|  |  |
| --- | --- |
| **Shawnee Twin No. 1**  |  |
| **Sample Period**  | **Times** **Visited**  | **Sampling Sites**  |
| November 2018 – September 2019  | 4  | 4  |
|  |  |
| **General** | Location  | Pottawatomie County  |
| Impoundment  | 1935  |
| Area  | 1,336 acres  |
| Capacity  | 22,600 acre-feet  |
| Purposes  | Water Supply, Recreation  |
| **Parameters**  |  | **Parameter** [(*Descriptions*)](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/SOPs_for_streams/WaterQualityParameterDefinitions.pdf) | **Result**  | **Notes/Comments**  |
| **In****-****Situ** | Average Turbidity  | 12 NTU  | 100% of values < OWQS of 25 NTU  |
| Average Secchi Disk Depth  | 74.2 cm  |  |
| Water Clarity Rating  | Good  |  |
| Chlorophyll-a  | 8.93 mg/m3  |  |
| Trophic State Index  | 52  | Previous Value = 47  |
| Trophic Class  | Eutrophic  |  |
|  |
| **Profile** | Salinity  | 0.09 – 0.13 ppt  |  |
| Specific Conductivity  | 195.2 – 277.1 µS/cm  |  |
| pH  | 7.10 – 8.27 pH units  | Neutral to slightly alkaline  |
| Oxidation-Reduction Potential  | 45.1 to 468.0 mV  |  |
| Dissolved Oxygen  | Up to 30% of water column < 2 mg/L in September  |  |
|  |
| **Nutrients** | Surface Total Nitrogen  | 0.375 mg/L to 0.765 mg/L  |  |
| Surface Total Phosphorus  | 0.012 mg/L to 0.026 mg/L  |  |
| Nitrogen to Phosphorus Ratio  | 31:1  | Phosphorus limited  |
|  |
| **Beneficial Uses** |  | [*Click to learn more about Beneficial Uses*http://www.owrb.ok.gov/quality/monitoring/bump/pdf\_bump/BENEFICIAL\_USES-COMPREHENSIVE.pdf](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/BENEFICIAL_USES-COMPREHENSIVE.pdf)  | Turbidity  | pH  | Dissolved Oxygen  | Metals  | TSI  | True Color  | Sulfates  | Chlorides  |  Total Dissolved Solids  | Enterro. & E. coli  | Chlor-a  |
| Fish & Wildlife Propagation  | NS  | S  | NEI  | S  |  |  |  |  |  |  |  |
| Aesthetics  |  |  |  |  | S  | \*  |  |  |  |  |  |
| Agriculture  |  |  |  |  |  |  | S  | S  | S  |  |  |
| Primary Body Contact Recreation  |  |  |  |  |  |  |  |  |  | S  |  |
| Public & Private Water Supply  |  |  |  |  |  |  |  |  |  |  |  |
| *S = Fully Supporting* *NS = Not Supporting* *NEI = Not Enough Information*  | **Notes**  | \*Standards revision, true color is for permitting purposes only |
| *NTU = nephelometric turbidity units OWQS = Oklahoma Water Quality Standards mg/L = milligrams per liter ppt = parts per thousand µS/cm = microsiemens per centimeter mV = millivolts µS/cm = microsiemens/cm En = Enterococci E. coli = Escherichia coli Chlor-a = Chlorophyll-a*  |

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Bathy map available[: http://www.owrb.ok.gov/maps/PMG/owrbdata\_Bathy.html](http://www.owrb.ok.gov/maps/PMG/owrbdata_Bathy.html)

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| --- | --- |
| **Stanley Draper**  |  |
| **Sample Period**  | **Times** **Visited**  | **Sampling Sites**  |
| October 2015 – August 2016  | 4  | 5  |
|  |  |
| **General** | Location  | Cleveland County  |
| Impoundment  | 1962  |
| Area  | 2,900 acres  |
| Capacity  | 100,000 acre-feet  |
| Purposes  | Water Supply, Recreation  |
| **Parameters**  |  | **Parameter** [(*Descriptions*)](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/SOPs_for_streams/WaterQualityParameterDefinitions.pdf) | **Result**  | **Notes/Comments**  |
| **In Situ** | Average Turbidity  | 8 NTU  | 100% of values < OWQS of 25 NTU  |
| Average Secchi Disk Depth  | 104 cm  |  |
| Water Clarity Rating  | Excellent  |  |
| Chlorophyll-a  | 2.7 mg/m3  |  |
| Trophic State Index  | 40  | Previous value = 36  |
| Trophic Class  | Oligotrophic  |  |
|  |
| **Profile** | Salinity  | 0.05 – 0.06 ppt  |  |
| Specific Conductivity  | 108.7 – 132.7 µS/cm  |  |
| pH  | 6.81 – 8.34 pH units  |  |
| Oxidation-Reduction Potential  | 176.1 – 463.7 mV  |  |
| Dissolved Oxygen  | Up to 62% of water column < 2 mg/L in August  |  |
|  |
| **Nutrients** | Surface Total Nitrogen  | 0.26 mg/L to 0.55 mg/L  |  |
| Surface Total Phosphorus  | 0.010 mg/L to 0.015 mg/L  |  |
| Nitrogen to Phosphorus Ratio  | 31:1  | Phosphorus limited  |
|  |
| **Beneficial Uses** |  | [*Click to learn more about Beneficial Uses*http://www.owrb.ok.gov/quality/monitoring/bump/pdf\_bump/BENEFICIAL\_USES-COMPREHENSIVE.pdf](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/BENEFICIAL_USES-COMPREHENSIVE.pdf)  | Turbidity  | pH  | Dissolved Oxygen  | Metals  | TSI  | True Color  | Sulfates  | Chlorides  |  Total Dissolved Solids  | Enterro. & E. coli  | Chlor-a  |
| Fish & Wildlife Propagation  | NS  | S  | S  | S  |  |  |  |  |  |  |  |
| Aesthetics  |  |  |  |  | S  | \*  |  |  |  |  |  |
| Agriculture  |  |  |  |  |  |  | S  | S  | S  |  |  |
| Primary Body Contact Recreation  |  |  |  |  |  |  |  |  |  | S  |  |
| Public & Private Water Supply  |  |  |  |  |  |  |  |  |  |  |  |
| *S = Fully Supporting* *NS = Not Supporting* *NEI = Not Enough Information*  | **Notes**  | \*Standards revision, true color is for permitting purposes only |
| *NTU = nephelometric turbidity units OWQS = Oklahoma Water Quality Standards mg/L = milligrams per liter ppt = parts per thousand µS/cm = microsiemens per centimeter mV = millivolts µS/cm = microsiemens/cm En = Enterococci E. coli = Escherichia coli Chlor-a = Chlorophyll-a*  |

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| **Tecumseh**  |  |
| **Sample Period**  | **Times** **Visited**  | **Sampling Sites**  |
| October 2007 – July 2008  | 4  | 5  |
|  |  |
| **General** | Location  | Pottawatomie County  |
| Impoundment  | 1934  |
| Area  | 127 acres  |
| Capacity  | 1,118 acre feet  |
| Purposes  | Waters Supply, and Recreation  |
| **Parameters**  |  | **Parameter** [(*Descriptions*)](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/SOPs_for_streams/WaterQualityParameterDefinitions.pdf) | **Result**  | **Notes/Comments**  |
| **In Situ** | Average Turbidity  | 132 NTU  | All values > 25 NTU  |
| Average Secchi Disk Depth | 11 cm  | All values > OWQS of 70  |
| Water Clarity Rating  | poor |  |
| Chlorophyll-a  | 6.52 mg/m3  |  |
| Trophic State Index  | 49  | Previous value = 57  |
| Trophic Class  | mesotrophic  |  |
|  |
| **Profile** | Salinity  | 0.00 – 0.10 ppt  |  |
| Specific Conductivity  | 105.6 – 141 µS/cm  |  |
| pH  | 7.08 – 7.60 pH units  | Neutral  |
| Oxidation-Reduction Potential  | 337 to 537 mV  |  |
| Dissolved Oxygen  |  | D.O. always > 5.0 mg/L |
|  |
| **Nutrients** | Surface Total Nitrogen  | 1.01 mg/L to 1.55 mg/L  |  |
| Surface Total Phosphorus  | 0.066 mg/L to 0.131 mg/L  |  |
| Nitrogen to Phosphorus Ratio  | 12:1  | Phosphorus limited  |
|  |
| **Beneficial Uses** |  | [*Click to learn more about Beneficial Uses*http://www.owrb.ok.gov/quality/monitoring/bump/pdf\_bump/BENEFICIAL\_USES-COMPREHENSIVE.pdf](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/BENEFICIAL_USES-COMPREHENSIVE.pdf)  | Turbidity  | pH  | Dissolved Oxygen  | Metals  | TSI  | True Color  | Sulfates  | Chlorides  |  Total Dissolved Solids  | Enterro. & E. coli  | Chlor-a  |
| Fish & Wildlife Propagation  | NS  | S  | S  | S  |  |  |  |  |  |  |  |
| Aesthetics  |  |  |  |  | S  | \*  |  |  |  |  |  |
| Agriculture  |  |  |  |  |  |  | S  | S  | S  |  |  |
| Primary Body Contact Recreation  |  |  |  |  |  |  |  |  |  | S  |  |
| Public & Private Water Supply  |  |  |  |  |  |  |  |  |  |  |  |
| *S = Fully Supporting* *NS = Not Supporting* *NEI = Not Enough Information*  | **Notes**  | \*Standards revision, true color is for permitting purposes only |
| *NTU = nephelometric turbidity units OWQS = Oklahoma Water Quality Standards mg/L = milligrams per liter ppt = parts per thousand µS/cm = microsiemens per centimeter mV = millivolts µS/cm = microsiemens/cm En = Enterococci E. coli = Escherichia coli Chlor-a = Chlorophyll-a*  |

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Modified for "Clear as Phytoplankton: A Tale of Two Lakes." Calculated Chlorophyll-a from Trophic State Index and formula from report's parameter descriptions. Replaced "True Color value."

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| **Thunderbird**  |  |
| **Sample Period**  | **Times** **Visited**  | **Sampling Sites**  |
| October 2014 – July 2015  | 4  | 7  |
|  |  |
| **General** | Location  | Cleveland County  |
| Impoundment  | 1965  |
| Area  | 6,070 acres  |
| Capacity  | 119,600 acre-feet  |
| Purposes  | Flood Control, Water Supply, Recreation, Fish & Wildlife  |
| **Parameters**  |  | **Parameter** [(*Descriptions*)](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/SOPs_for_streams/WaterQualityParameterDefinitions.pdf) | **Result**  | **Notes/Comments**  |
| **In Situ** | Average Turbidity  | 14 NTU  | 4% of values > OWQS of 25 NTU  |
| Average Secchi Disk Depth  | 59 cm  |  |
| Water Clarity Rating  | Average  |  |
| Chlorophyll-a  | 21 mg/m3  |  |
| Trophic State Index  | 61  | Previous value = 56  |
| Trophic Class  | Hypereutrophic  |  |
|  |
| **Profile** | Salinity  | 0.13 – 0.26 ppt  |  |
| Specific Conductivity  | 281.5 – 530 µS/cm  |  |
| pH  | 7.14 – 8.68 pH units  | Neutral to slightly alkaline  |
| Oxidation-Reduction Potential  | 90.2 to 454 mV  |  |
| Dissolved Oxygen  | Up to 67% of water column < 2 mg/L in July  |  Occurred at sites 1, the dam  |
|  |
| **Nutrients** | Surface Total Nitrogen  | 0.80 mg/L to 1.27 mg/L  |  |
| Surface Total Phosphorus  | 0.018 mg/L to 0.064 mg/L  |  |
| Nitrogen to Phosphorus Ratio  | 23:1  | Phosphorus limited  |
|  |
| **Beneficial Uses** |  | [*Click to learn more about Beneficial Uses*http://www.owrb.ok.gov/quality/monitoring/bump/pdf\_bump/BENEFICIAL\_USES-COMPREHENSIVE.pdf](http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/BENEFICIAL_USES-COMPREHENSIVE.pdf)  | Turbidity  | pH  | Dissolved Oxygen  | Metals  | TSI  | True Color  | Sulfates  | Chlorides  |  Total Dissolved Solids  | Enterro. & E. coli  | Chlor-a  |
| Fish & Wildlife Propagation  | NS  | S  | NS  | S  |  |  |  |  |  |  |  |
| Aesthetics  |  |  |  |  | NEI\*  | S  |  |  |  |  |  |
| Agriculture  |  |  |  |  |  |  | S  | S  | S  |  |  |
| Primary Body Contact Recreation  |  |  |  |  |  |  |  |  |  | S  |  |
| Public & Private Water Supply  |  |  |  |  |  |  |  |  |  |  | NS  |
| *S = Fully Supporting* *NS = Not Supporting* *NEI = Not Enough Information*  | **Notes**  | \*The lake is listed in the Oklahoma Water Quality Standards (WQS) as a Nutrient Limited watershed (NLW). This listing means that the lake is considered threatened from nutrients until a more intensive study can confirm the Aesthetics beneficial use non-support status. |
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