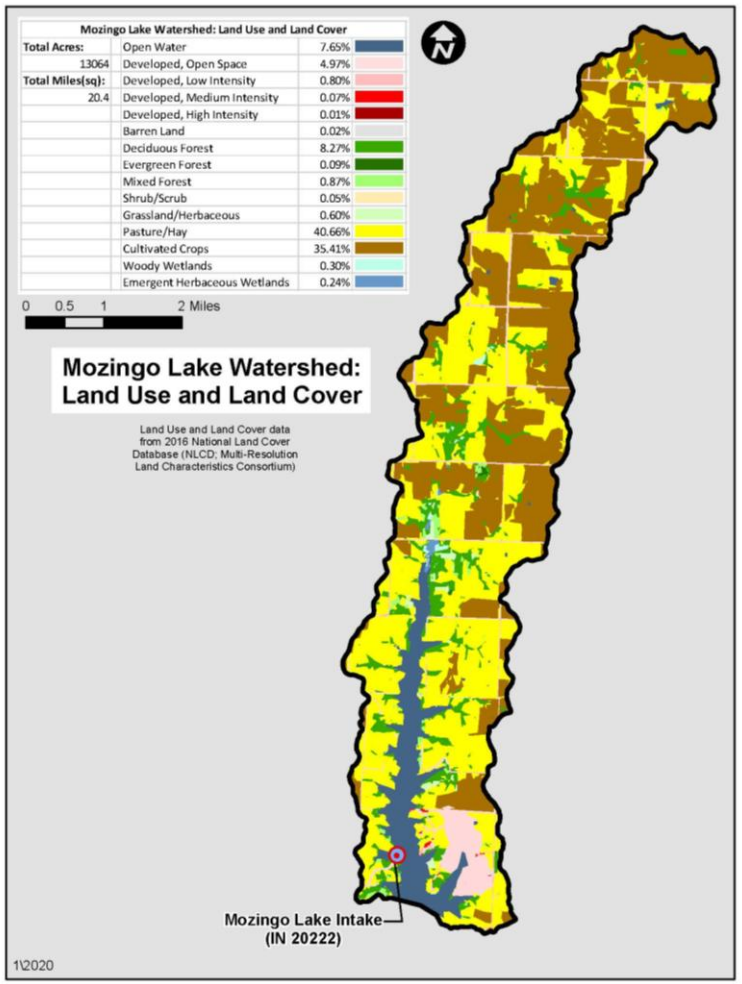
MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Algae Blooms in Mozingo Lake

Jeremy Redden
Missouri Department of Natural Resources
Soil and Water Conservation Program

Mozingo Lake Watershed

- Nodaway County
- Only drinking water supply for Nodaway County (approx. 30,000 users)
- 13,064 acre watershed
- City of Maryville owns around 3,000 acres including the 1,006 acres of water
- 2,000 acres of developed or forested
- Leaves a remainder of about 8,000 acres of agricultural land
    - 35.4% cultivated crops
    - 40.6% pasture/hayland



MISSOURI DEPARTMENT OF NATURAL RESOURCES

Water Quality Concerns

- In January 2020 the lake had elevated levels of cyanobacteria (blue-green algae) showing up in the raw water tests, high enough to trigger warning signs at the lake to limit use
- Even during the highest cyanobacteria levels, the water was safe to consume after treatment from the local water treatment plant
- The blue-green algae feed on nutrients that wash into the lake from agricultural land
- The program has worked with many partners including NRCS, USGS, Northwest Missouri State University, City of Maryville, Nodaway County Commission, Missouri Department of Conservation, Missouri Rural Water Association, and Nodaway County Soil and Water Conservation District, and the City of Maryville
- Currently, the cyanobacteria levels are manageable

State and Federal Cost Share Assistance

- The Soil and Water Districts Commission allocated $200,000 to the Nodaway County SWCD to develop a special Mozingo Lake Watershed Fund to provide cost share assistance aimed at reducing harmful algal blooms in the lake by placing conservation practices on agricultural land within the watershed
- The district has set aside an additional $100,000 in regular cost share funds for the Mozingo Watershed
- NRCS has obligated roughly $450,000 in EQIP funds and paid out $53,000 to landowners

Cooperator Meetings

- DNR-SWCP, NRCS, Rural Water Association, and the Nodaway County SWCD have put on four informational meetings for cooperators within the watershed to discuss the issues within the lake which are caused by excess nitrogen, phosphorus, and sediment in the lake that potentially could have originated from their farms
- The discussion included an overview of water quality issues, demos (NRCS rainfall simulator), and state/federal cost share opportunities
- There are less than 120 total potential cooperators in the watershed
- There are 26 cooperators that have attended the informational meetings which would account for a large percentage of the acres within the watershed

State of Missouri Cost Share Assistance

- Nodaway SWCD has made 34 cost share practices available to the cooperators within the watershed
- As of September 2021 the Nodaway County SWCD has obligated $69,398 for practices in the watershed with $49,248 already paid out
- With $14,704 going to cover crops and $34,544 paid to for structural practices
- The district has met with many landowners and has an additional $110,777 in cost share planned

Available Conservation Practices

- Cropland
  - Cover Crop
  - Nutrient Management
  - Filter Strips
  - Field Borders
  - Terraces – modified outlets
  - Waterway
  - Seeding
- Pasture
  - Livestock Exclusion
  - Grade Stabilization Structure
  - Prescribed Grazing

Monitoring Project with USGS

- Missouri Department of Natural Resources has entered into a $372,300 monitoring project with USGS
- Monitoring equipment will be installed in the Mozingo Creek to monitor of the influx of nutrients and sediments into the lake from the watershed
- Mozingo Creek accounts for 50% of the watershed
- Continuous monitoring will be used to characterize the timing and magnitude of nutrient and sediment concentrations and loads by measuring turbidity, temperature, specific conductance, dissolved oxygen, nitrates, phosphorus, and suspended sediments.

Future Plans

- Meet with the remaining cooperators that are signed up for conservation practices
- Have additional informational meetings
- Obligate the remainder of the Mozingo Lake Watershed fund in FY 22
- Waiting on approval from National Headquarters for an $1 million dollar MRBI project
- Potential EPA 319 grant through the Missouri Department of Natural Resources to increase monitoring within the lake