

Cottonwood Creek and Vine Creek Stormwater

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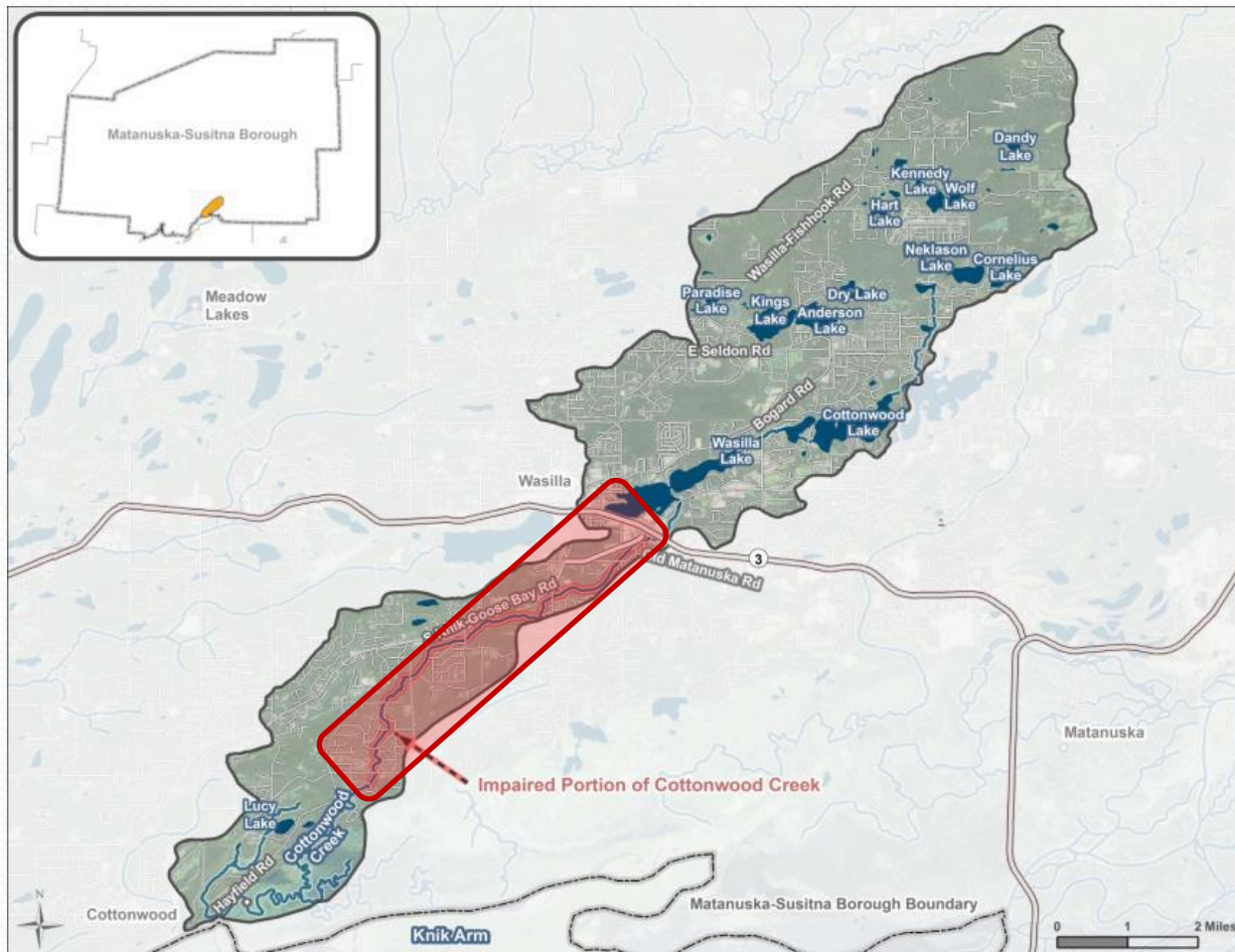
Cottonwood Creek Orientation



- 13 miles of stream
- Groundwater fed
- Flows through several lakes
- Wetland areas
- Supports coho & sockeye salmon; other native fish, & waterfowl
- More densely developed area of greater Wasilla
- Recreation uses
- Receiving water stormwater discharge



Cottonwood Creek Bacteria



- Water quality monitoring
- Listed impaired 2010 (7 miles)
- Fecal coliform bacteria
- Microbial source tracking – bacteria speciation through DNA markers
- Horse, waterfowl, dogs, human
- Bacteria increased during times of stormwater runoff.



Cottonwood Creek Stormwater

- Stormwater quality sampling in 2011-2012.
- Increased levels typical urban pollutants of sediment, specific conductivity, copper, lead and zinc during periods of stormwater runoff.



Legend

-  Cottonwood Creek Watershed Boundary
-  City of Wasilla
-  NHD Flowline
-  NHD Waterbody
- Cottonwood Creek Basins**
-  Outside Area of Field Investigation
-  Mapped

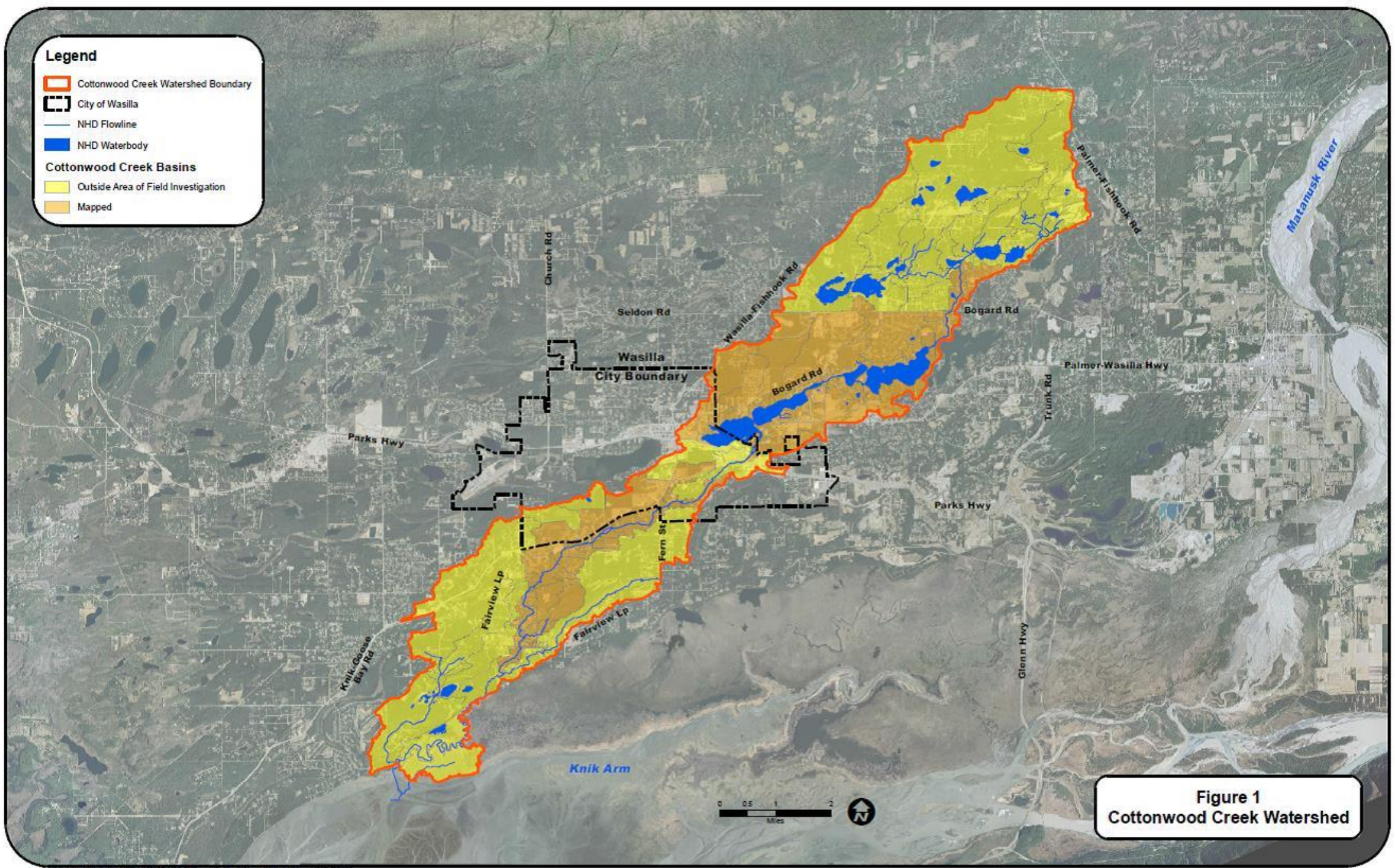



















Figure 1
Cottonwood Creek Watershed

Stormwater Analysis Scope

- Use GIS data and field investigations to develop mapping of stormwater discharge areas along creek – used 2011 LiDAR, NHDPlus, impervious surface area data
- Develop Map of the stormwater system including sub-basins, creek inflow points, stormwater structures (catch basins, culverts, etc.)
- Look for evidence of potential fecal coliform inflow
- Estimate flow volumes at inflow points
- Identify inadequate storm drain collection and treatment systems

Legend

- | | |
|---|---|
|  Cottonwood Creek Watershed Boundary (TNC) |  Catchment Type: Sink |
|  City of Wasilla |  Catchment Type: Outfall |
|  NHD Flowline (TNC) |  Catchment Type: Dispersed |
|  NHD Waterbody (TNC) |  Catchment Type: Connected |
|  Mapped Constructed Ditch |  Outside Area of Field Investigation |
|  Mapped Culvert | ADF & G Fish Passage |
|  Mapped Outfall |  Green |
|  Mapped Field Inlet |  Gray |
|  Mapped Curb Inlet |  Red |

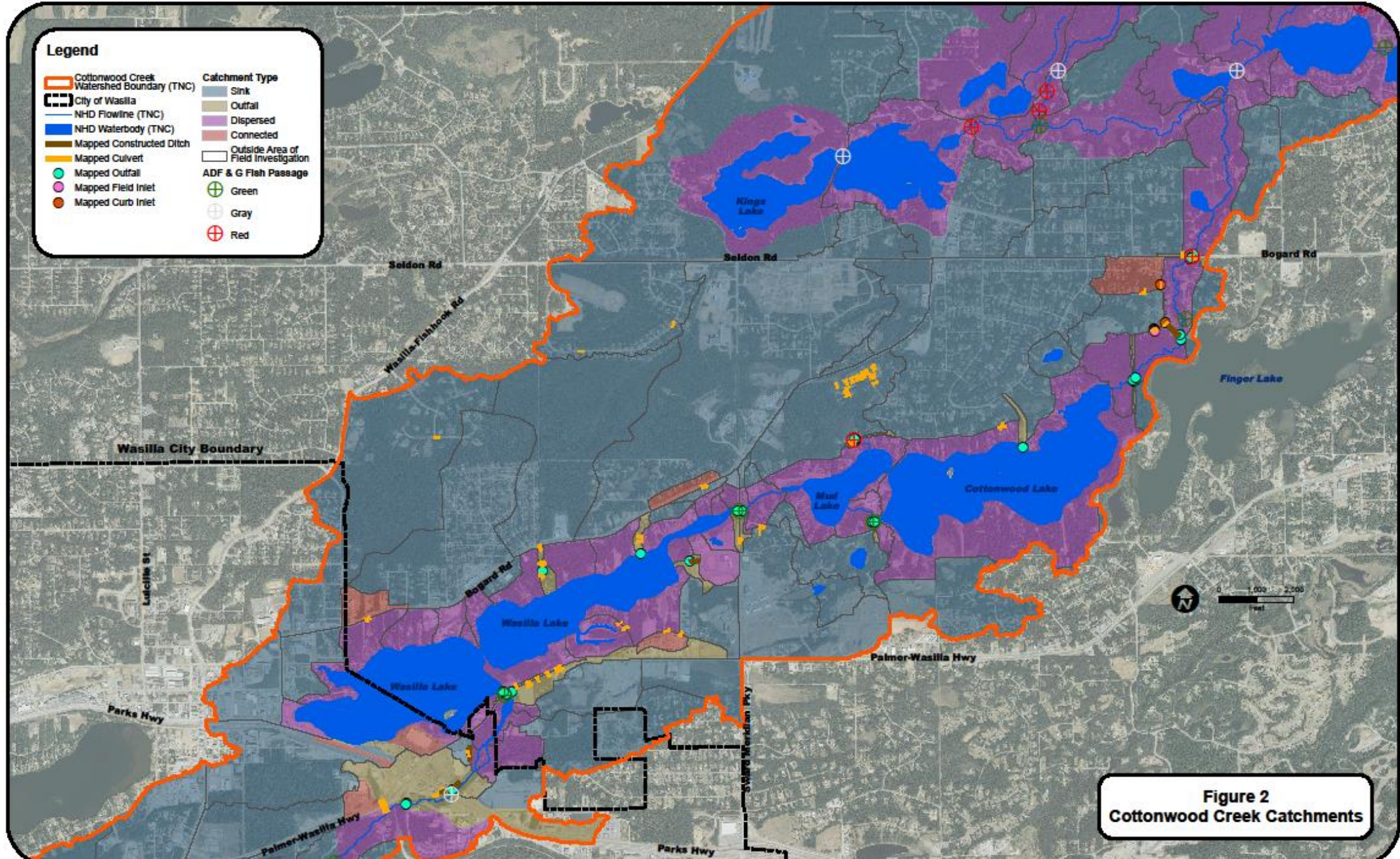
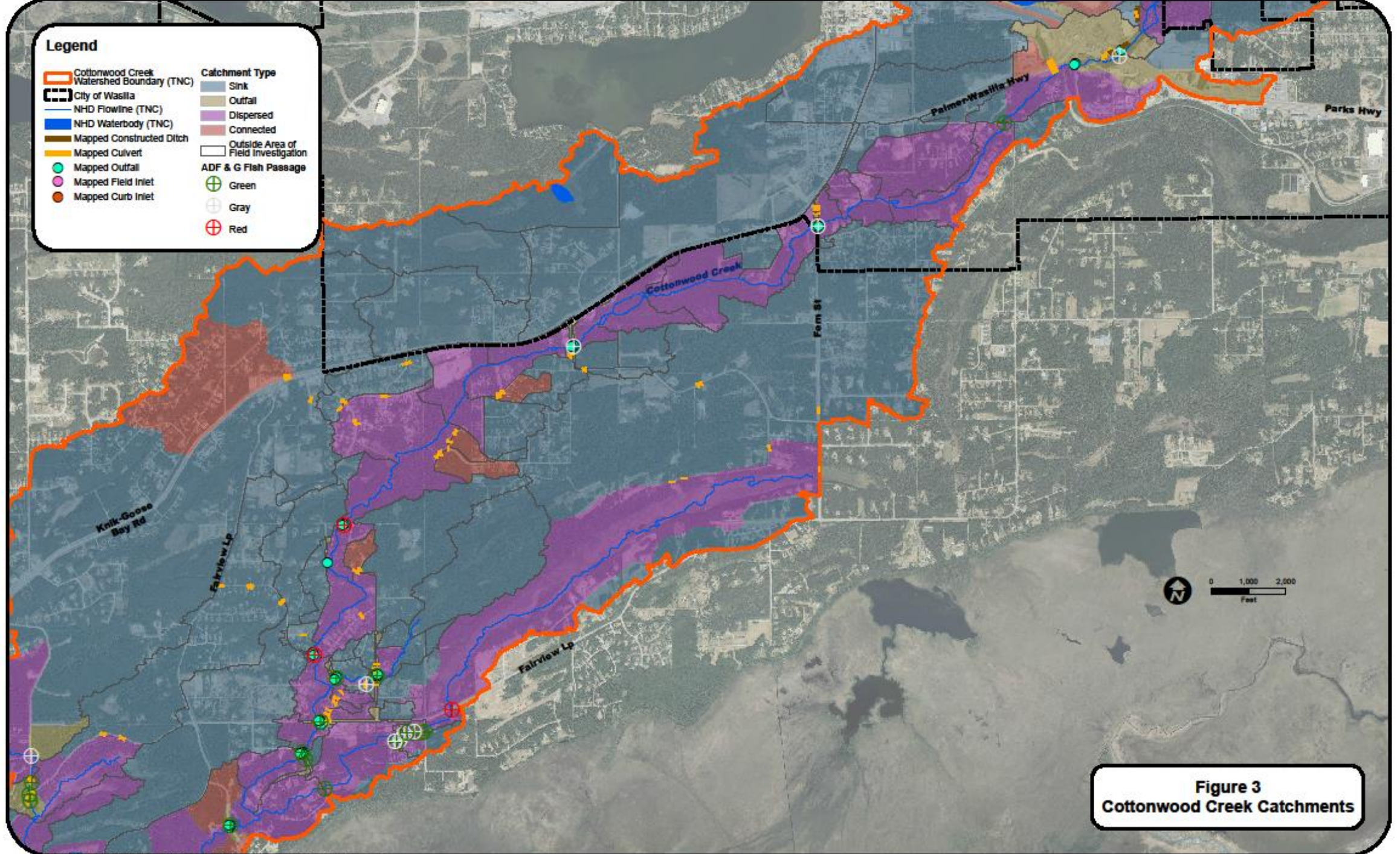


Figure 2
Cottonwood Creek Catchments



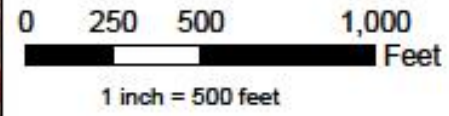
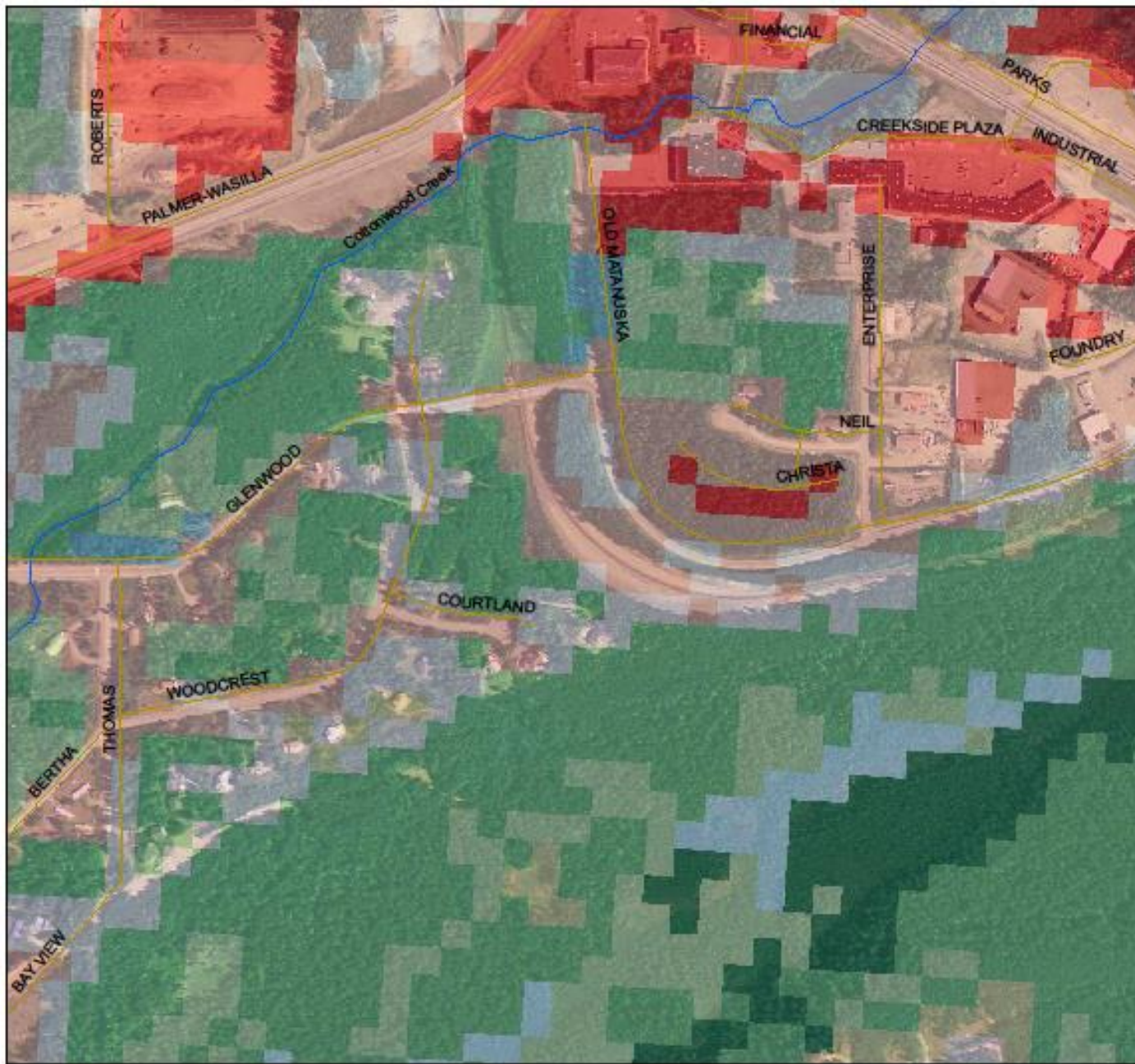
Legend

Cottonwood Creek Watershed Boundary (TNC)	Sink
City of Wasilla	Outfall
NHD Flowline (TNC)	Dispersed
NHD Waterbody (TNC)	Connected
Mapped Constructed Ditch	Outside Area of Field Investigation
Mapped Culvert	ADF & G Fish Passage
Mapped Outfall	Green
Mapped Field Inlet	Gray
Mapped Curb Inlet	Red

Figure 3
Cottonwood Creek Catchments

Photos





Legend

- rds
- scn_arc

Cottonwood Ck - 2011 land cover data

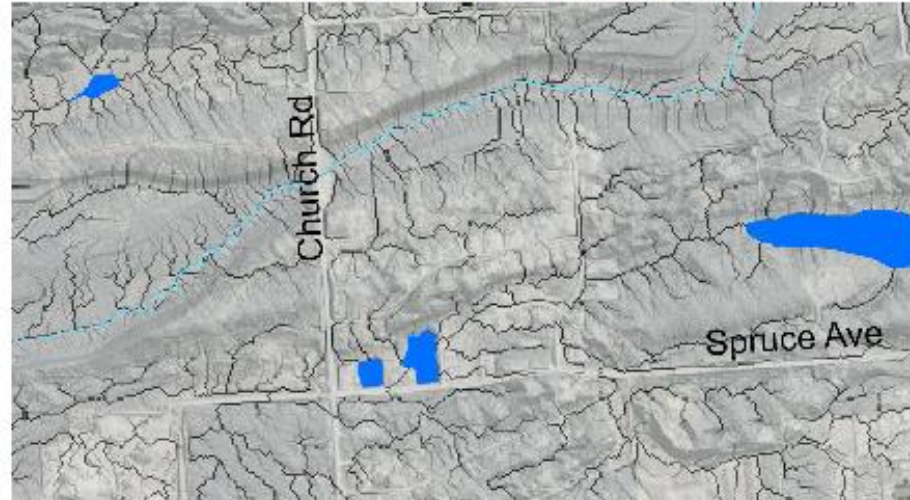
Vine Creek Background

- Not an officially recognized waterbody, however, provides a natural drainage for a large area north and west of Wasilla from Memory Lake to Lucille Creek near Vine Road
- No fish present, not a water of the U.S.
- Past issues with flooding and development within the drainage way have led to operational and capital costs

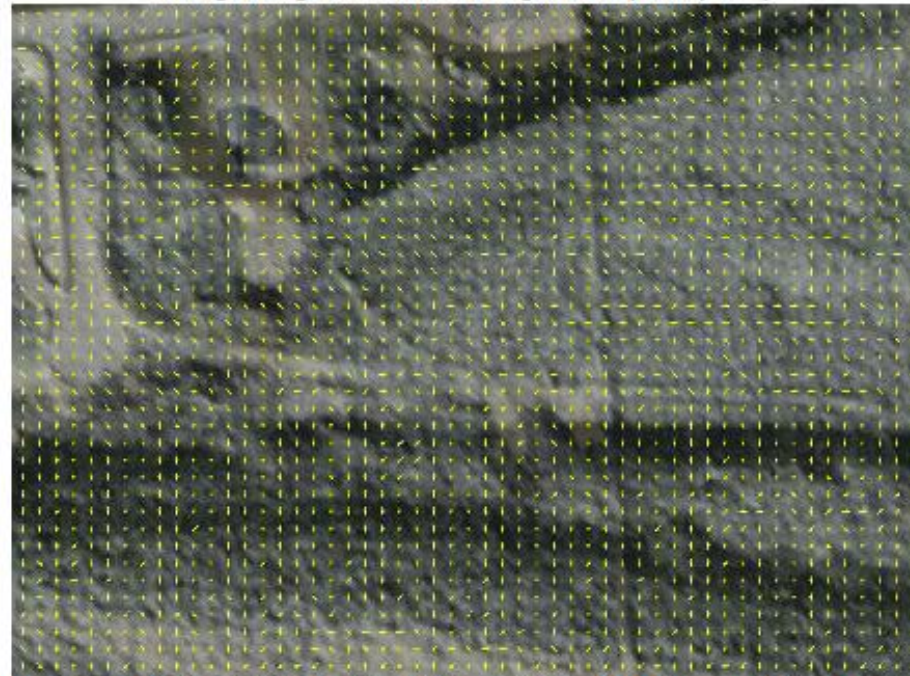
Vine Creek Scope of Work

- Use GIS data and field investigations to develop mapping of stormwater discharge areas along creek – used 2011 LiDAR, NHDPlus
- Develop Map of the stormwater system including sub-basins, creek inflow points, stormwater structures (catch basins, culverts, etc.)
- Estimate flow volumes at inflow points
- Identify inadequate storm drain collection and treatment systems

Examples of constituent data sets: Flow accumulation and flow direction



Flow Accumulation: Each 5-meter grid cell is populated with the total area (in square meters) which drains into that cell. Cells with high drainage areas tend to be drainage channels (in black, above).



Flow Direction: Each 5-meter grid cell is populated with the cardinal direction surface water will flow out of that cell.

