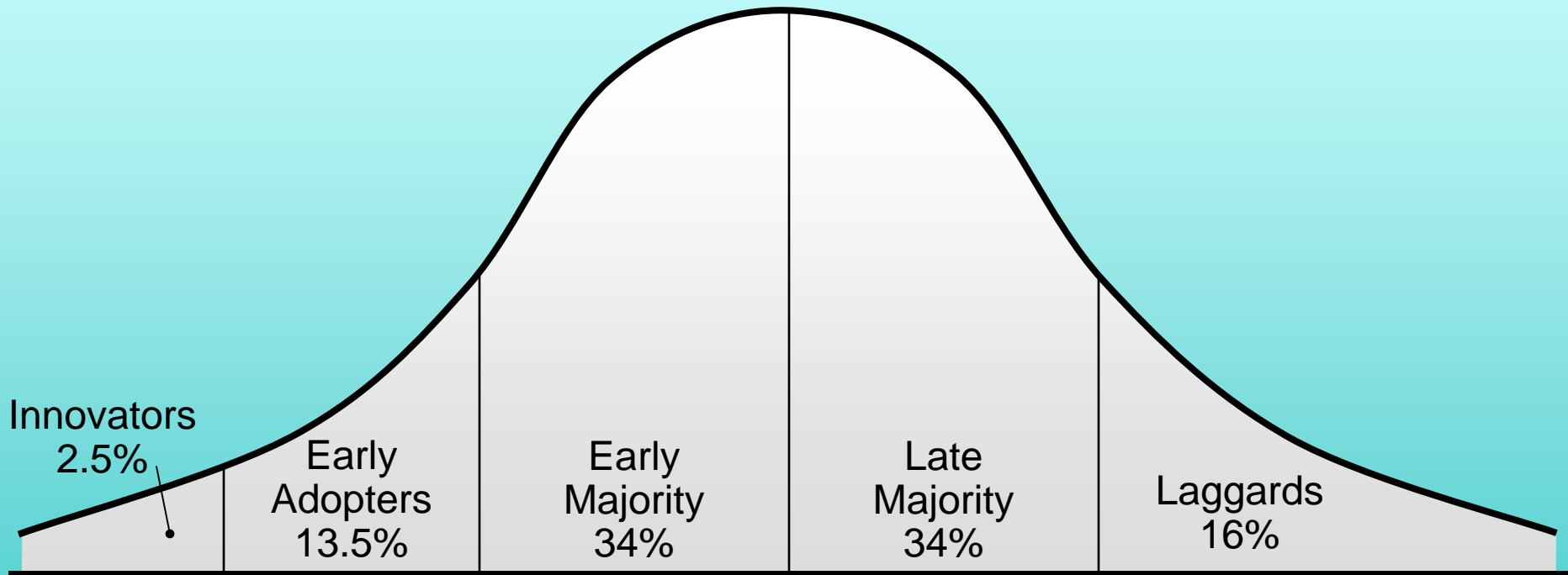


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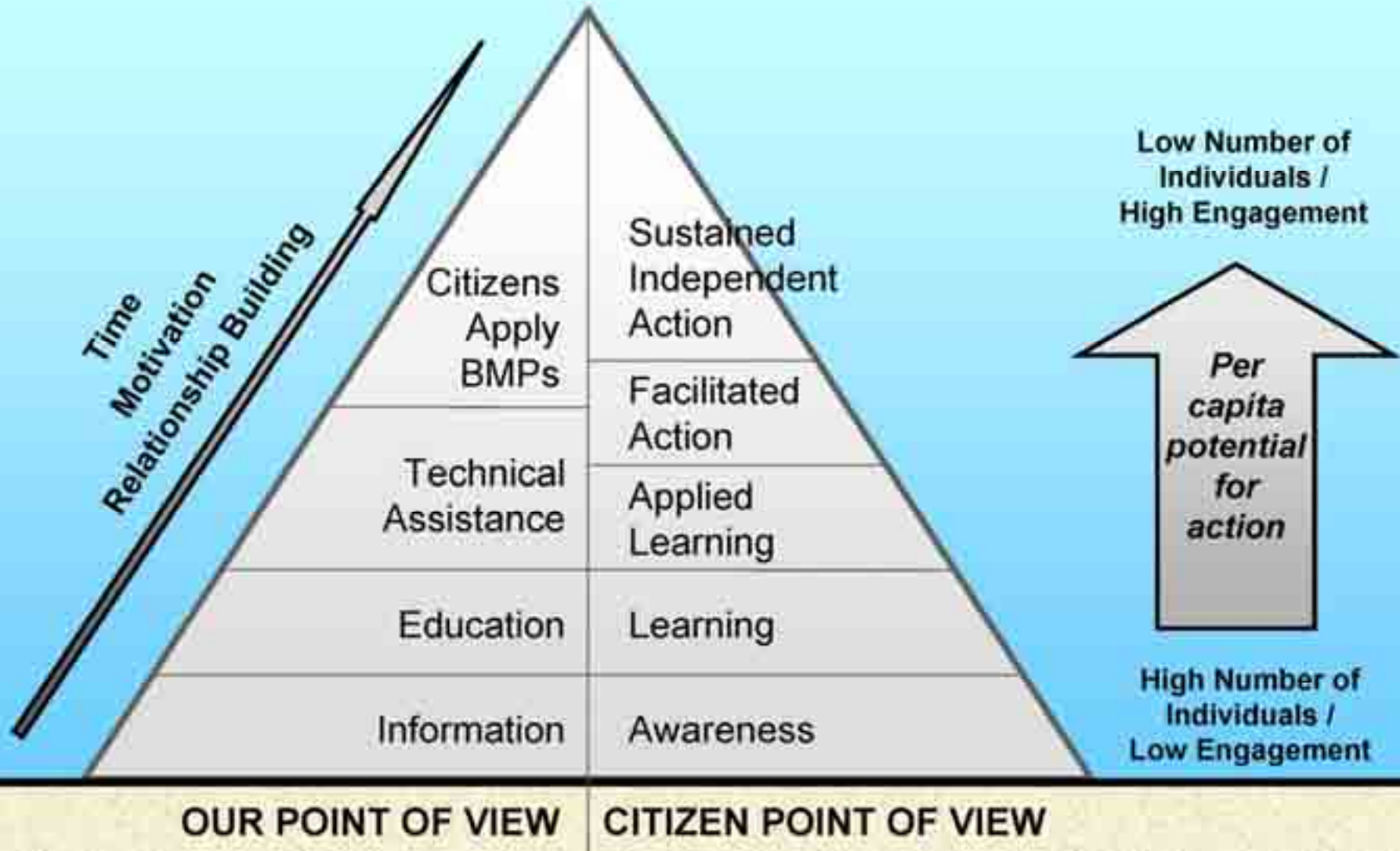
# Diffusion of Innovations



Graphic based on Everett Rogers, Diffusion of Innovations, 1962, 2003

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# Public Involvement Continuum



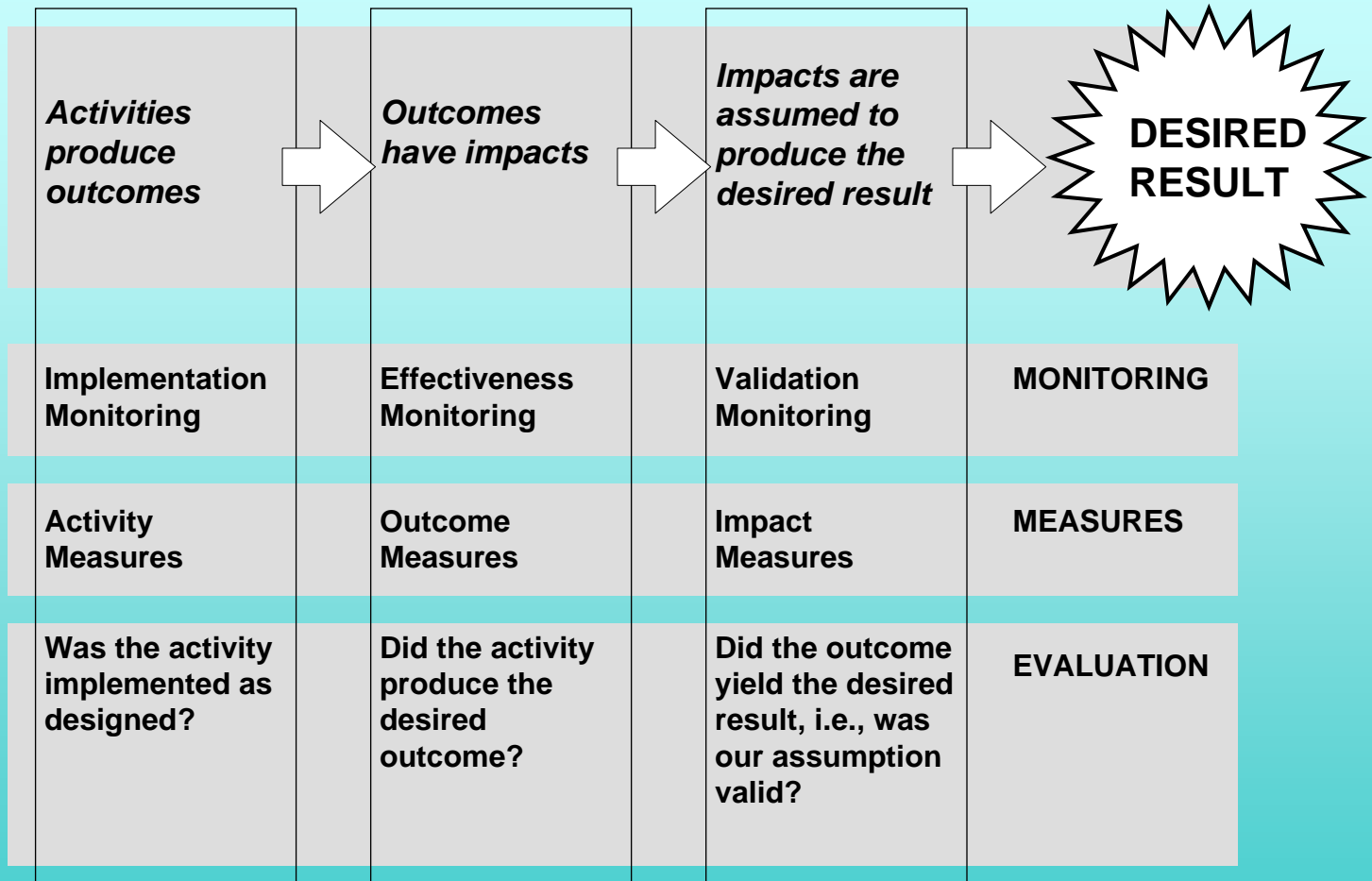
Graphic: Snohomish County Surface Water Management

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# Program Evaluation and Monitoring

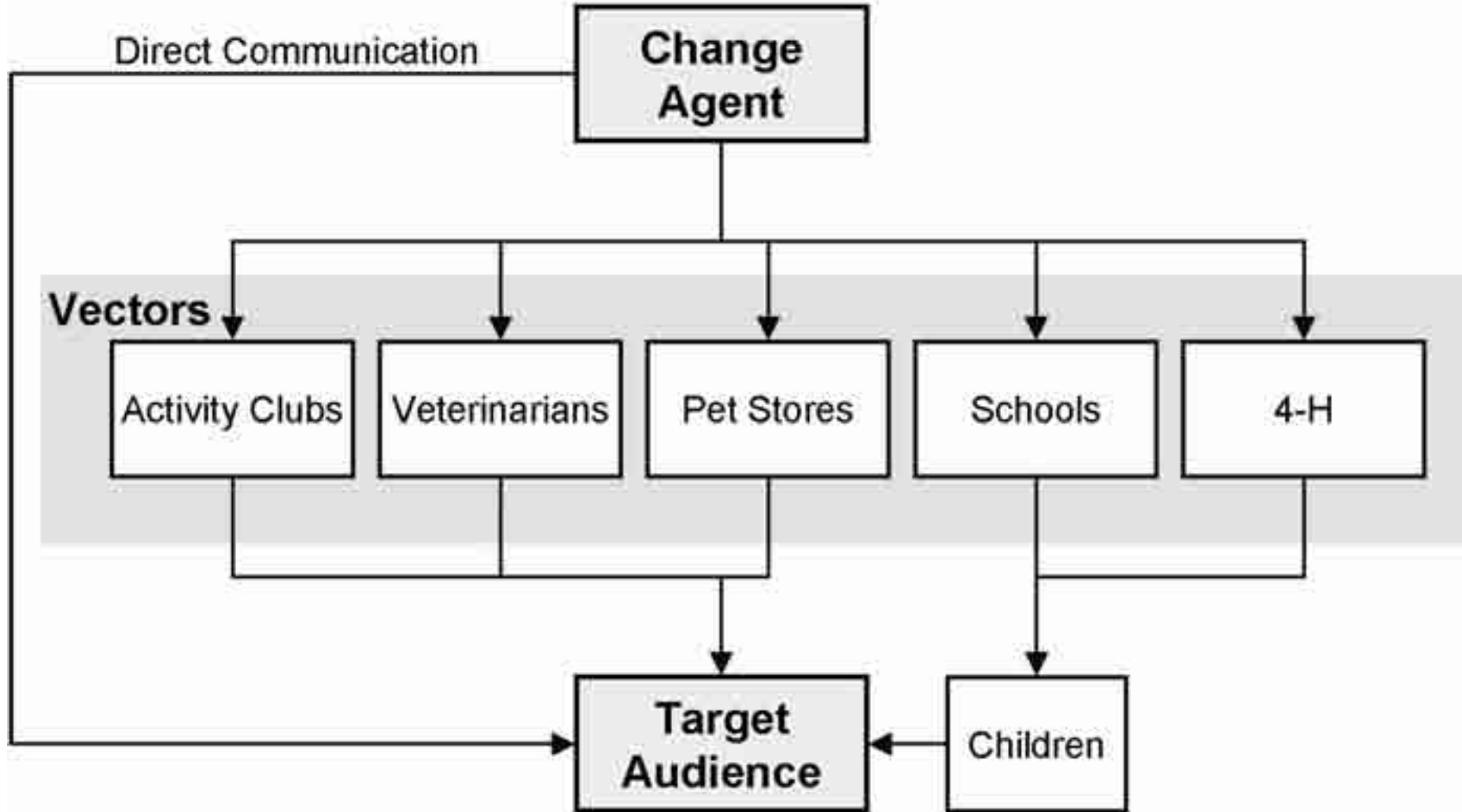


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# Communications Strategy

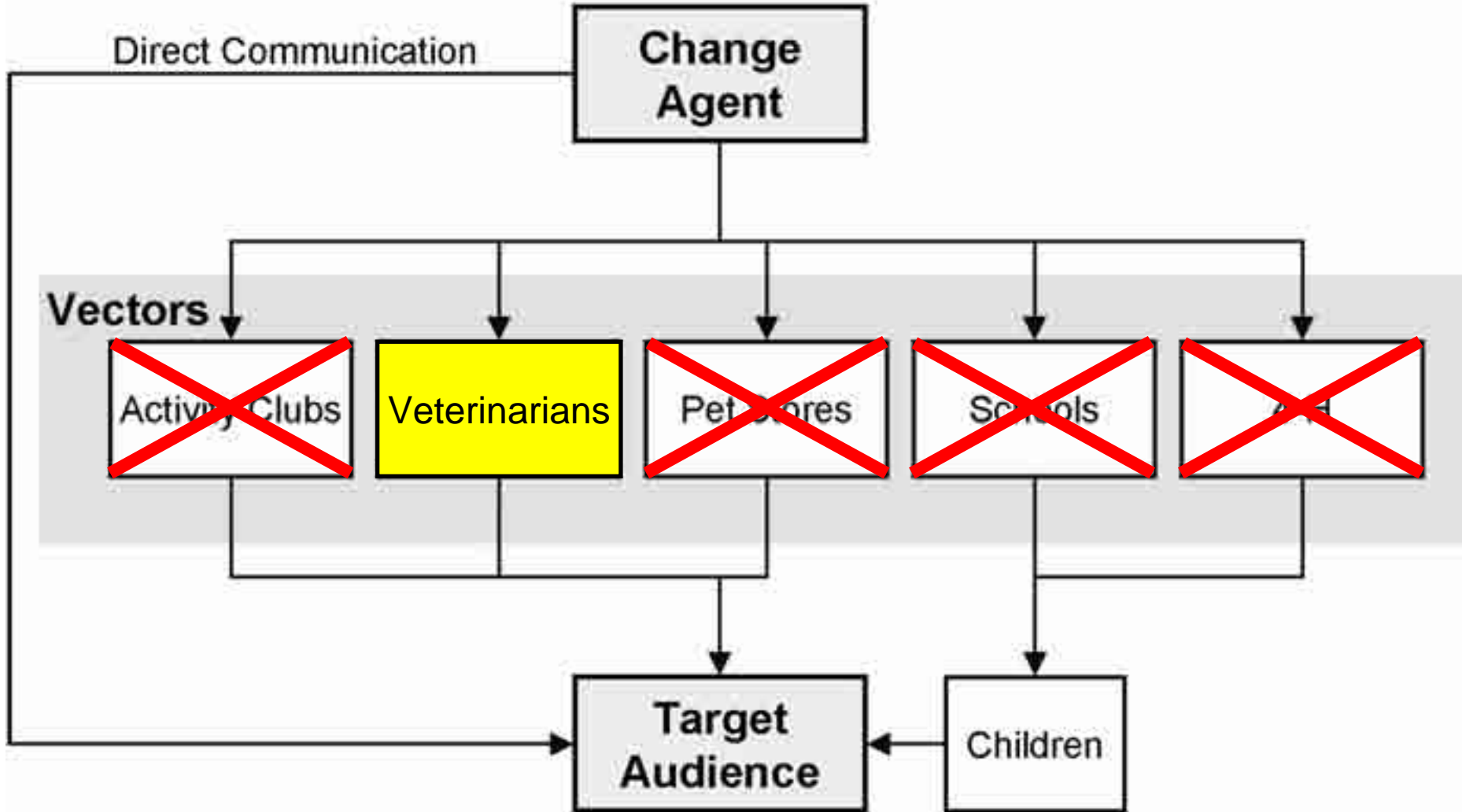


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# Communications Strategy



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# BEHAVIOR CHANGE

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# Have Fun!!



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*Washington State Department of Ecology*

# Even if it smells like a rose, it's still sewage



**SCRATCH & SNIFF**

More than 2 million dogs live in Broward County,  
that's an entire city's worth of fermented cow 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**

  
Broward County  
Public Works  
Animal Waste Management  
351-350-6500 • [www.broward.org](http://www.broward.org)