Protecting Shellfish One Rain Garden at a Time

Kitsap Conservation District
Brian Stahl
Technical Resource Coordinator
May 2017
The Beginning
A DEA officer stopped at a ranch in Texas, and talked with an old rancher. He told the rancher, "I need to inspect your ranch for illegally grown drugs." The rancher said, "Okay, but don't go in that field over there.....", as he pointed out the location. The DEA officer verbally exploded saying, "Mister, I have the authority of the Federal Government with me !" Reaching into his rear pants pocket, he removed his badge and proudly displayed it to the rancher. "See this badge?! This badge means I am allowed to go wherever I wish.... On any land !! No questions asked or answers given!! Have I made myself clear......do you understand ?!!" The rancher nodded politely, apologized, and went about his chores. A short time later, the old rancher heard loud screams, looked up, and saw the DEA officer running for his life, being chased by the rancher's big bull......

With every step the bull was gaining ground on the officer, and it seemed likely that he’d sure enough get gored before he reached safety. The officer was clearly terrified. The rancher threw down his tools, ran to the fence and yelled at the top of his lungs..... "Your badge, show him your BADGE....... ! !"
MISSION STATEMENT

• GUIDING CONSERVATION WITHOUT REGULATION
• EDUCATING BY DEMONSTRATION
• FORMING PARTNERSHIPS TO ACCOMPLISH MORE

WE DEDICATE OURSELVES TO INVOLVING THE COMMUNITY IN BETTER FARMING PRACTICES AND NATURAL RESOURCE PROTECTION NOW AND FOR THE FUTURE.
HOW DO WE GET THINGS DONE?

LANDOWNER COOPERATION
INTERAGENCY PARTNERSHIPS
MULTI-SOURCE FUNDING
NON-REGULATORY TECHNICAL ASSISTANCE
START-TO-FINISH PROJECT DEVELOPMENT
KCD PARTNERS WITH KITSAP COUNTY IN CLEAN WATER KITSAP, A DIVISION OF PUBLIC WORKS

OTHER PARTNERS INCLUDE KITSAP PUBLIC HEALTH DISTRICT, WSU EXTENSION, KITSAP PUD

FUNDED BY A PARCEL-BASED STORMWATER FEE

ESTABLISHED IN 1995 AND CONTINUES SUCCESSFULLY

PROVIDES STABILE FUNDING TO KCD AND INCENTIVE FUNDING FOR LANDOWNERS

NOTABLE PROGRAM RECOGNIZED NATIONWIDE
THE GOAL OF THE RAIN GARDEN COST-SHARE PROGRAM HAS BEEN TO PROMOTE AND FACILITATE INSTALLATION OF RAIN GARDENS AT EXISTING RESIDENTIAL PROPERTIES.
Rain Gardens and More Program

<table>
<thead>
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<th>Year</th>
<th>Total Number of Installed Practices</th>
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<tr>
<td>2010</td>
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<tr>
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<td>2015</td>
<td>59</td>
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<td>43</td>
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Impervious Area Treated

Over 409,000 sq. ft. of Impervious Treated
BENEFITS & BARRIERS TO IMPLEMENTATION

BENEFIT OF TECHNICAL ASSISTANCE

• COST SHARED
• SITE VISIT WITH TECHNICAL ASSISTANCE
• WELL RESEARCHED DESIGNS
• SOME EDUCATION ON FUNCTION
• ESTHETIC VALUE TO LANDOWNERS’ PROPERTY

BARRIER

• AGE OR PHYSICAL CAPACITY
• NOT INTERESTED IN PHYSICAL LABOR
• DIDN’T KNOW WHAT TO DO FIRST
• DIDN’T HAVE ‘FRONT MONEY’
• DIDN’T UNDERSTAND THE FUNCTIONAL VALUE
discuss Jeffs letter
Brian D. Stahl, 4/25/2017
BACKGROUND AND PURPOSE OF THE 2013 SURVEY BY KITSAP COUNTY STORMWATER

• EXPLORE ADDITIONAL RUNOFF MANAGEMENT PRACTICES AND WILLINGNESS TO INSTALL THEM.

• IDENTIFY THE REASONS FOR NOT INSTALLING A RAIN GARDEN.

• EVALUATE SATISFACTION WITH INSTALLED RAIN GARDENS.

• IDENTIFY MOTIVATING FACTORS FOR PARTICIPATING IN THE RAIN GARDEN COST SHARE PROGRAM.
Survey paid for by Clean Water Kitsap
Brian D. Stahl, 4/25/2017

We were already thinking about dig days
Brian D. Stahl, 4/25/2017
SURVEY METHODOLOGY

• **METHOD:** 243 RESIDENTS PARTICIPATED AND WERE SENT AN INITIAL EMAIL WITH A LINK TO AN ONLINE SURVEY. THE SURVEY TOOK ON AVERAGE ABOUT 7 MINUTES TO COMPLETE.

• **TIMEFRAME:** AUGUST 9-21, 2013

• **RESULTS:** 89 COMPLETE SURVEYS. THE RESPONSE RATE WAS 37%.

• **MARGIN OF ERROR:** ±8.3%
Participants were already cooperators or attended workshops
Brian D. Stahl, 4/25/2017
WHAT WERE THE MAIN REASONS NOT TO INSTALL A RAIN GARDEN?

- ONE-THIRD DID NOT PARTICIPATE BECAUSE THEY COULD NOT FIND A SUITABLE LOCATION DUE TO FACTORS SUCH AS A STEEP SLOPE, WET SOILS, POOR DRAINAGE, OR UNDERGROUND UTILITIES.
- 1 IN 10 (11%) SAID THAT COST WAS THE MAIN REASON FOR NOT INSTALLING A RAIN GARDEN.
- ABOUT 1 IN 5 (19%) SAID THE RAIN GARDEN WOULD NOT PROVIDE BENEFITS.
- MORE THAN 1 IN 10 (13%) STILL PLAN TO INSTALL THE RAIN GARDEN.
MORE REASONS NOT TO...

- NOT SUITABLE LOCATION 33%
- NOT PROVIDING BENEFITS 19%
- STILL PLAN TO INSTALL RAIN GARDEN 13%
- OTHER HIGHER PRIORITIES 11%
- COMPLICATED & TIME 6%
- OTHER 6%
- CONCERNED ABOUT MAINTENANCE OTHER 2%
CONSTRUCTION BARRIERS INCREASED EXPENSE

• MORE THAN ONE-HALF (56%) INSTALLED THE RAIN GARDEN WITHOUT USING A CONTRACTOR.

• 2 IN 5 (41%) USED A CONTRACTOR FOR SITE PREPARATION.

• 1 IN 10 (11%) USED A CONTRACTOR FOR PLANT INSTALLATION
BDS4  Remove construction expense by dig days.  also had better designs
Brian D. Stahl, 4/25/2017
THE VAST MAJORITY WERE EITHER VERY (35%) OR COMPLETELY (50%) SATISFIED WITH THE RAIN GARDENS
SURVEY INDICATED LANDOWNERS’ CHOICES

**EASIEST AND LEAST EXPENSIVE**
- TREE PLANTING
- SOIL IMPROVEMENTS
- RAIN BARRELS

**OPTIONS THAT REQUIRE MORE EFFORT AND COST**
- PLANTER BOXES
- SOAKAGE TRENCHES
- RAIN GARDENS

**OPTIONS MORE DIFFICULT TO INSTALL**
- PAVING ALTERNATIVES
- PERVIOUS PAVERS
- TURF BLOCKS,
- HOLLYWOOD DRIVEWAY
- CISTERNs
MORE LID OPTIONS

- **PAVING ALTERNATIVES** - 34% were extremely or very likely to participate compared to 47% not very or not at all likely to participate.

- **CISTERNS** - 16% were extremely or very likely to participate compared to 54% not very or not at all likely to participate.

- **GREEN ROOFS** - 12% were extremely or very likely to participate compared to 73% not very or not at all likely to participate.
Farms & gardeners requesting cisterns
Brian D. Stahl, 4/25/2017
DIGGIN’ DAY
REMOVING BARRIERS TO IMPLEMENTATION
Respondents were motivated by concern for the environment when considering other stormwater runoff practices.

THE TOP THREE MOTIVATORS WERE:

a) FILTERING POLLUTANTS BEFORE ENTERING LOCAL WATERWAYS
b) CONTROLLING RUNOFF FROM PROPERTY
c) REPLENISHING DRINKING WATER.
THE SURVEY SAYS...

- Nearly all (91%) thought that the ability to filter pollutants before entering local waterways was important.
- 80% thought that controlling runoff from their property was important.
- Nearly 3 in 4 (72%) thought that replenishing drinking water was important.
- Nearly 2 in 3 (63%) thought that adding to the aesthetic or property value was important.
- Saving money was the least important motivator, but 52% still thought it was important.
BDS12  Discuss the Bremerton ILA Combined Sewer Outflow fee reduction as a motivator
Brian D. Stahl, 5/15/2017
POSITIVE COMMENTS ABOUT THE PROGRAM AND PROMOTIONAL IDEAS

- "WE VALUE THE TECHNICAL ASSISTANCE/VISITS MORE THAN ANY COST SUBSIDY."
- "MORE PEOPLE NEED TO BE EDUCATED ON HOW IMPORTANT IT IS."
- "YOU SHOULD DO MORE ADVERTISING SO FOLKS KNOW YOU ARE THERE."
- "CONTINUED PUBLICITY ABOUT THE NEED FOR REPLENISHING GROUNDWATER. MY NEIGHBORHOOD HASN’T FELT THE IMPORTANCE OF IT YET."
- "THE RAIN GARDEN PROGRAM IS TERRIFIC. SOMEHOW WE NEED TO GET THE WORD OUT TO MORE PEOPLE"
- "GET THE WORD OUT TO MORE PEOPLE."
IMPORTANCE OF STAFF TECH ASSISTANCE

• “ALL STAFF MEMBERS WE HAVE WORKED WITH IN THE PLANNING STAGES HAVE BEEN FANTASTIC! GREAT JOB!”

• “WOMAN WHO CAME TO VISIT WAS VERY HELPFUL. LOTS OF GOOD IDEAS THAT WE HAVE IMPLEMENTED.”

• “I WANT TO THANK STAFF WHO CAME OUT TO SEE WHAT I HAD INSTALLED AND VERIFIED THAT IT WAS A GOOD, FUNCTIONING RAIN GARDEN.”

• “I AM VERY SATISFIED WITH THE RAIN GARDEN PROGRAM!”

• “THE PLANNERS HAVE BEEN GREAT TO WORK WITH.”

• “SITE VISIT AND HANDOUTS FOR RAIN GARDEN WERE EXCELLENT.”

• “I AM VERY PLEASED WITH THE WHOLE PROCESS AND THE WONDERFUL STAFF. I'M RECOMMENDING THE PROGRAM TO FRIENDS/COLLEAGUES.”
importance of trained staff
Brian D. Stahl, 4/25/2017
NEED FOR ADDITIONAL FINANCIAL OR TECHNICAL ASSISTANCE

• “FREE ASSISTANCE WITH TRENCH OR HOLE DIGGING A PLUS. ANY FREE PLANTS A PLUS.”
• “I AM STILL INTERESTED, JUST HAVE HAD SOME HEALTH AND FINANCIAL OBSTACLES TO OVERCOME.”
• “THE REAL BARRIER FOR ME WITH INSTALLING A RAIN GARDEN IS THAT IT WOULD BE QUITE A BIT OF WORK TO INSTALL AS WELL AS BEING EXPENSIVE.”
• “ASSISTANCE WITH DIGGING THE RAIN GARDEN AND PIPE TRENCHING (TRACTOR AND CONTRACTOR) MADE THE PROJECT MORE DOABLE FOR US. I'M NOT SURE IF AND WHEN IT WOULD HAVE EVER HAPPENED.”
• “HELPING DIG THE INITIAL HOLE FOR THE RAIN GARDEN WOULD BE VERY BENEFICIAL.”
MORE BARRIERS TO OVERCOME

• “INSTALLING A RAIN GARDEN MAY BE INEXPENSIVE AND EASY TO DO YOURSELF FOR YOUNGER PEOPLE, BUT IT IS SOMETHING WE WOULD HAVE TO HIRE OUT.”

• “THE LANDSCAPE DESIGNER WE CONTACTED FROM A LIST GIVEN TO US REQUIRED US TO MAP THE AREA AND LOOKED LIKE IT WOULD BE FAIRLY EXPENSIVE.”

• “CONTINUE TO HELP WITH EXCAVATION. PROVIDE MORE FUNDING.”

• “MORE HELP WITH FINANCES.”

• “I WOULD DO IT ALL AND I REALLY HAVE ALWAYS WANTED A LIVING ROOF BUT WE DO NOT HAVE THE MONEY TO START ANY OF IT AND WAIT TO BE REIMBURSED.”

• “WE CANNOT AFFORD IT UNLESS IT IS FULLY FUNDED.”
VOLUNTEERS PREPARE FOR KING 5 TELEVISION’S ‘MAKE A DIFFERENCE DAY’
BDS9  Make a difference day
Brian D. Stahl, 4/25/2017

BDS10  outreach
Brian D. Stahl, 4/25/2017
PARTNERS HELP REMOVE BARRIERS
DEMONSTRATION OF MATURE RAIN GARDEN AND SIGNAGE
PROVIDING MATERIALS ALSO REMOVES COSTS AND ERRORS
Add pipe, plants, fittings

Brian D. Stahl, 4/25/2017
Creating Pervious Parking
RAIN BARRELS, CISTERNS & RAIN GARDEN IN A BOX
OPERATIONS & MAINTENANCE

KEEPING LID PROJECTS FUNCTIONAL
ADDRESSING LONG-TERM PERFORMANCE AND MAINTENANCE OF LID PRACTICES

- RAIN GARDEN / BIO-RETENTION AREA
- BIO-SWALES / FILTER STRIPS
- SOAKAGE TRENCH
- PERMEABLE PAVEMENT
Guide to Care

Weeding
- Avoid chemicals
- Avoid string trimmers
- Avoid compacting soils
- Remove weeds before seed development

Watering
- Limit watering to top 6-12” of soil
- Irrigate 1” per week

Plant Care
- Prune shrubs if necessary
- Grasses and rushes will fill Zone 1
- Dead vegetation maybe left in place or removed

Keeping Water Flowing
- Repair erosion caused by high water flow
- Remove garbage and other debris

Mulching
- Maintain a 2-3” mulch layer to control weeds and conserve soil moisture
RAIN GARDEN TROUBLESHOOTING

RAIN GARDEN NOT DRAINING WITH 48 HOURS

• CHECK FOR DEPRESSIONS OR HIGH POINTS IN THE BOTTOM OF THE GARDEN.
• RAKE BACK MULCH AND SMOOTH OUT BIORETEIION SOIL. REPLACE MULCH.
• COMPACTED SOIL – USE FORK TO LOOSEN SOIL

PERSISTENT PONDING

• ARE THE NATIVE SOILS APPROPRIATE FOR A RAIN GARDEN?
• IS THERE A HIGH WATER TABLE?
• IS THERE A CONTINUOUS SEASONAL FLOW?
• CONSIDER INSTALLING A UNDERDRAIN
BIOSWALE / FILTER STRIPS

• Mow upright vegetation to 6-8” height during runoff events

• Control undesirable weeds

• Inspect and repair after significant storm events

• Remove flow-disrupting sediment accumulations

• Exclude vehicular traffic during wet soil conditions
Subsurface Inlet
- Remove accumulated litter and debris from catch basin
- Avoid vehicular traffic on soakage trench surface

Surface flow inlet
- Remove accumulated litter and debris from surface
- Mow and weed
- Restore basin infiltration capacity by removing any excess fine sediment and/or aerating the basin
PERMEABLE SURFACES

Permeable concrete or asphalt
• Vacuum sweep 2 to 3 times annually
• Pressure wash to restore permeability

Interlocking Pavers
• Vacuum sweep or blow 2 to 3 times annually
• Remove fine debris between paver blocks
• Refill void material per manufacture spec

Open-celled grids (StabiliGrid)
• Vacuum sweep or blow 2 to 3 times annually
• Refill cells with gravel or original specified material as necessary
• Grass filled – Re-establish ⅛” soil level below grid surface to protect grass roots from compaction and then replant.
O&M
BOTTOM LINE

• LID LONG-TERM FUNCTIONALITY/SUCCESS HAS MUCH MORE TO DO WITH THE KNOWLEDGE, SKILLS, AND CREATIVITY OF THE PROJECT DESIGNERS THAN WHAT THE PROPERTY OWNER DOES OR DOESN’T DO.

• HOMEOWNERS GENERALLY NEED NO SPECIAL EQUIPMENT OR COSTS TO MAINTAIN THEIR LID PRACTICE.

• O & M POLICY SHOULD ENCOURAGE PROPERTY OWNERS TO BE RESPONSIBLE FOR THE IMPACTS ASSOCIATED WITH THEIR LAND.