

Investing in catchments for water quality and environment

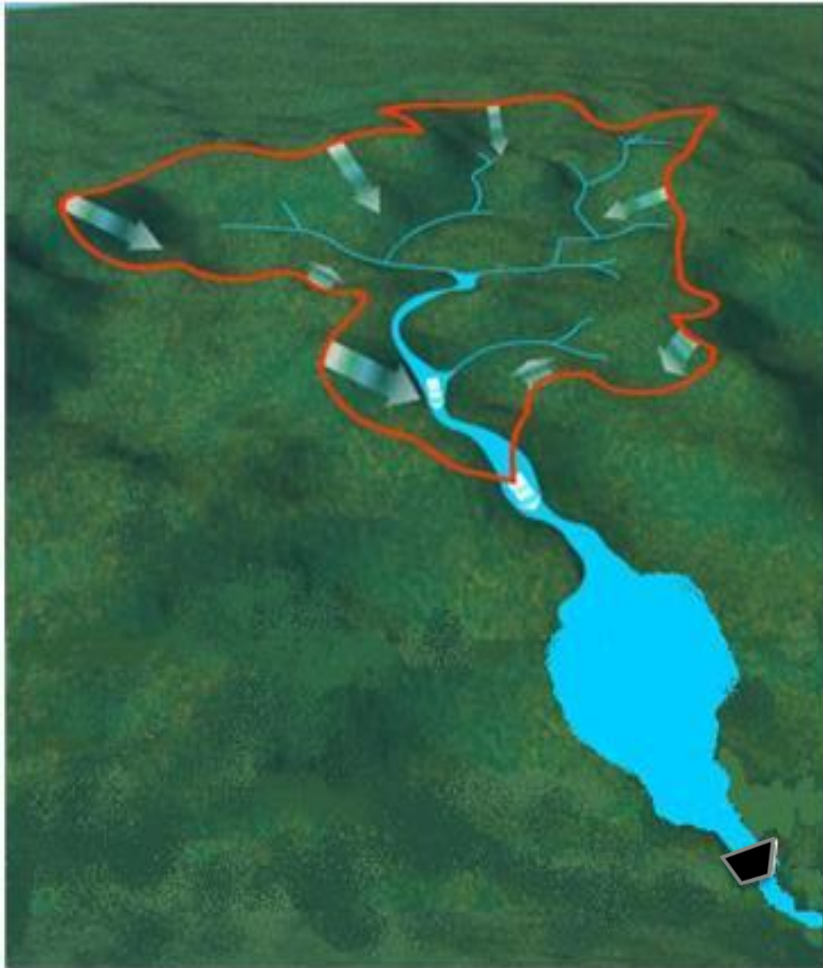
OCTOBER 19TH, 2015

IWA WATER AND DEVELOPMENT CONGRESS

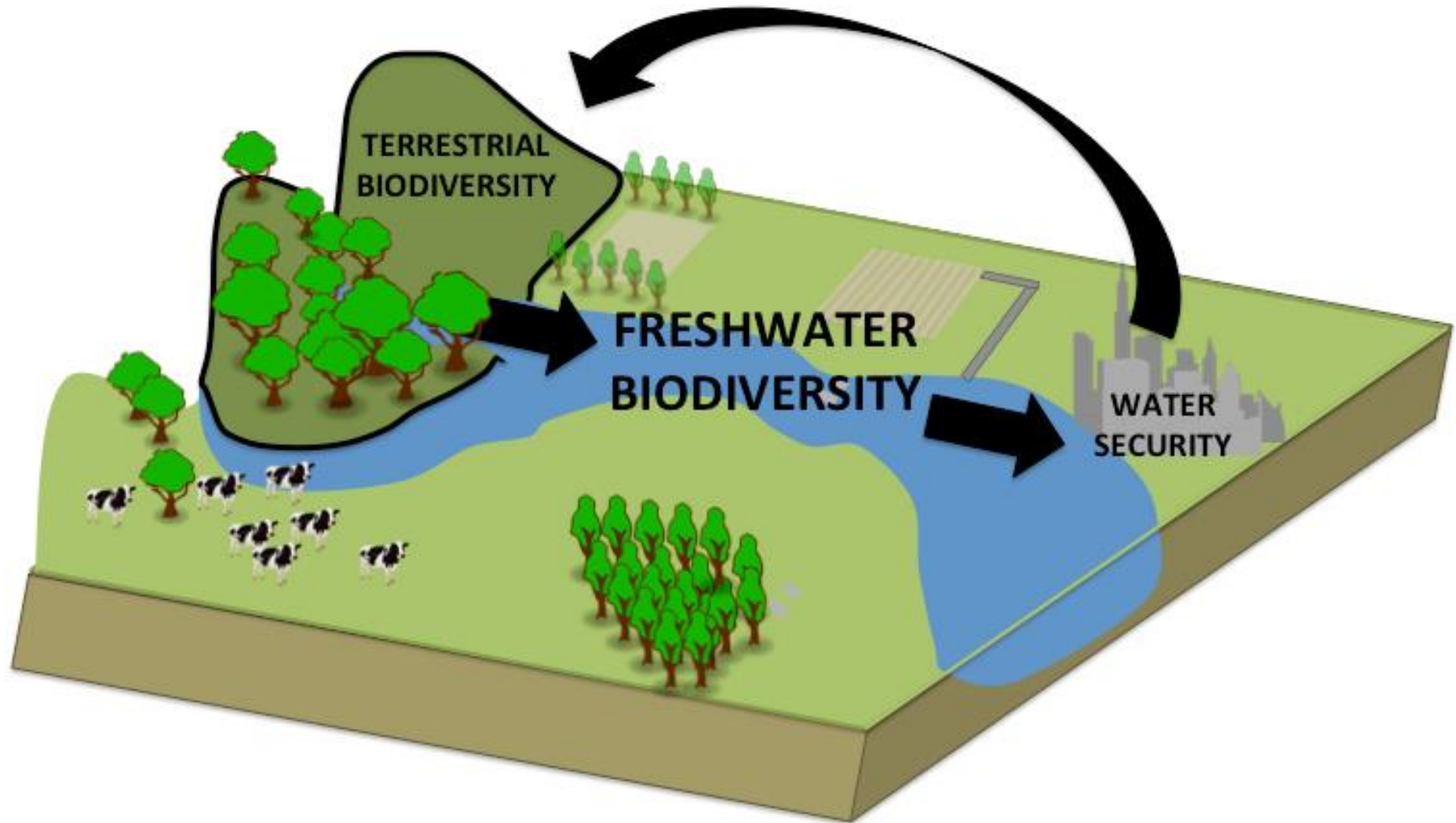
inspiring change



Why improving water services depend on land management



The Genius of “And” – complementarity between conservation and water security



What is the Urban Water Blueprint?

<http://water.nature.org/waterblueprint>



In partnership with



2,000

water sources

534

cities

Where cities
source their
water

Type of land
the water
travels
through

Quality and
supply

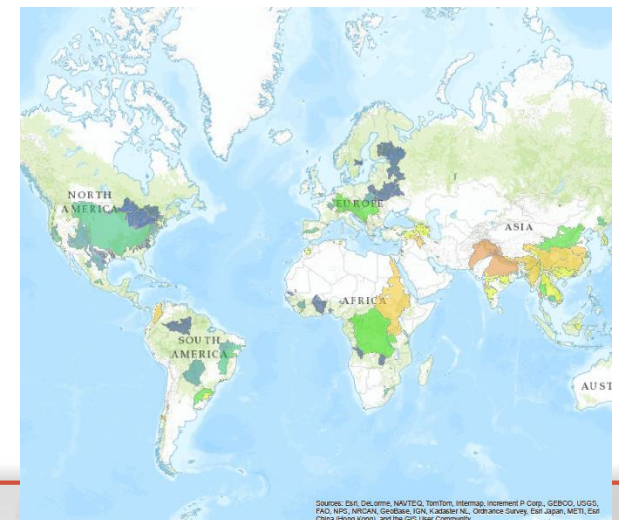
Water quality risk

Sediment loading model
built on USLE

N and P Loading using
export coefficient
approach

Risk metrics:

- » Sediment yield (tons/km²)
- » N yield (tons/km²)
- » P yield (tons/km²)



Source watershed protection activities...

Solution



Targeted Land Protection



Assisted Revegetation



Agricultural Best Practices



Riparian Restoration



Forest Fuel Reduction

Most people say that nature is a good investment for cities' water supply

Myth

Investments in nature always measurably benefits cities' water supplies

Investments in nature are always cheaper than built alternatives

Investments in nature are always feasible

Investments in nature can address water scarcity issues

Investments in nature are all equal

Reality

Benefits depend on specific conditions, incl. scale of interventions, size of the watershed, types of problems faced, and existing infrastructure

Cost-effectiveness is highly dependent on watershed size, land value, and transaction costs

Ability to deploy capital from cities limited by jurisdiction, regulation and technical capacity

While vegetation can improve timing and quality of water, it largely decreases water yield

Natural solutions is more effective on areas of hydrological importance, incl. high slopes and headwater

Understanding reality unlocks where city water needs and natural infrastructure benefits overlap

Findings - Nature as a Solution



Forest Protection



Reforestation



Agricultural Best
Management
Practices



Riparian
Restoration



Forest Fuel
Thinning

700 million
people

living in the largest 100
cities could benefit from
all conservation
solutions

6.4 million
hectares

Targeting 0.2% of
agricultural land in a
watershed for improved
farming practices could
help 600 million people

1 in 4

cities would see a
positive return on
investment from
investing in
conservation solutions

Watershed Conservation Screening Tool

- Motivation- Lots of people asked TNC “Can you analyze my source using the Urban Water Blueprint methodology?”
- Goals: Rapid, no-cost estimates of
 - water quality impairment (sediment, nutrients)
 - Potential for source watershed conservation activities to help
- Audience: Bulk water users interested in source watershed conservation

Overview of Screening Tool

The screenshot shows a web browser window with the URL watershedtool.org. The page title is "Watershed Conservation Screening Tool" with the subtitle "Estimating how much nature can help keep your water clean". Navigation links include "Project Information", "Share Data", and "Change Basemap". A central text box provides instructions and details about the tool's capabilities and limitations. A red circle highlights the "Click to Continue" button, with a red arrow pointing to it. The background features a map of South America.

Watershed Conservation Screening Tool
Estimating how much nature can help keep your water clean

Project Information | Share Data | Change Basemap

Watershed Conservation Screening Tool

What it does: This tool will quickly measure the potential for five common watershed conservation activities to reduce sediment and nutrient pollution in a source watershed.

Values returned: This tool will describe for each source watershed its land cover and estimate its pollutant loading. It will also return for each watershed the amount of conservation effort (in area or cost) needed to achieve a 1%, 5%, 10%, and 20% reduction in pollution.

Surface water only: This tool is intended for bulk surface water users that know the location of their water intakes. Groundwater sustainability is not analyzed.

Non-point source pollution only: This tool focuses on how watershed conservation activity can reduce sediment and nutrient pollution from non-point sources. Watersheds that have significant sources of pollution from point sources may not find the results returned meaningful.

Municipal water users: Water users that draw water from a municipal supply must know where that municipal water supply comes from. Users can look up this information for some large cities in the Urban Water Blueprint. If your city isn't listed there, but you know where your city gets its water from, then you can should enter that information yourself.

Inter-basin transfers: If a larger inter-basin transfer of water into your watershed occurs upstream of your water intake, you must input into the tool both the location of your intake and the location of where the transferred water comes from (the donor basin).

More info: If this is your first time using the Screening Tool, please watch our short briefing video about the tool [here](#). Next, watch our video walkthrough of how to use the tool [here](#). If you want more details on the methodology of the app, please click [here](#).

Click to Continue

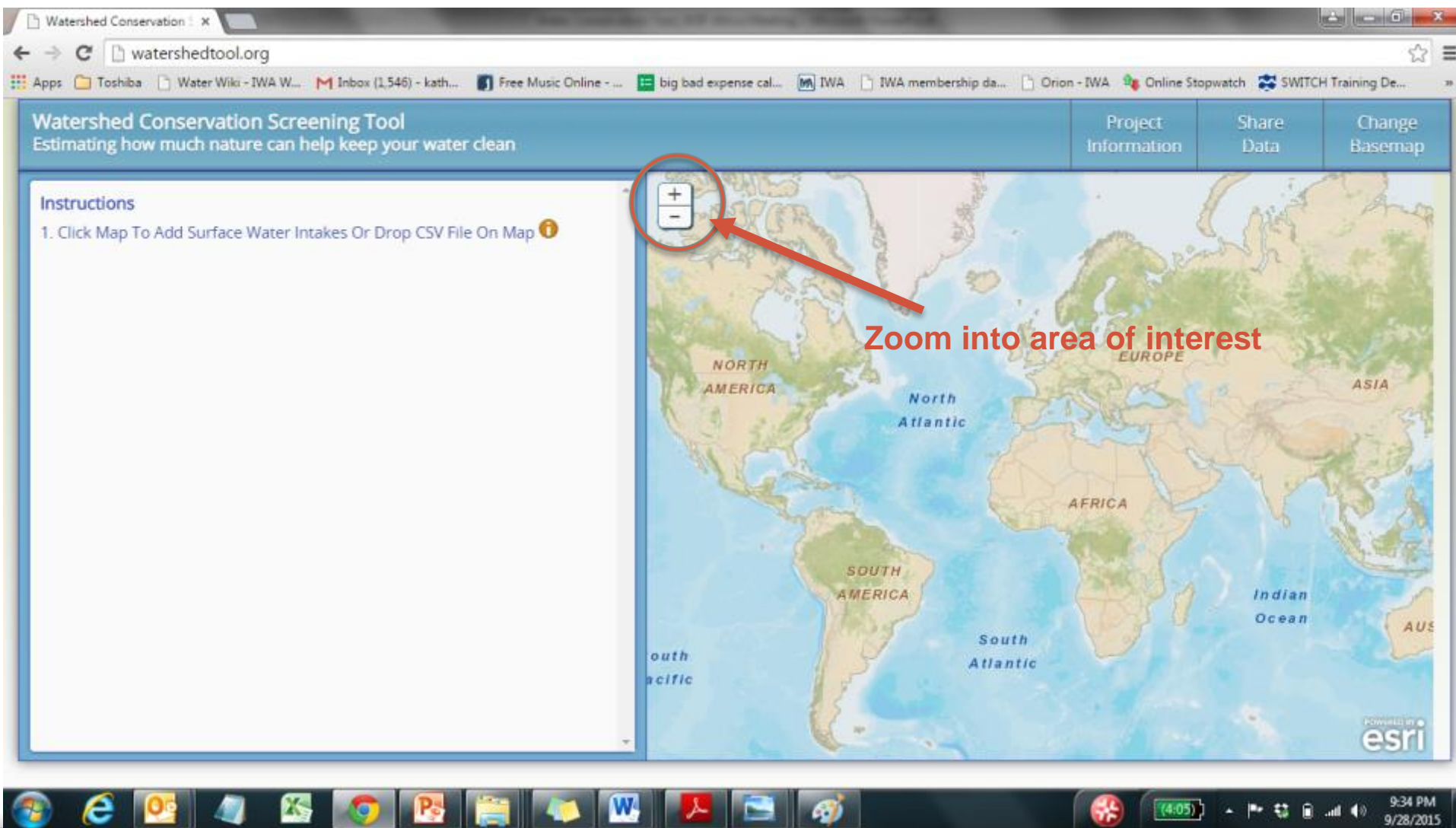
Choose geographical area

Watershed Conservation Screening Tool
Estimating how much nature can help keep your water clean

Project Information | Share Data | Change Basemap

Instructions
1. Click Map To Add Surface Water Intakes Or Drop CSV File On Map ⓘ

Zoom into area of interest



Adding Intake Points

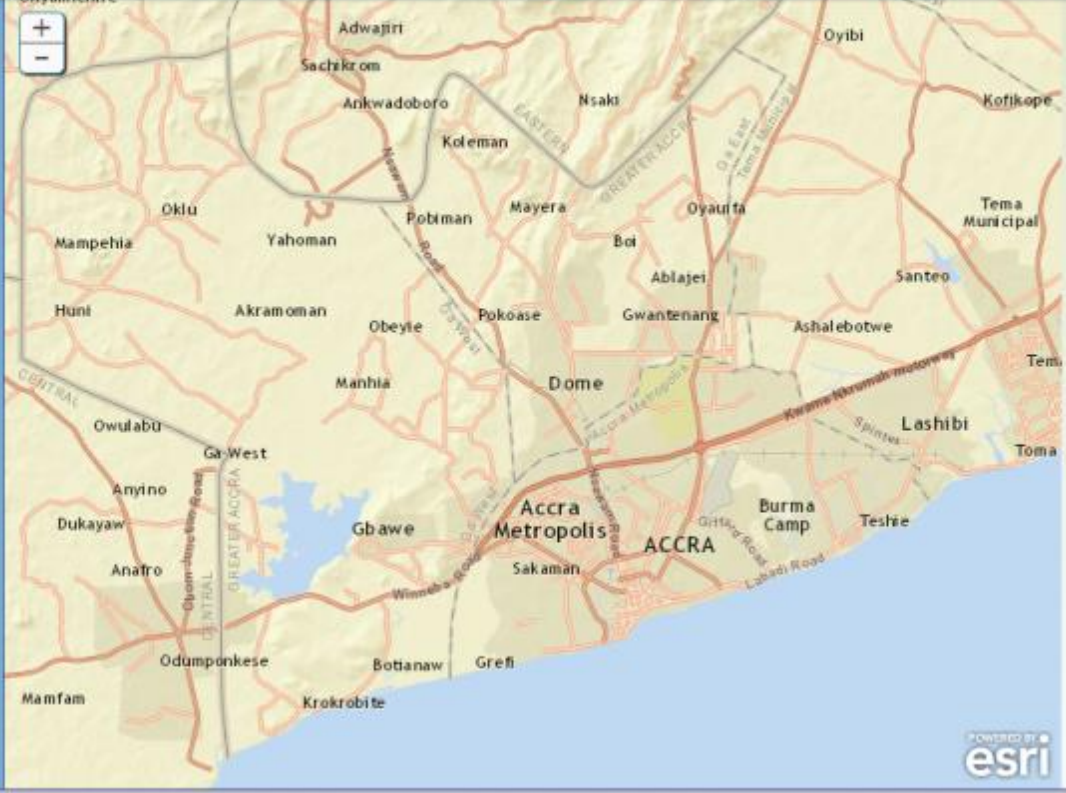
Watershed Conservation Screening Tool
Estimating how much nature can help keep your water clean

Project Information | Share Data | Change Basemap

Instructions

1. Click Map To Add Surface Water Intakes Or Drop CSV File On Map

Once zoomed in, click on map to start adding intake points

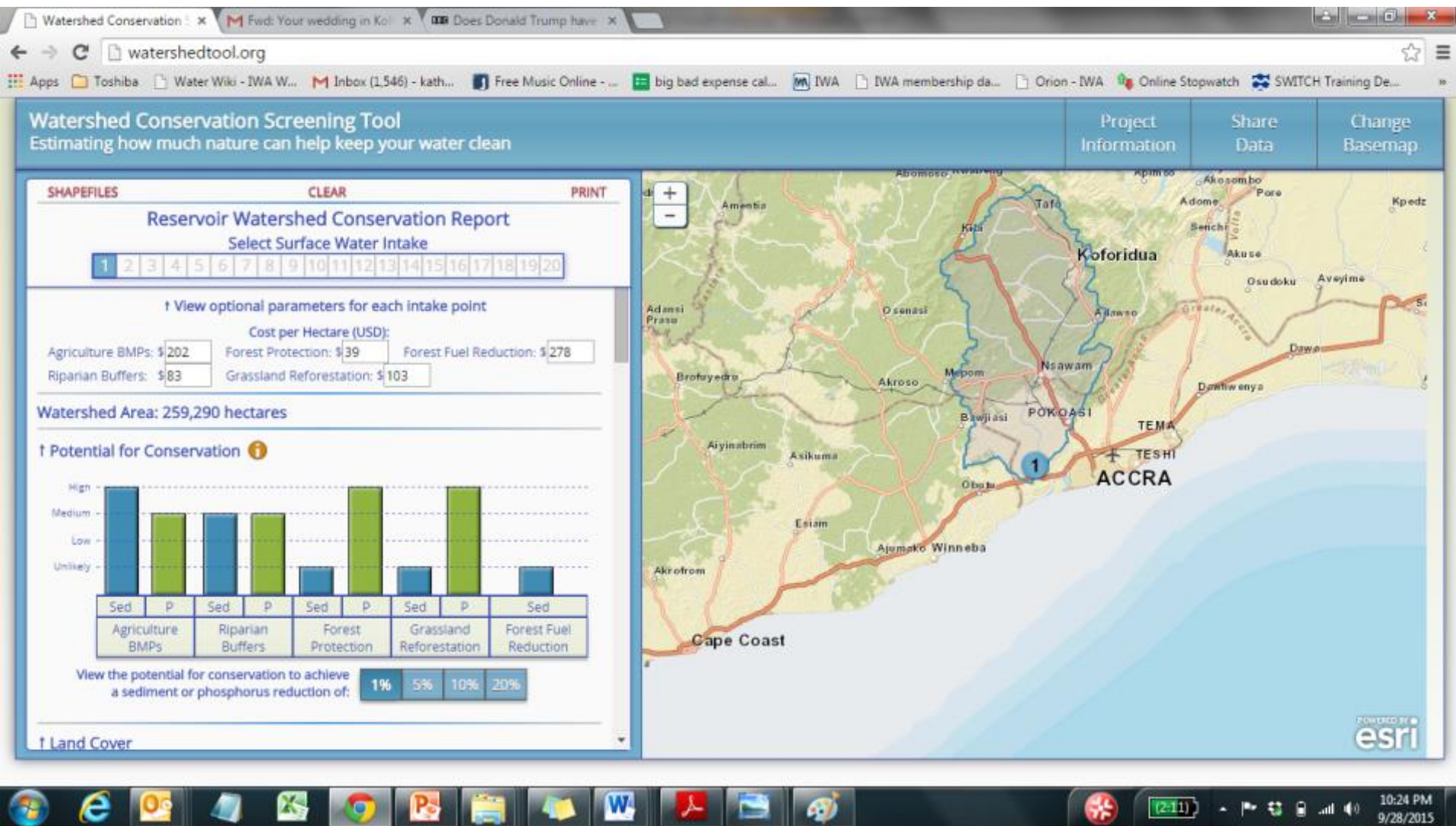


The screenshot displays the Watershed Conservation Screening Tool web application. The interface features a top navigation bar with links for 'Project Information', 'Share Data', and 'Change Basemap'. A sidebar on the left contains 'Instructions' and a list of actions, including 'Click Map To Add Surface Water Intakes Or Drop CSV File On Map'. The main area shows a map of Accra, Ghana, with various districts and landmarks labeled. The map is zoomed in on the central area, showing districts like Mampedia, Huni, Akramoman, Obeyie, Manhia, Dome, Gbawe, and Accra Metropolis. The tool's interface includes a sidebar with instructions, a top navigation bar, and a bottom taskbar with various application icons.

Adding Intake Points



Watershed area



Creating Water Quality Report

Watershed Conservation : x

watershedtool.org

Apps Toshiba Water Wiki - IWA W... Inbox (1,546) - kath... Free Music Online - ... big bad expense cal... IWA IWA membership da... Orion - IWA Online Stopwatch SWITCH Training De...

Watershed Conservation Screening Tool

Estimating how much nature can help keep your water clean

Project Information Share Data Change Basemap

SHAPEFILES CLEAR

Reservoir Watershed Conservation Report

Select Surface Water Intake

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

↑ View optional parameters for each intake point

Cost per Hectare (USD):

Agriculture BMPs: \$202	Forest Protection: \$39	Forest Fuel Reduction: \$278
Riparian Buffers: \$83	Grassland Reforestation: \$103	

Watershed Area: 259,290 hectares

↑ Potential for Conservation ⓘ

Land Cover	Sed	P
Agriculture BMPs	High	Medium
Riparian Buffers	Medium	Medium
Forest Protection	Low	High
Grassland Reforestation	Low	High
Forest Fuel Reduction	Unlikely	Low

View the potential for conservation to achieve a sediment or phosphorus reduction of:

1% 5% 10% 20%

↑ Land Cover

PRINT

Create pdf report

These values can be tailored

Accra Metropolis ACCRA

esri

10:00 PM 9/28/2015

Potential for Conservation

Watershed Conservation Screening Tool
Estimating how much nature can help keep your water clean

Project Information | Share Data | Change Basemap

SHAPEFILES CLEAR PRINT

Reservoir Watershed Conservation Report

Select Surface Water Intake

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Riparian Buffers: 583 Grassland Reforestation: 5103

Watershed Area: 259,290 hectares

Potential for Conservation

Category	Sed	P
Agriculture BMPs	High	High
Riparian Buffers	Medium	Medium
Forest Protection	Medium	Medium
Grassland Reforestation	Medium	Medium
Forest Fuel Reduction	Unlikely	Unlikely

View the potential for conservation to achieve a sediment or phosphorous reduction of:

1% 5% 0% 20%

Land Cover

99% Cropland
2% Grassland
4% Forest
1% Wetland

Map showing the watershed area (labeled 1) and surrounding locations: Koforidua, TEMA, ACCRA, Cape Coast.

Change % sediment/phosphorous reduction to see potential for conservation in watershed

esri

WANT TO LEARN MORE?



- Visit <http://watershedtool.org>
- Live demonstration - **October 20th 12pm-1pm, Ayla Hall**
- If you have any questions about the tool, contact Rob McDonald (rob_mcdonald@tnc.org).