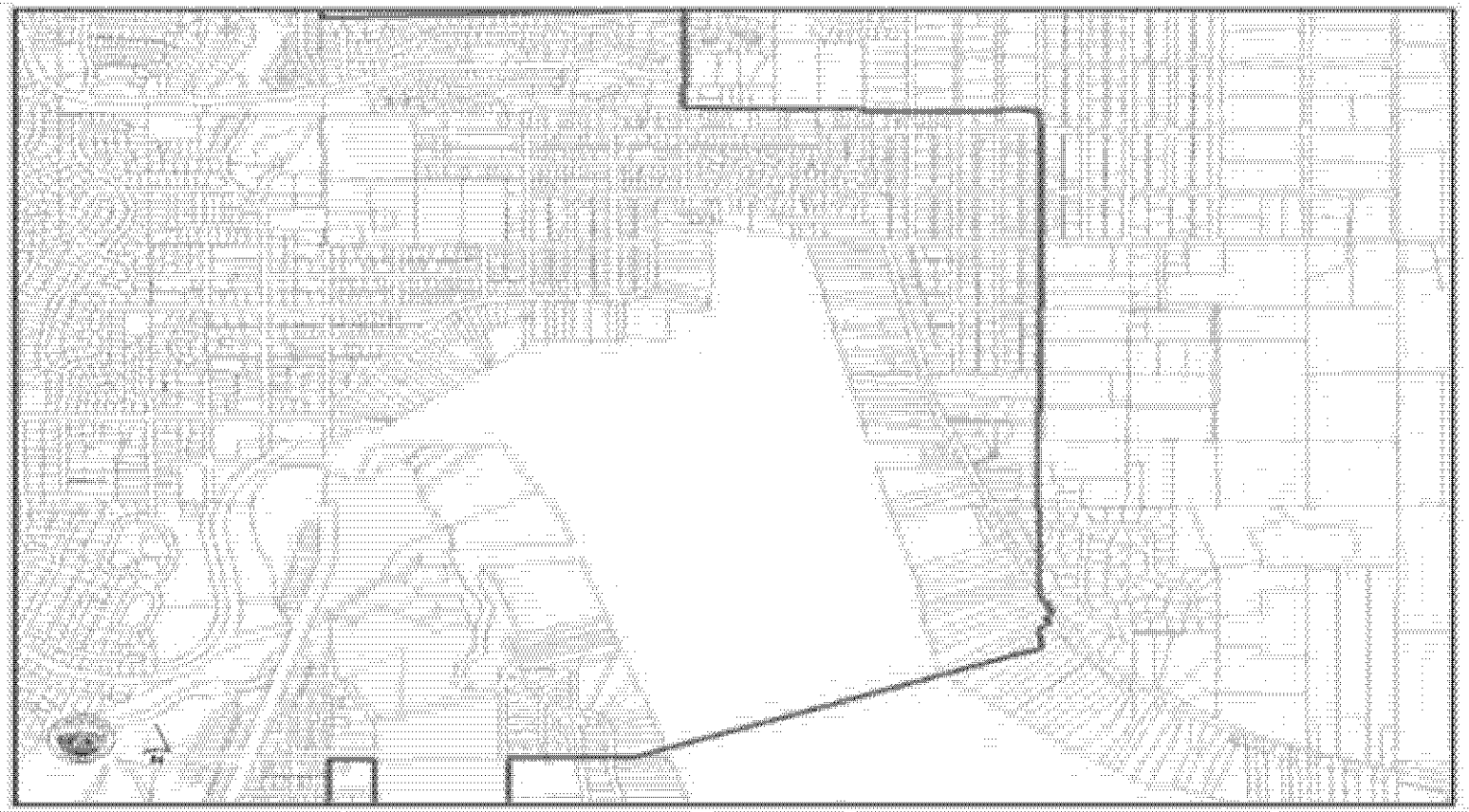
Lake Whatcom Stormwater

Presented by:
Bill Reilly, Eli Mackiewicz, Kim Weil, Jason Porter,

City of Bellingham

Residential Properties in City Portion of Basin One

802 Single Family Homes



The shaded area here indicates the area that drains to Basin One Lake Whatcom. There are currently 802 single family homes within this area.

Properties Retrofitted (10/2008 – Present)

115 Single Family Homes

The red areas indicate 115 homes that have been retrofit to date primarily through the rain barrel retrofit program, which reduces runoff by dispersion.

Current Participants in Grant Programs

10/2008-Present - 165 Single Family Homes

This map shows the properties that have taken advantage of our grant programs as of December, 2010 . Red indicates participation in the rain barrel program, blue indicates HIP participants, and purple indicates properties participating in both programs.

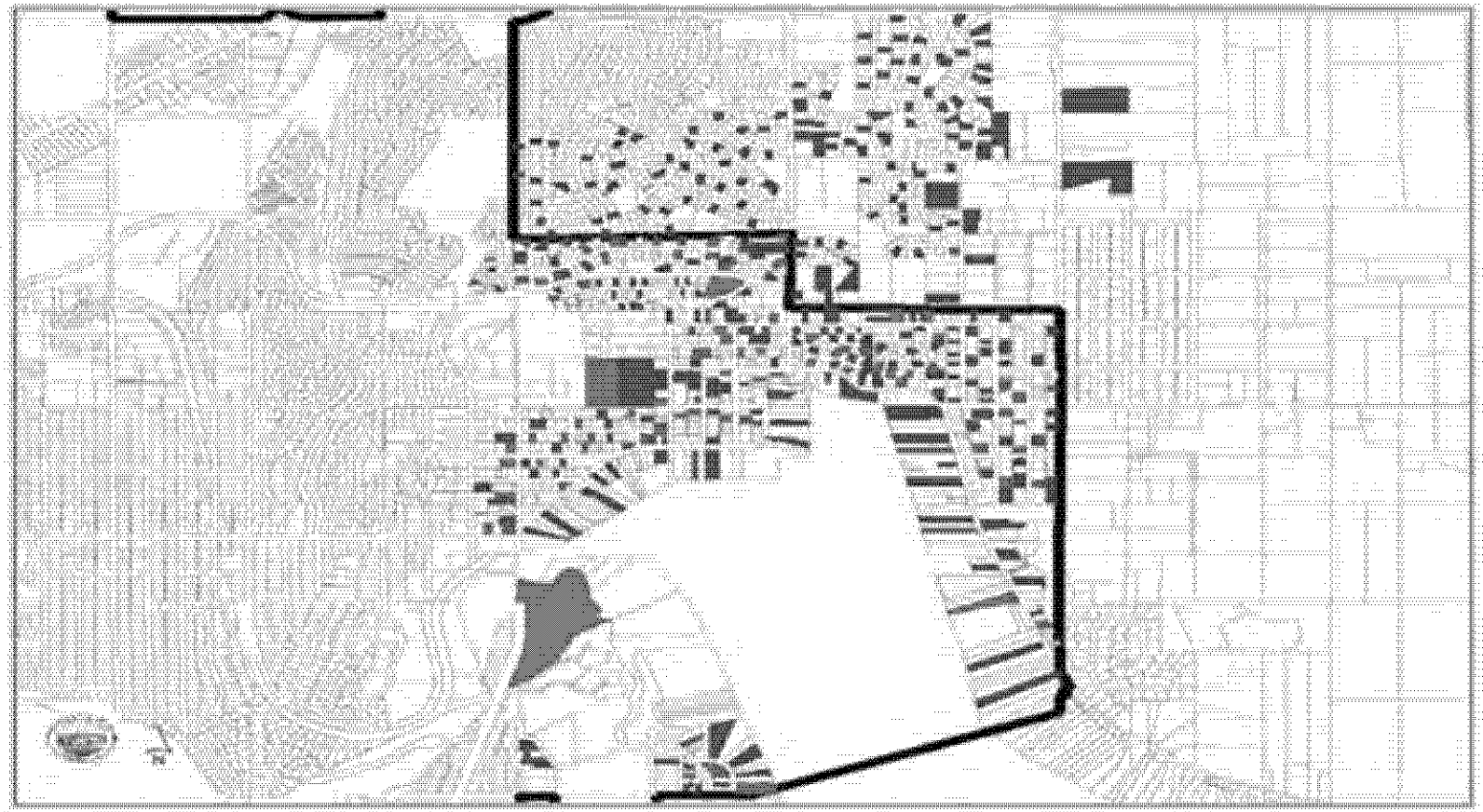
Properties Receiving On-Site Consultations

10/2008-Present - 235 Single Family Homes

The additional properties in yellow indicate property owners that have received on-site consultation but, at this point, have not chosen to participate.

Projected Participation – Full Grant Implementation

Present-2014 - 550 Single Family Homes



This slide represents the potential land coverage if our grants are fully utilized between now and 2014.

Residential Grant Progress

- **235** on-site consultations (one-on-one)

- **250** cisterns installed through R.S.R.P. Grant

  2.8 acres of roof area managed

  3.2 million gallons of rain water per year diverted

- **50** homes enrolled in Incentive Program (H.I.P. Grant)

  15 H.I.P. projects designed and approved

  0.8 acres of residential property managed (15 projects)

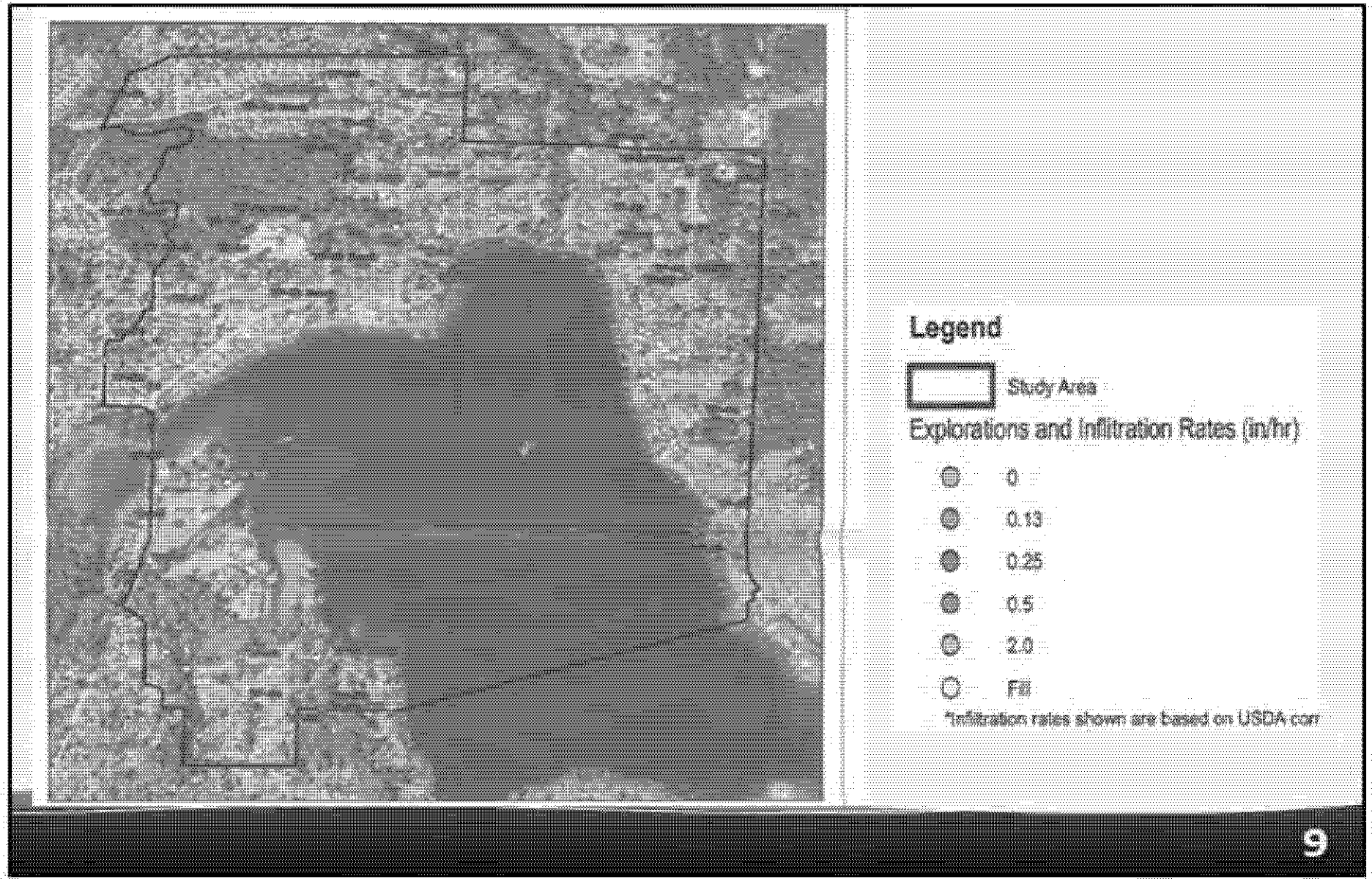
  906,000 gallons of rain water per year treated

Specific numbers for grants as of December, 2010

Next Steps

- Complete Contract with Ecology
- Hire Grant Coordinator
- Complete Canvas of Homes including County
- Contract for Soils Analysis in County
  - Approximately 100 test pits to provide infiltration rates
- Engage Homeowners in Projects

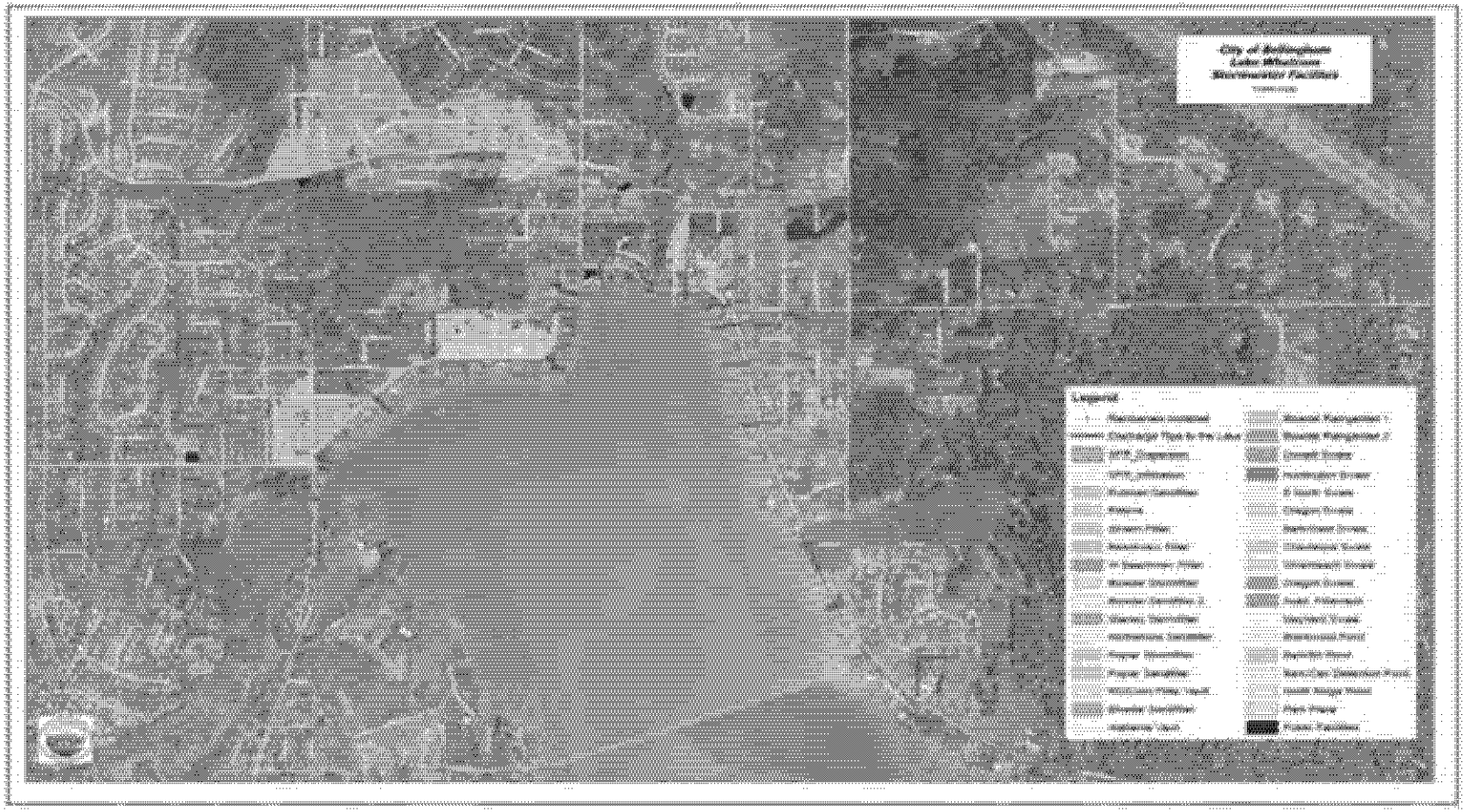
These are the steps necessary for the implementation of HIP as of December, 2010.



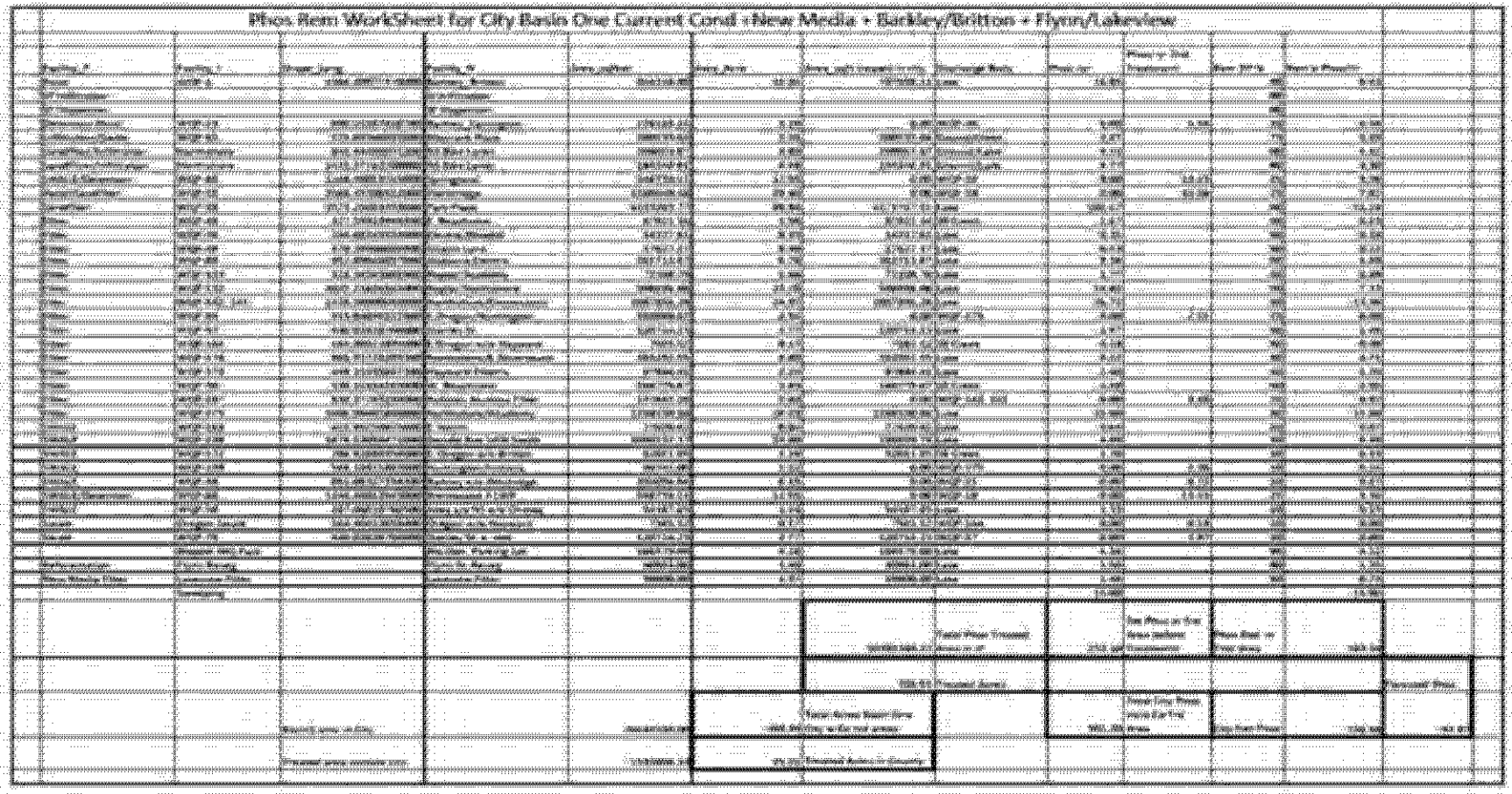
This represents a soil infiltration study done for the City portion of the Lake Whatcom Watershed. The infiltration capability of the soils is low in many areas, but some areas allow for infiltration.

Stormwater Modifications Over Time

The next few slides will demonstrate how Stormwater Management for the City portion of the Lake Whatcom Watershed has grown and changed over time.



This map is an overview of the existing stormwater treatment systems in the City portion of the Lake Whatcom Watershed. Each colored area represents the acreage treated by a particular treatment system.



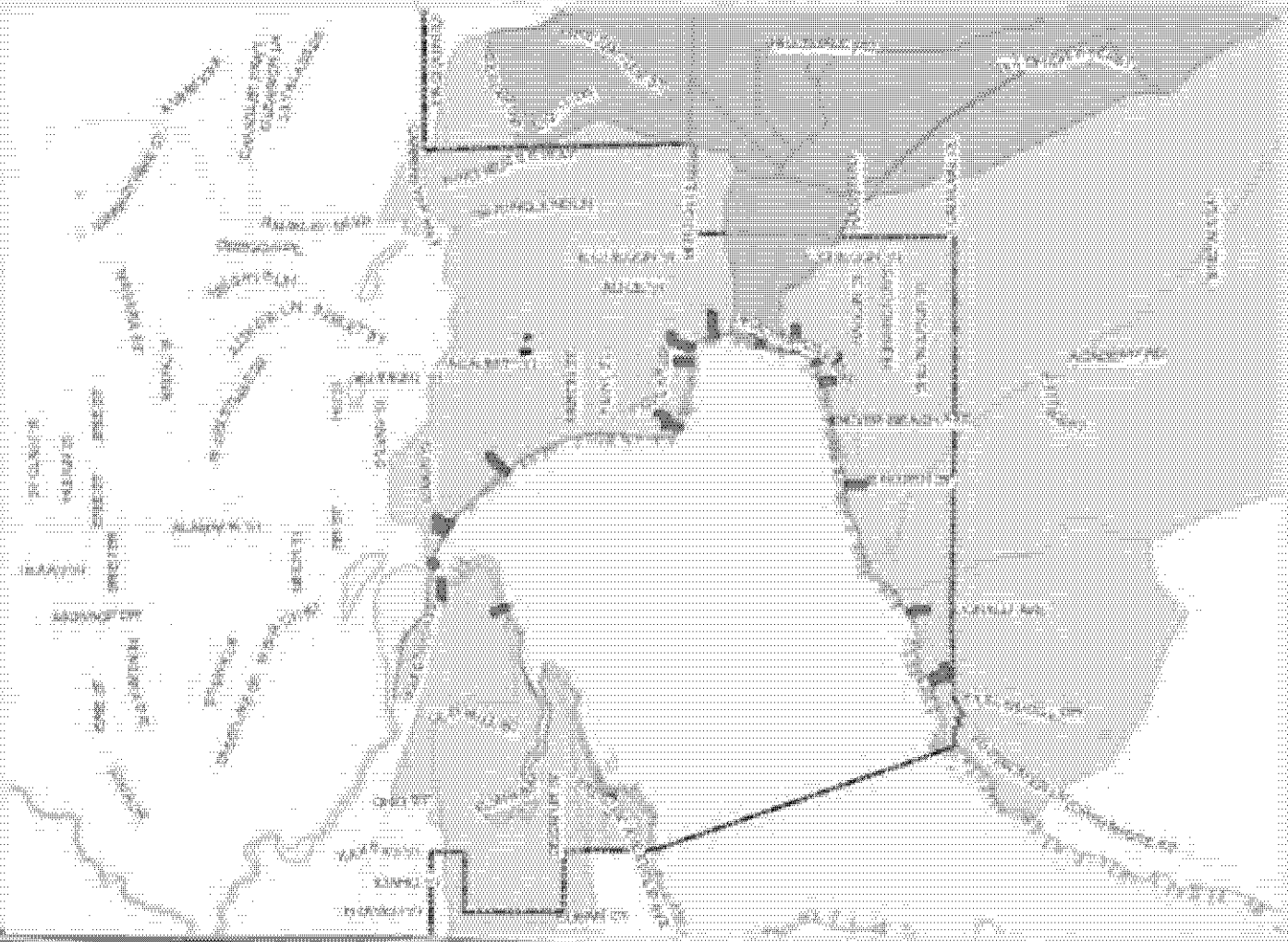
This spreadsheet uses the information from the map to calculate the annual amount of phosphorus that is removed by each of the stormwater facilities. This information is used to see how well we are doing in protecting the Lake.

Stormwater Time Shots

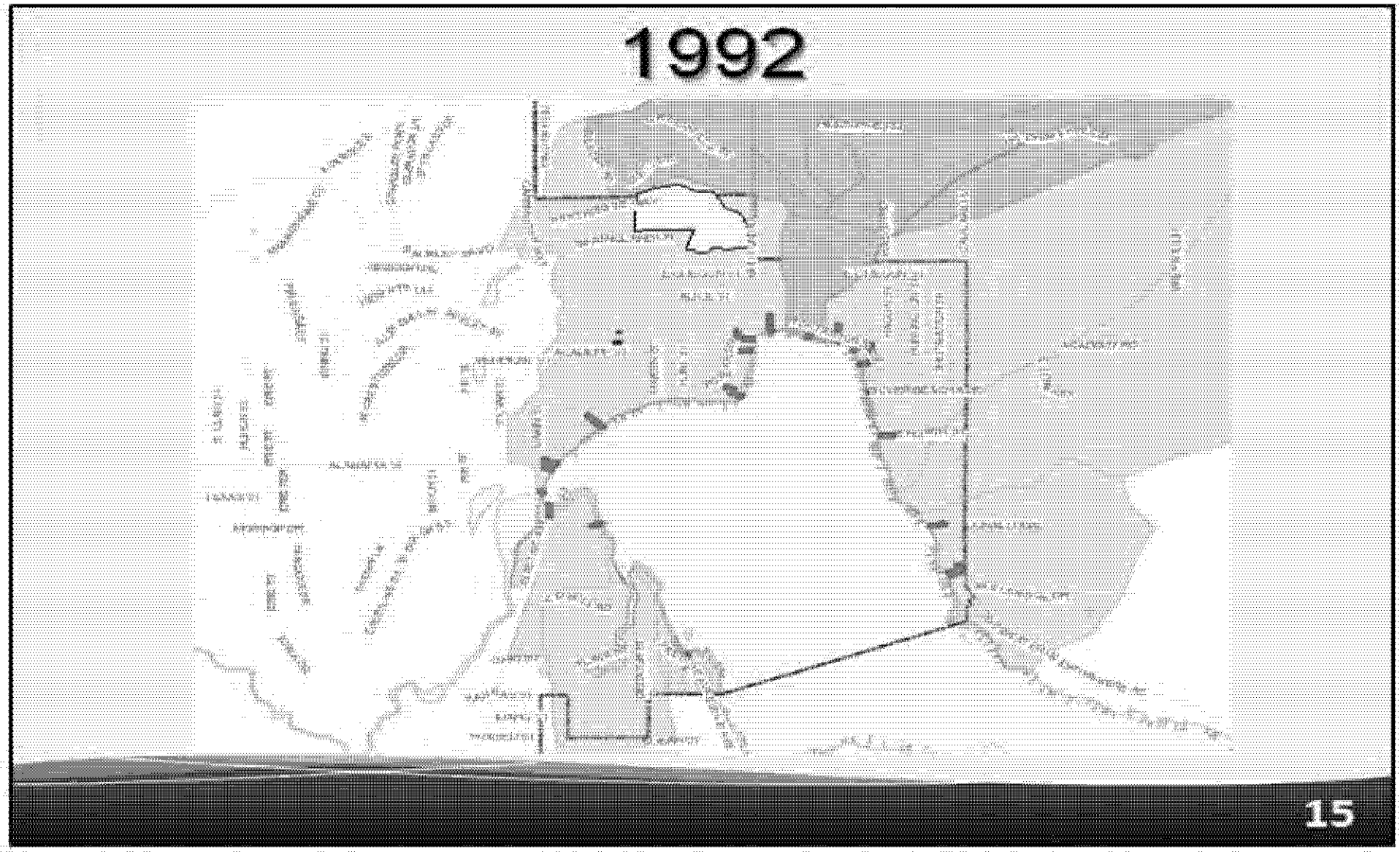
- Dark Green – Infiltration/Preserved Forest 90-100% phosphorus removal
- Light Green – Meets Ecology standard for 50% phosphorus removal control
- Yellow – Unknown Phosphorus removal or less than Ecology standard
- Stripes - Proposed removal modifications

To make the level of work easier to see graphically, the proceeding slides will show how our phosphorus treatment has evolved and will evolve in the Watershed. The legend above indicates those changes.

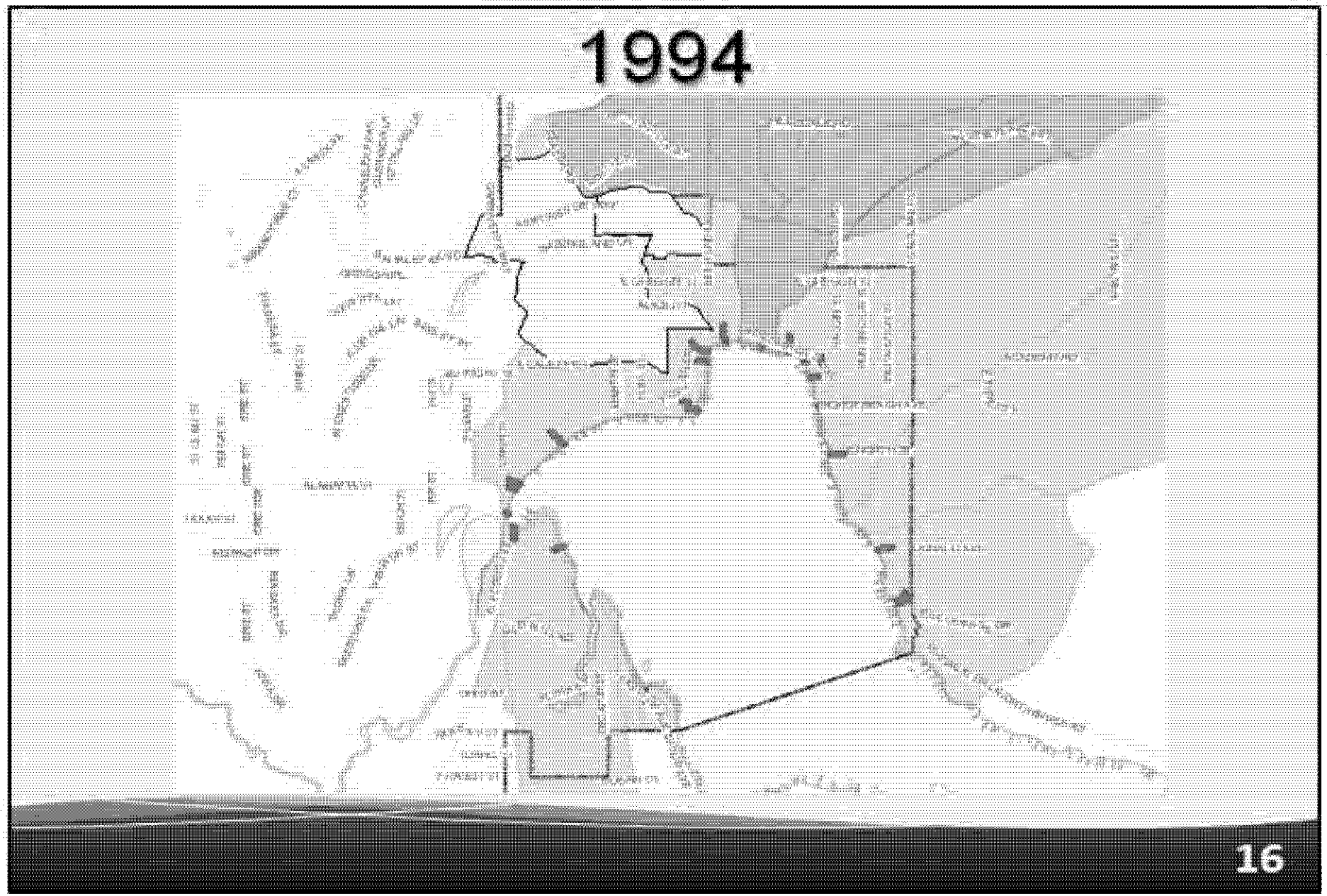
Pre - 1992



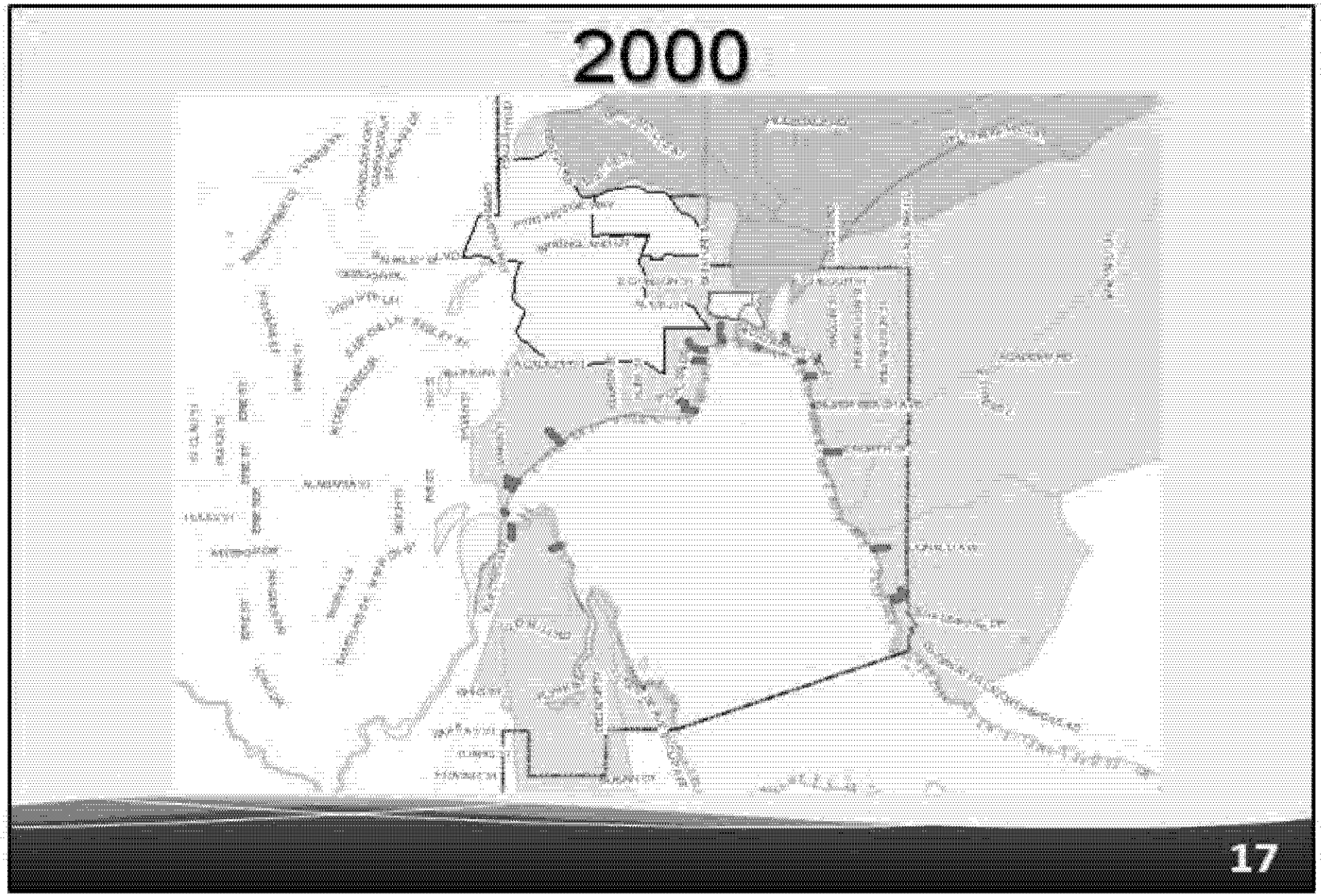
Prior to 1992 there were no treatment systems in Lake Whatcom.



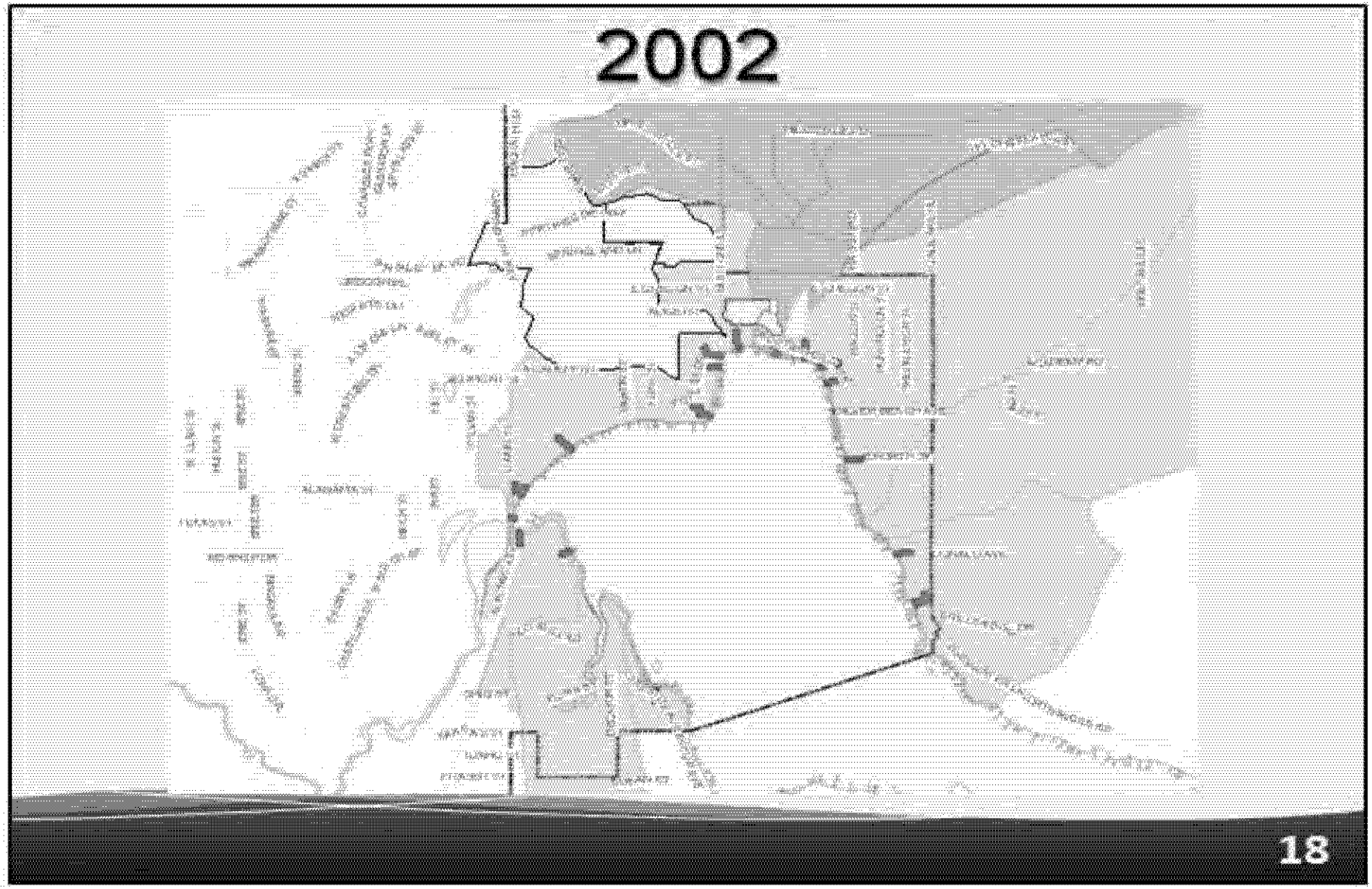
In 1992 the City reconstructed a pond at Barkley Blvd. and Britton Rd. to improve stormwater coming from the Brentwood subdivision. As with all of the proceeding slides, the area of treatment is displayed. Yellow shading means the system was not designed specifically for phosphorus removal or it does not remove sufficient phosphorus to meet the minimum standard from the Dept. of Ecology.



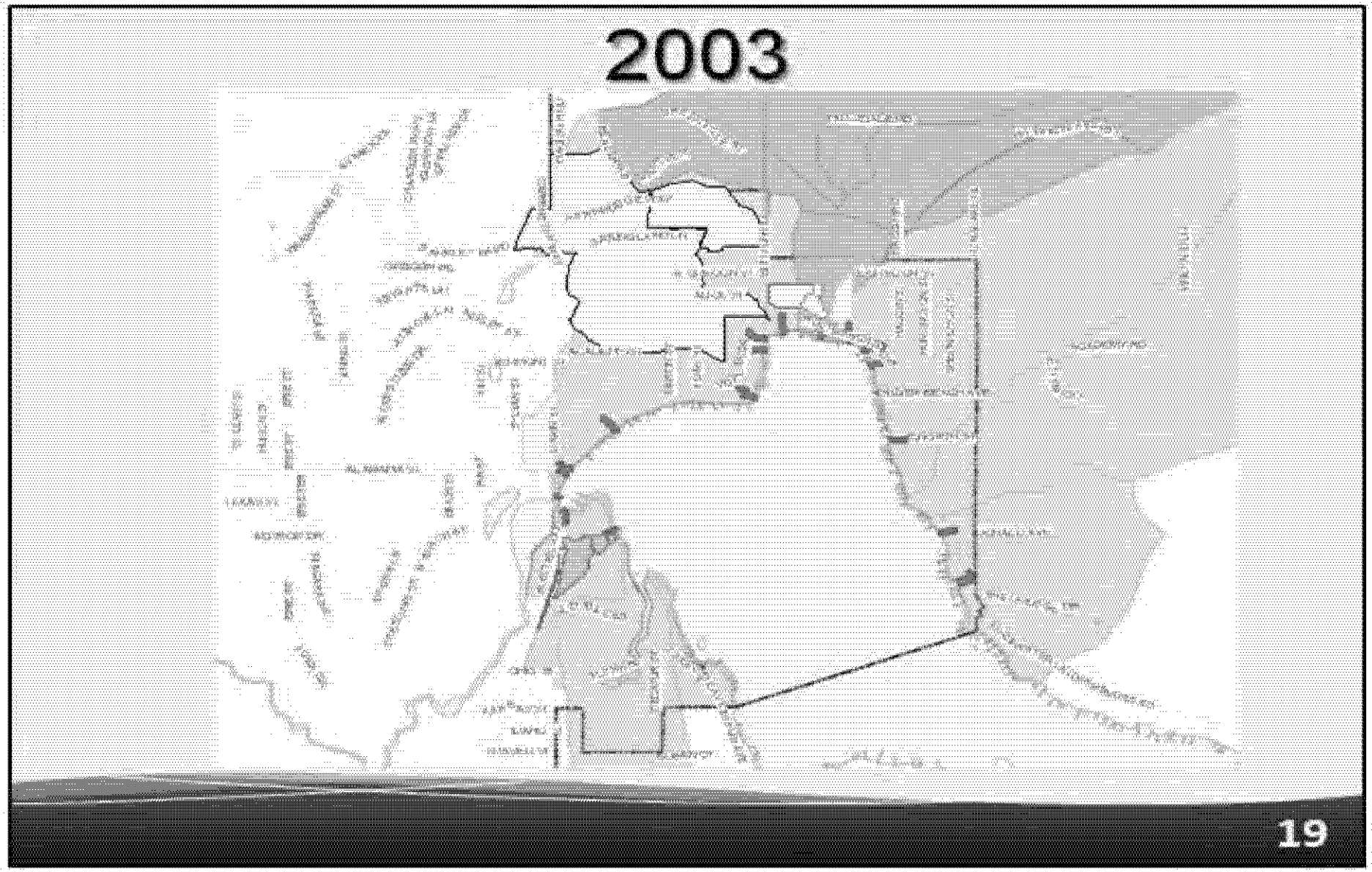
Treatment area increased with the addition of the Park Place wet pond.



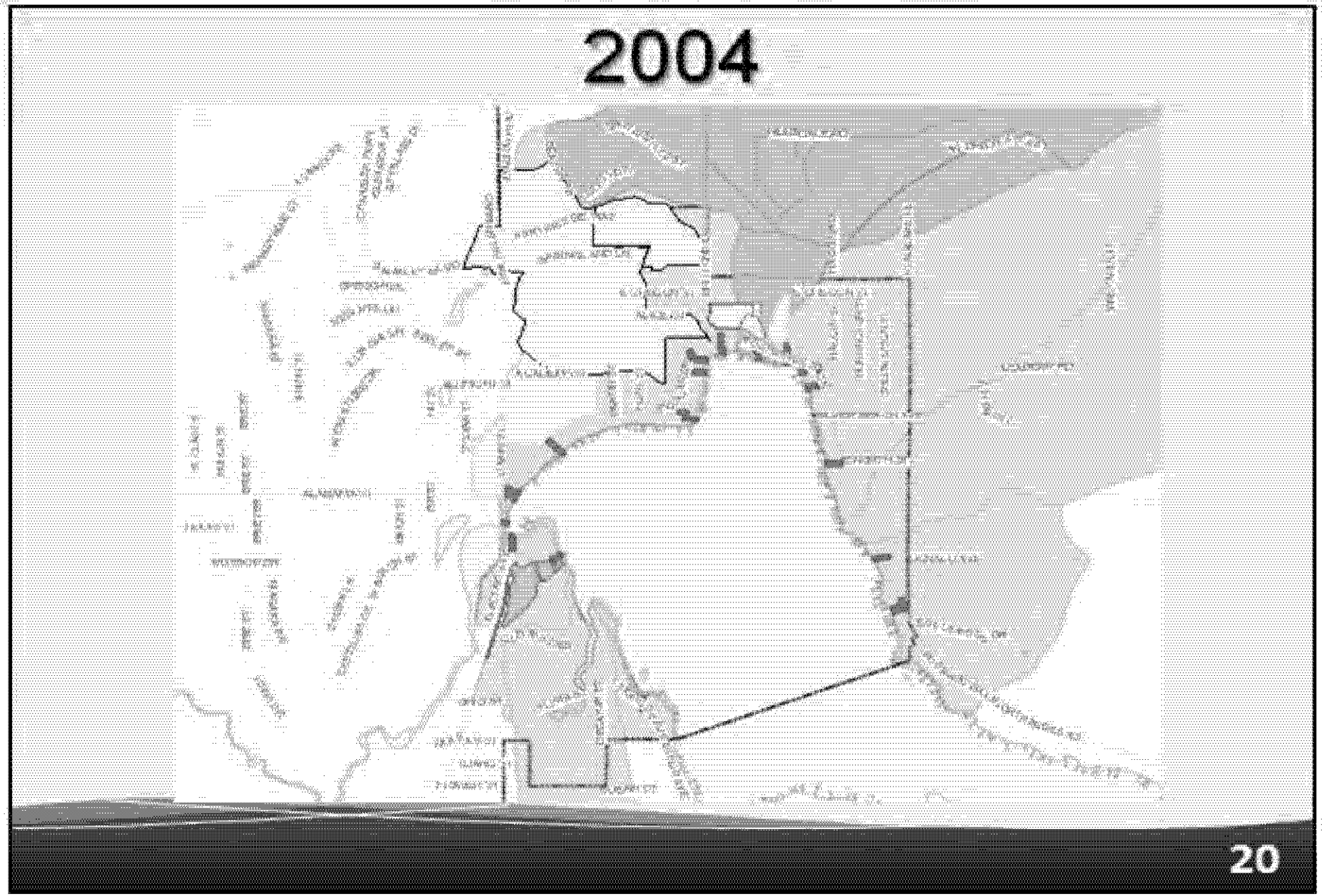
Two new systems were put in place, one for Sylvan Estates, the other constructed for Maynard Place.



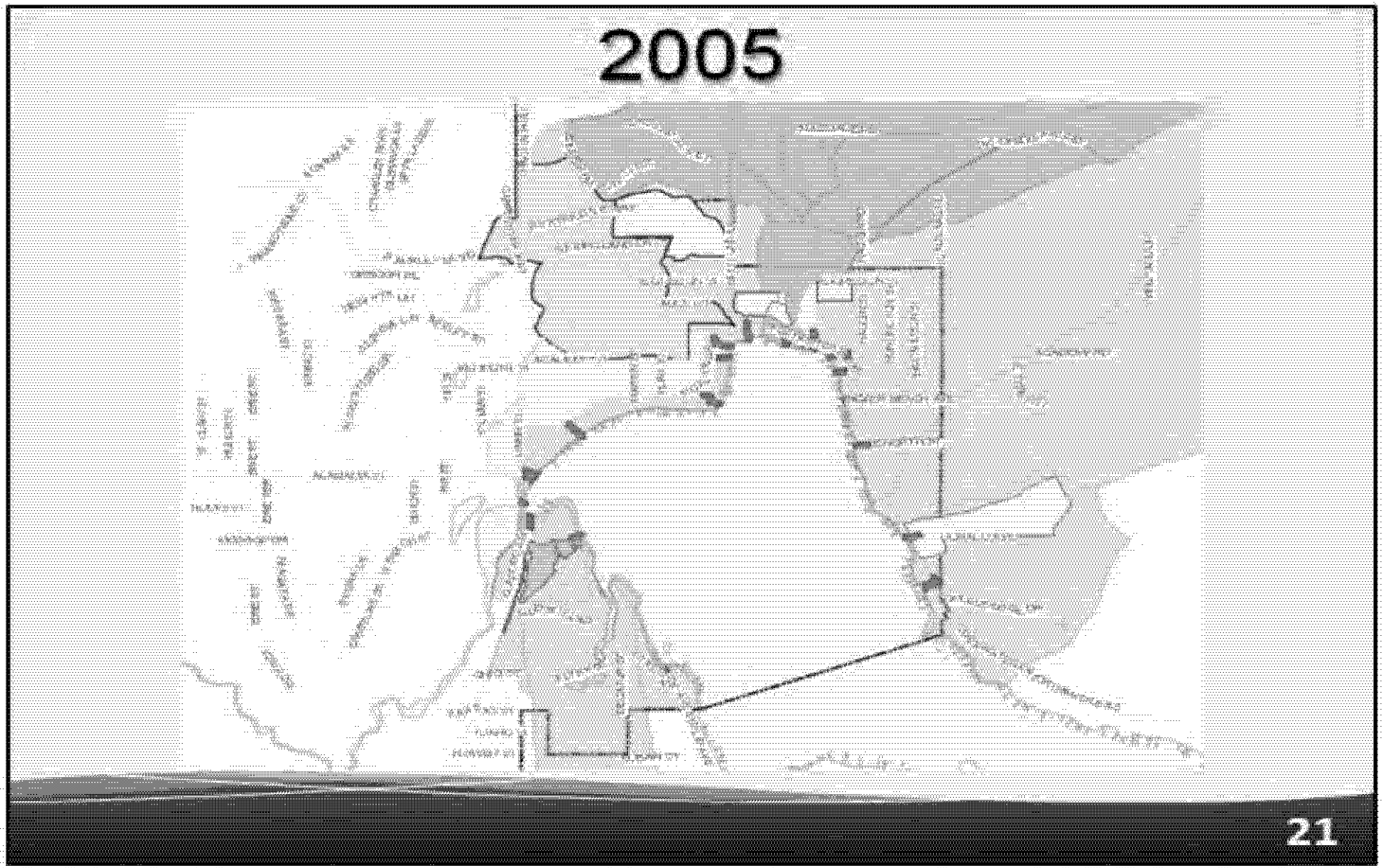
In 2002 treatment of Electric Ave from Alabama St. to Bloedel Donovan Park was completed, although the area is hardly discernable on this map.



The Alabama media vault was constructed to treat the area between Dakin St. and Sylvan St. north of Alabama St. Secondly, an award-winning stormwater system was installed at Bloedel Donovan Park that included media and infiltration systems and rain gardens. The dark green indicates approximately 90% of phosphorus removed.

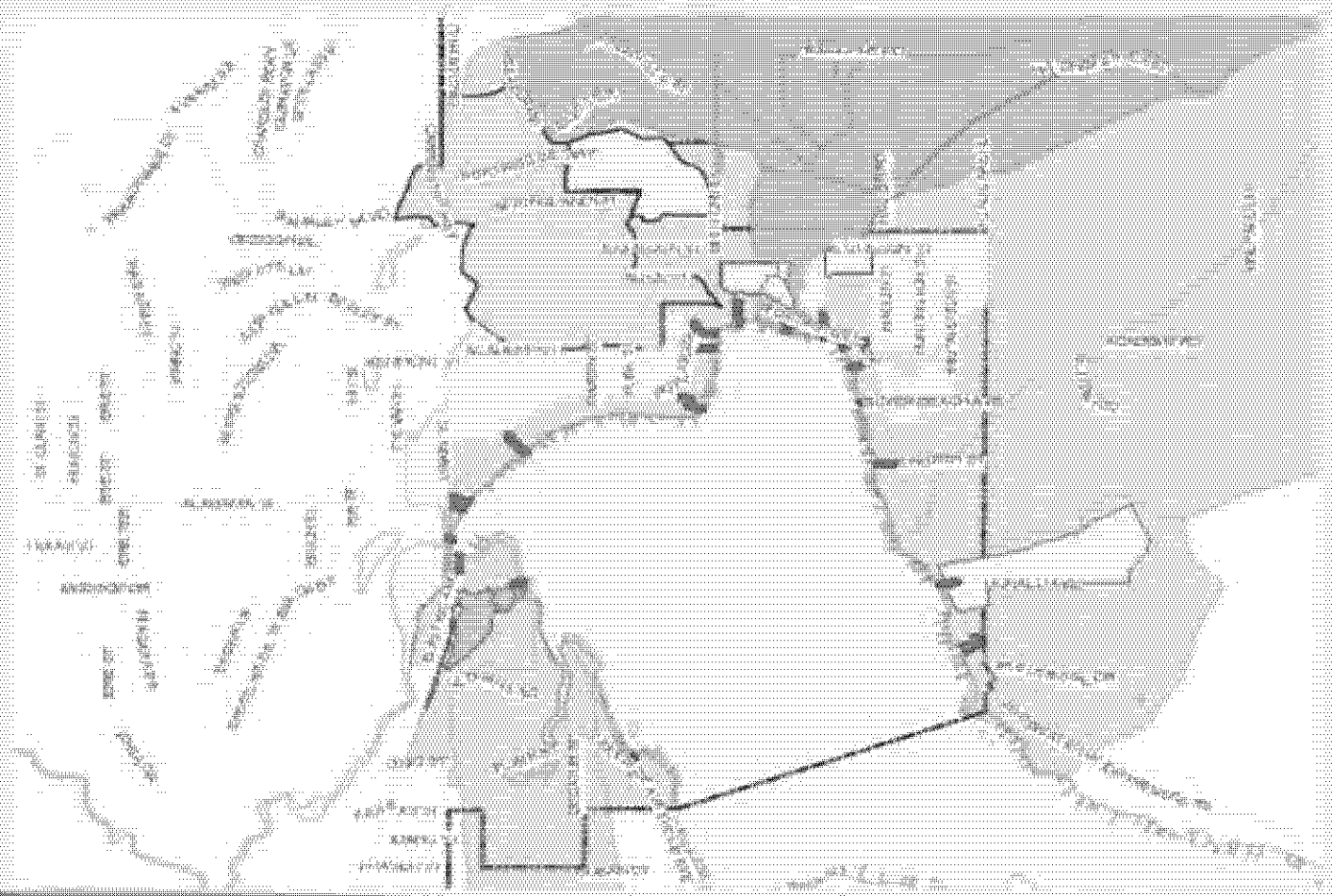


A media filtration system was installed at Northshore Dr. and Connecticut St. to treat another large section of the Watershed.

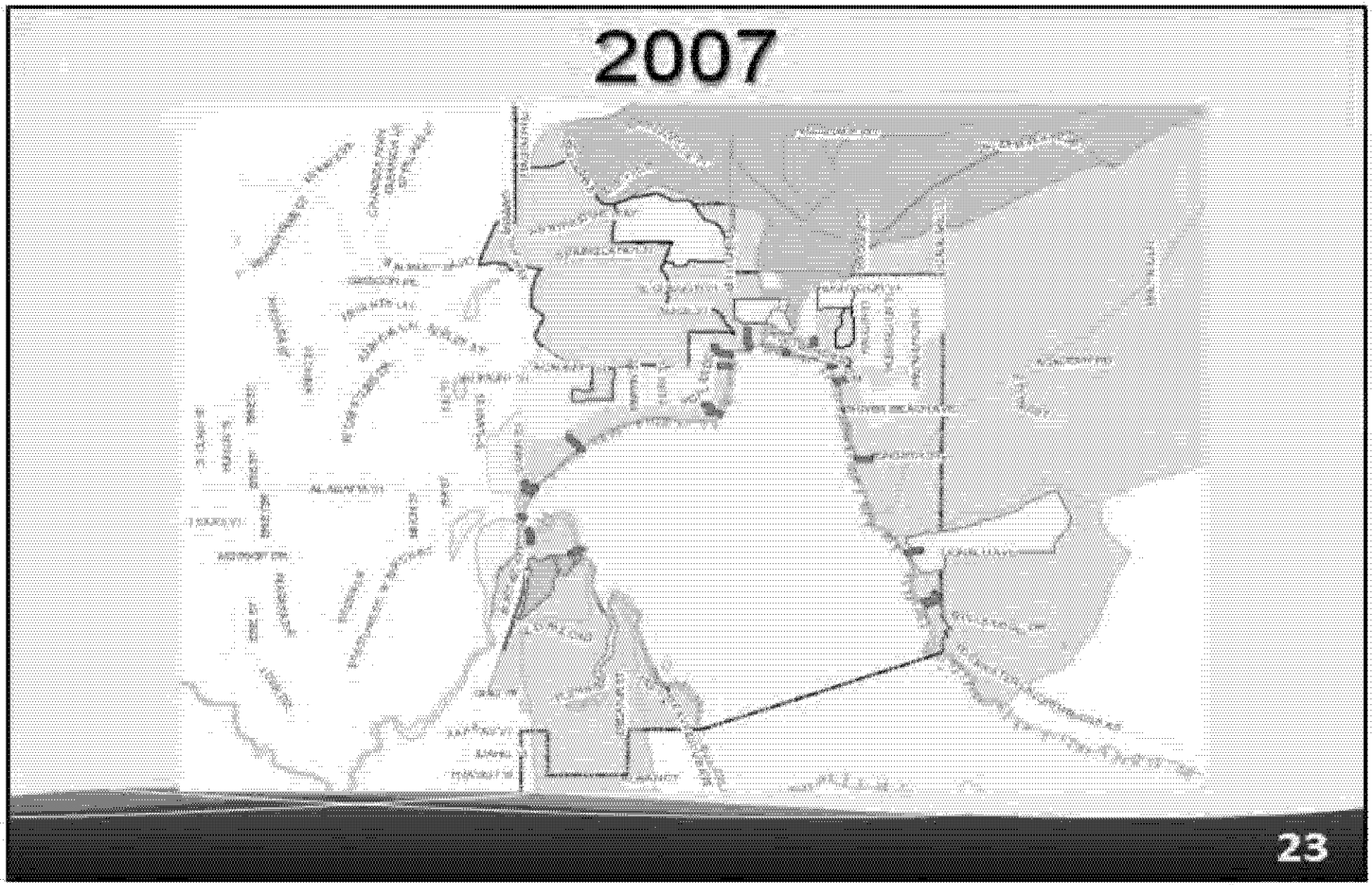


The Park Place wet pond was reconfigured to improve phosphorus removal by conversion to a sand filter. It is shown in light green which equates to over 50% of phosphorus removed. Secondly, Donald Ave. to the east and Stanley St. close to Oregon Pl. in the north were also treated.

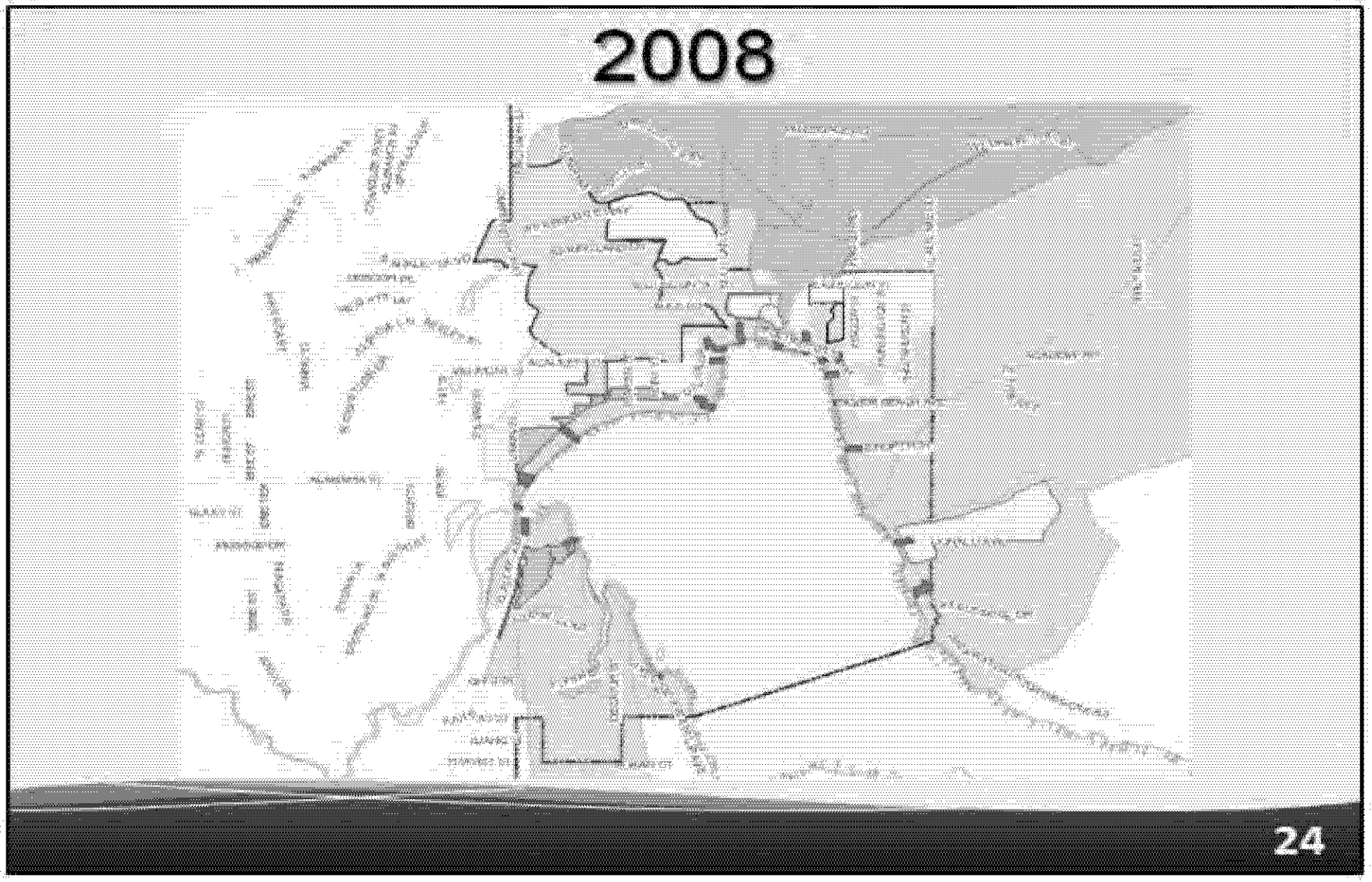
2006



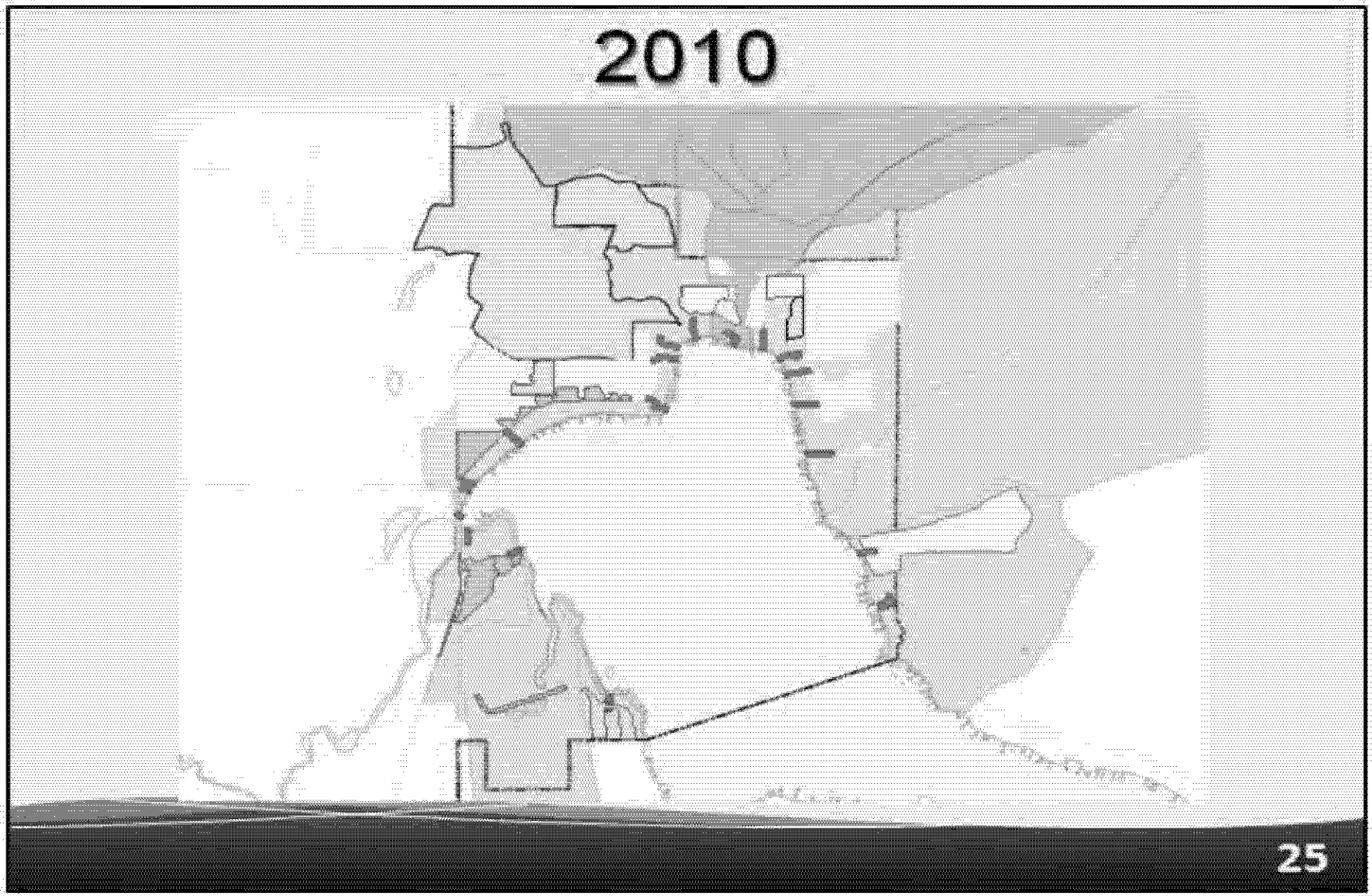
In 2006 four media systems were installed: Two on the west shore on Poplar Dr. and West Academy St.; two on the east shore on Silver Beach Ave. and East Academy St.



In light green, an alumina media vault was constructed below Silver Beach School and a new treatment system at Hayward Court is being tested.

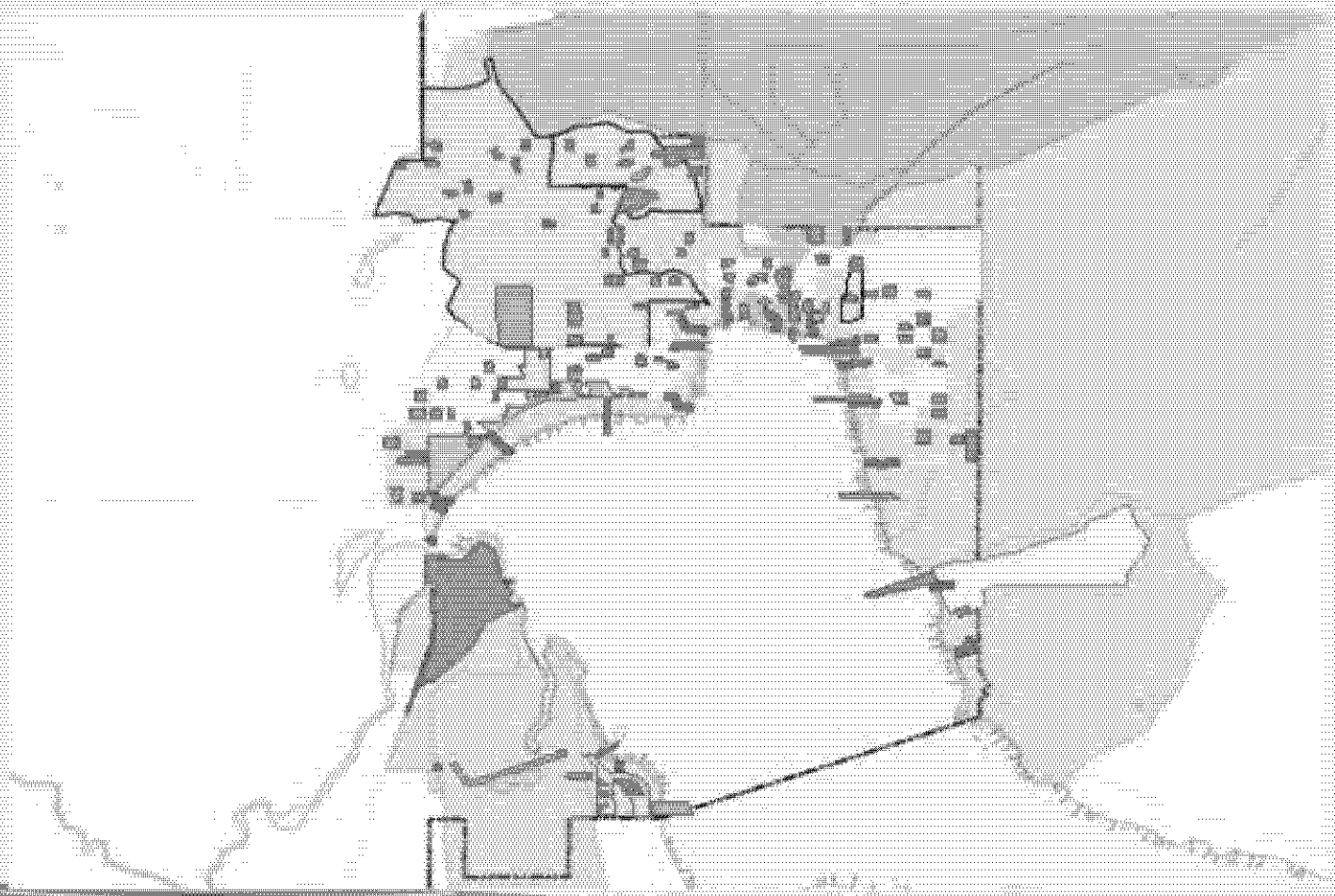


Along Northshore Dr. the dark green area represents the Northshore sand filter/infiltration system. This was constructed utilizing pervious pavement with treatment and infiltration below the street.



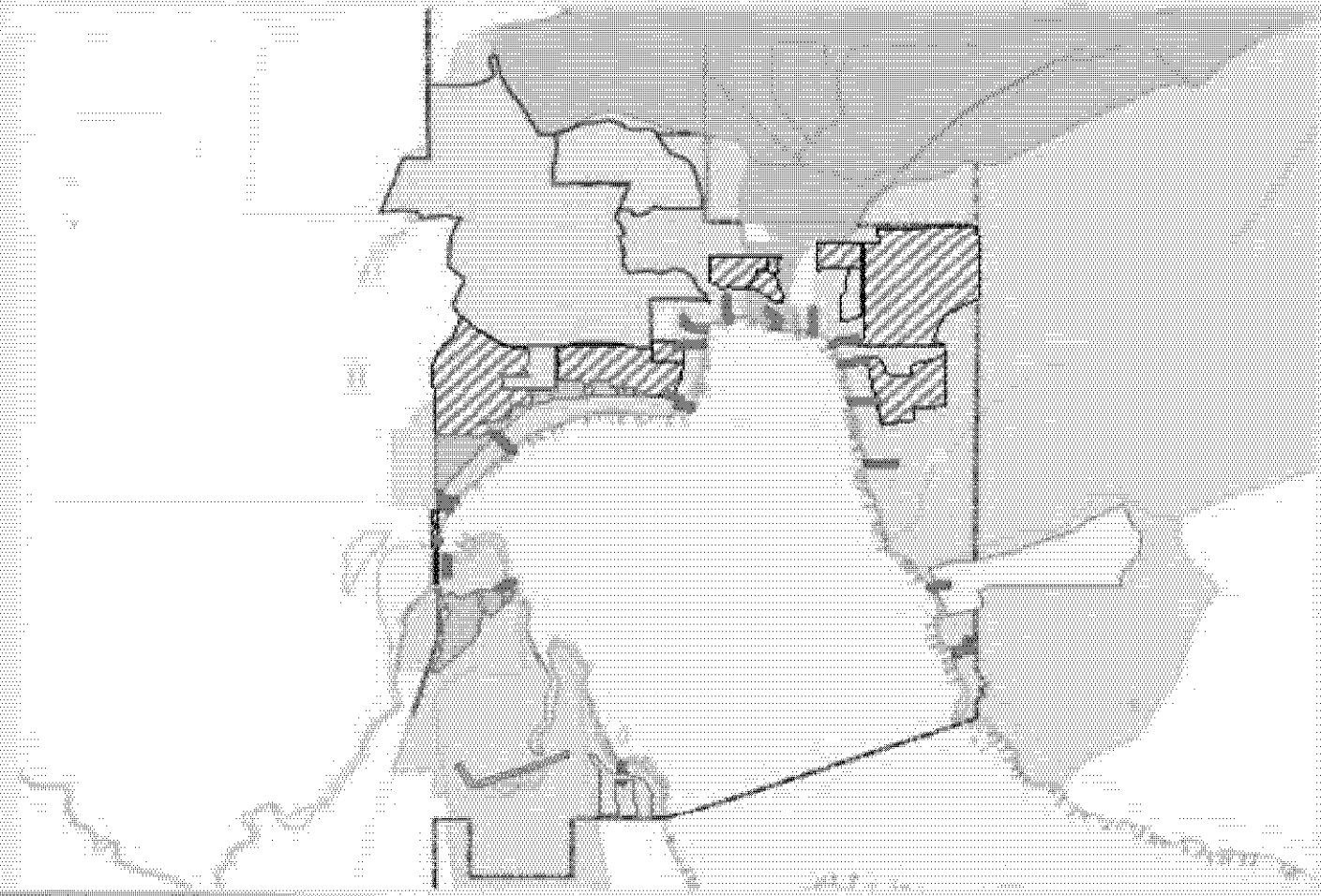
Four projects were completed, including the Flynn Street reforestation, Lakeview enhanced media system, and modification of the Britton Barkley pond to a rock plant filter. The fourth is the full scale testing of Imbriums system media in the Alabama vault. This media has shown 50-75% of dissolved phosphorus removal in preliminary tests.

2010 Plus



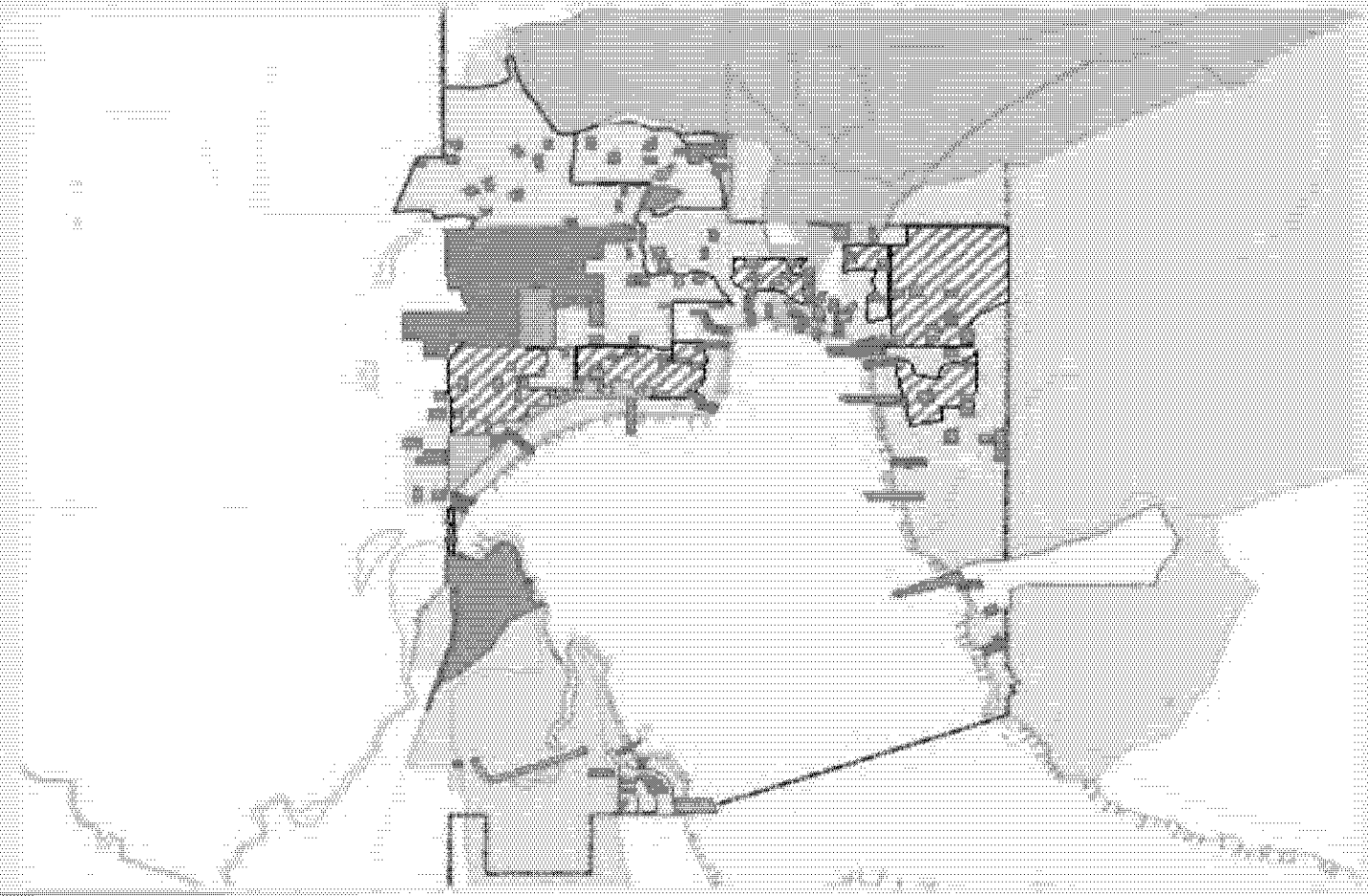
This map shows the capital facility systems as well as the private systems that have been installed in the City portion of the Watershed to date.

2012 Facility Improvements



This map shows expected area of treatment by capital facilities in 2012. The striped areas indicate where additional media filtration systems will be converted to new improved media that targets the removal of phosphorus from water.

2012 Plus



This slide shows proposed 2012 capital improvements along with existing private residential systems. Untreated areas remaining need to be targeted through a private grants program. Two large multifamily developments, Mill Wheel Mobile Home Park and Mill Wheel Village will still require treatment of stormwater.

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