



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

## PUBLIC NOTICE

July 28, 2009

- **AVAILABILITY OF DRAFT BACTERIA TMDL FOR THE NORTH CANADIAN RIVER IN THE OKLAHOMA CITY METROPOLITAN AREA**
- **REQUEST FOR PUBLIC COMMENTS**
- **NOTICE OF INFORMATIONAL MEETING**

**Public Comment Period Ends: October 1, 2009**

The Oklahoma Department of Environmental Quality (DEQ) is seeking comments on a draft document describing reductions needed to reduce disease-causing bacteria. Reductions in these bacteria will improve water quality in the North Canadian River in the Lower North Canadian River watershed (USGS HUC 11100302). Elevated levels of bacteria in a waterbody means that the water is contaminated with human or animal feces and that there is a potential health risk for individuals exposed to the water during activities such as swimming.

The federal Clean Water Act<sup>1</sup> requires DEQ to develop plans with goals and pollution control targets for improving water quality where minimum standards are not met. This is accomplished by establishing limits known as Total Maximum Daily Loads (TMDLs) for each pollutant exceeding the standards. TMDLs set levels for pollutants that allow water bodies to achieve their beneficial uses. Beneficial uses include water for drinking, recreation, aesthetics, irrigation, fishing, and swimming.

The TMDL study in the North Canadian River watershed focused on twelve waterbodies that DEQ placed in Category 5 of the 2008 Integrated Report [303(d) list]<sup>2</sup> for nonsupport of primary body contact recreation (PBCR) (i.e. swimming). These twelve waterbodies are:

- |  |   |
|--|---|
| • North Canadian River (OK520510000110_20) | • North Canadian River (OK520520000210_00)  |
| • North Canadian River (OK520520000010_00) | • North Canadian River (OK520520000250_00)  |
| • North Canadian River (OK520520000010_10) | • Crooked Oak Creek (OK520520000150_00)     |
| • North Canadian River (OK520520000010_20) | • Mustang Creek (OK520520000240_00)         |
| • North Canadian River (OK520520000010_30) | • Crutcho Creek (OK520520000070_00)         |
| • North Canadian River (OK520520000010_40) | • Airport Heights Creek (OK520520000350_00) |

1 Section 303(d) of the Clean Water Act (CWA), Water Quality Planning and Management Regulations (40 CFR Part 130), U.S. Environmental Protection Agency, [http://edocket.access.gpo.gov/cfr\\_2008/julqtr/pdf/40cfr130.7.pdf](http://edocket.access.gpo.gov/cfr_2008/julqtr/pdf/40cfr130.7.pdf)

2 [http://www.deq.state.ok.us/wqdnew/305b\\_303d/2008\\_integrated\\_report\\_entire\\_document.pdf](http://www.deq.state.ok.us/wqdnew/305b_303d/2008_integrated_report_entire_document.pdf)



Water samples from these areas were analyzed to determine if there were pathogen violations of water quality standards. The section of the North Canadian River (Water Body ID OK520520000250\_00) that was sampled flows 6.52 miles from Lake Overholser to around SW 12<sup>th</sup> and Council. This section is impaired with fecal coliform. Around SW 12<sup>th</sup> and Council, the North Canadian River joins with Mustang Creek which is impaired with E. coli. The section of the North Canadian River (WBID OK520520000210\_00) after the two join is impaired with Enterococci. This section is 1.07 miles long and extends to around SW 15<sup>th</sup> and Rockwell.

The next impaired section of the North Canadian River (WBID OK520520000010\_40) begins around SW 14<sup>th</sup> and Meridian and flows 9.78 miles to end near NE 10<sup>th</sup> & Sunnyslane. Here the North Canadian River is impaired with both fecal coliform and Enterococci. Crooked Oak Creek (which is impaired with fecal coliform) flows into this section of the North Canadian River just east of the I-35 & I-40 interchange near the Tinker Diagonal.

The next section of the North Canadian River (WBID OK520520000010\_30) has been found to be in violation for all three of the bacteria: E. coli, fecal coliform, and Enterococci. This section begins around NE 10<sup>th</sup> & Sunnyslane and runs 4.55 miles to around NE 48<sup>th</sup> & N. Midwest Blvd where it joins with Crutch Creek (impaired with fecal coliform). The next section of the North Canadian River (WBID OK520520000010\_20) begins at this point. This section, along with the two following sections (WBIDs OK520520000010\_10 and OK520520000010\_00), is impaired with both fecal coliform and Enterococci. This section ends around Luther Rd and Highway 62.

The final section of the North Canadian River in this TMDL study (WBID OK520510000110\_20) runs from Luther Rd and Highway 62 to around Highway 177 north of Hardesty Road in Shawnee. This section is impaired with Enterococci. (See the following table.) The review of monitoring data for Airport Heights Creek (WBID OK520510000350\_00) revealed that it is not impaired for bacteria.

**Waterbodies Requiring TMDLs for Not Supporting Primary Body Contact Recreation Use as the Result of Re-assessment**

WQM Station	Waterbody ID	Waterbody Name	Indicator Bacteria		
			FC	E. coli	ENT
NC-08	OK520510000110_20	N. Canadian River			X
520510000110-001AT	OK520520000010_00	N. Canadian River	X		X
NC-07	OK520520000010_10	N. Canadian River	X		X
NC-06	OK520520000010_20	N. Canadian River	X		X
NC-05	OK520520000010_30	N. Canadian River	X	X	X
NC-04	OK520520000010_40	N. Canadian River	X		X
NC-03	OK520520000210_00	N. Canadian River			X
USGS07241000	OK520520000250_00	N. Canadian River	X		
OK520520-00-0070G OK520520-00-0070B	OK520520000070_00	Crutch Creek	X		
OK520520-00-0150G	OK520520000150_00	Crooked Oak Creek	X		
WCNCW654 & OK520520-00-0240G	OK520520000240_00	Mustang Creek		X	
WCNCW425	OK520520000350_00	Airport Heights Creek			

ENT = enterococci; FC = fecal coliform

## **Report:**

A TMDL document uses scientific data collection and analysis to determine the amount and source of each pollutant entering the system, and allocates pollutant loads to each source at levels that would ultimately restore water quality to meet clean water standards. A TMDL is the amount of each pollutant a waterway can receive and not violate water quality standards. A TMDL takes into account the pollution from all sources.

An important part of TMDL analysis is the identification of individual sources of pollutants in the watershed that affect pathogen loading and the amount of loading contributed by each of these sources. Under the Clean Water Act, sources are classified as either point or nonpoint sources. The National Pollutant Discharge Elimination System (NPDES) program regulates point source discharges. A point source is described as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Nonpoint source pollution (NPS) has such widespread sources that they cannot be identified as entering a waterbody at a single location.

### **Point Sources**

Point source discharges can be described by three broad subcategories: 1) NPDES regulated municipal and industrial wastewater treatment facilities (WWTF); 2) NPDES regulated industrial and municipal storm water discharges; and 3) NPDES regulated Concentrated Animal Feeding Operations (CAFOs). A TMDL must provide Waste Load Allocations (WLAs) for all NPDES regulated point sources. For the purposes of this TMDL, all sources of pollutant loading not regulated by NPDES permits are considered nonpoint sources. The TMDL must provide a Load Allocation (LA) for these sources.



- 1) NPDES regulated municipal and industrial wastewater treatment facilities:** Most municipal and industrial wastewater treatment facilities that could be point sources of bacteria already have permit limits equal to the water quality standard and do not contribute to the impairment. There are 59 permitted NPDES facilities in the North Canadian River study area, however only 12 of these actively discharge bacterial-containing sewage.<sup>5</sup>

**2) NPDES regulated industrial and municipal storm water discharges:** Polluted stormwater runoff is commonly transported through Municipal Separate Storm Sewer Systems (MS4s), from which it is often discharged untreated into local waterbodies. To prevent harmful pollutants from being washed or dumped into an MS4, cities and towns must obtain a NPDES permit and develop a stormwater management program. There are 10 MS4 entities in the North Canadian River study area.<sup>6</sup>

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<sup>5</sup> City of Spencer, Del City Municipal Services Authority, City of Midwest City, City of OKC - Dunjee Park, McCloud Public Works Authority, Town of Jones Public Works Authority, Town of Valley Brook, City of OKC – North Canadian, Choctaw Utilities Authority, Harrah Public Works Authority, Holliday Outt Mobile Home Park (MHP), and Lakeview Terrace MHP

<sup>6</sup> City of Oklahoma, Del City, Mustang, Yukon, Choctaw, Nicoma Park, Spencer, Midwest City, Oklahoma Department of Transportation, and Tinker Air Force Base.

**3) NPDES regulated Concentrated Animal Feeding Operations (CAFOs):** There is no NPDES permitted CAFO facility in the North Canadian River study area.

**Sanitary sewer overflows (SSO):** SSOs from wastewater collection systems, although infrequent, can be a major source of harmful bacteria into streams. SSOs have existed since the introduction of separate sanitary sewers, and most overflows are caused by blockage of sewer pipes by grease, tree roots, and other debris that clog sewer lines; by sewer line breaks and leaks; by cross connections with storm sewers; and by inflow and infiltration of groundwater into sanitary sewers. While not all sewer overflows are reported, in the North Canadian River study area, there were 1,059 reported SSO occurrences, ranging from 0 to 30,000,000 gallons from January 2005 to July 2008.

Given the significant number of occurrences and the size of overflows reported, SSOs could be a significant source of bacteria loading to streams in the study area. Because of this, DEQ has focused its limited resources to first investigate SSOs that result in environmental harm - such as fish kills - or lead to citizen complaints. All SSOs falling in these two categories are addressed through DEQ's formal enforcement process to eliminate future SSOs. Another target area for DEQ is chronic SSOs from OPDES major facilities, those with a total design flow in excess of 1 MGD (million gallons per day). All SSOs are considered unpermitted discharges under State statute and DEQ regulations.

**Total Retention Facilities:** There are 18 no-discharge (total retention) facilities<sup>7</sup> within the North Canadian River study area. For the purposes of these TMDLs, it is assumed that no-discharge facilities do not contribute bacteria loading into the North Canadian River study area. However, it is possible these wastewater treatment facilities (WWTF) could be a source of bacteria loading if rain exceeded the systems' storage capacities during large rainfall events.

### **Non-Point Sources**

Most of the bacterial pollution in the North Canadian River study area comes from the aforementioned MS4 facilities as well as non-point sources. Nonpoint sources of pollutants are typically separated into urban and rural categories. Surface storm runoff is an important source of loading in urban or residential settings with high amounts of paved impervious area. In rural settings, the sources of bacteria may include runoff of applied manure to agricultural land, runoff of animal wastes associated with the erosion of sediments in grazing fields, contributions from wildlife, and failing septic tanks. Some examples include:

- **Wildlife** – Disease-causing bacteria are produced by all warm-blooded animals, including birds. Wildlife is naturally attracted to riparian corridors of streams and rivers. With direct access to the stream channel, wildlife can be a concentrated source of bacteria loading to a waterbody. Bacteria from wildlife are also deposited onto land surfaces, where it may be washed into nearby streams by rainfall runoff.

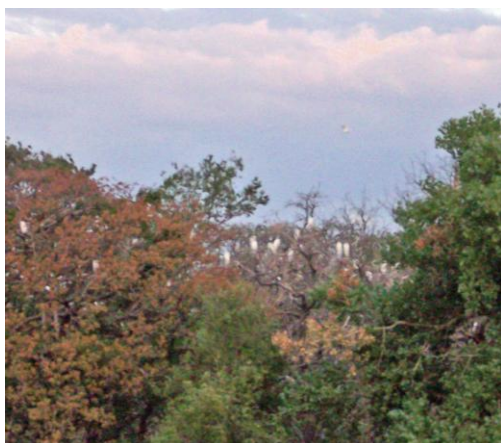
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<sup>7</sup> Peachtree Apartments, Ponderosa MHP, Timberland MHP, Country Haven MHP, Absentee Shawnee (Lagoon), Steelman Estates, Terrel Heights MHP WWTF, Shady Valley MHP, Pottawatomie Co Sewer Dist #1 WWTF, Imperial Oaks MHP, Toland Acres MHP, Summit Ridge, Hillside #1 MHP WWTF, Garden Acres MHP, Applewood MHP WWTF, Choctaw-Waterfront Acres WWTF, Pointons Redwood Manor, and A-Rolling Acres MHP



Currently there are insufficient data available to estimate populations and spatial distribution of wildlife and avian species by watershed. Consequently it is difficult to assess the magnitude of bacteria contributions from wildlife species as a general category. However, adequate data are available by county to estimate the number of deer by watershed.

In the North Canadian River study area, there are an estimated 1948 deer which would be an average deer per acre rate of about 0.007 deer per acre. However, this is probably an overestimation given the highly urbanized sections of this study area.



Though wildlife in general is considered to be a minor contributor of bacteria in the North Canadian River study area, there are two exceptions. At NW 10<sup>th</sup> and Council Road just southwest of the Lake Overholser Dam along the North Canadian River, there is a large, active heron/egret/cormorant rookery. These birds are protected by the Federal Migratory Bird Treaty Act.<sup>8</sup> (see photo) There is also a large active roost of pigeons and starlings underneath the river bridge near the area of County Line Road and I-40. The bacterial production by these birds may be small compared to other animals, but the birds may still be a significant source of bacteria to the North Canadian River since their droppings go directly into the river or on the river banks. Canada Geese

are not considered in this TMDL since they migrate to the area in the fall and winter which is outside of PBCR season.

- **Agricultural animals** - Agricultural livestock grazing in pastures deposit manure containing bacteria onto land surfaces. Examples of livestock activities that can contribute to bacteria sources include:
  - Processed manure from livestock operations: This manure is often applied to fields as fertilizer and can contribute to fecal bacteria loading to waterbodies if washed into streams by stormwater runoff.
  - Livestock grazing in pastures: Livestock deposit manure containing fecal bacteria onto land surfaces. These bacteria may be washed into waterbodies by stormwater runoff.
  - Direct access to waterbodies by livestock: Livestock standing in or crossing streams can provide a direct concentrated source of fecal bacteria into the streams.

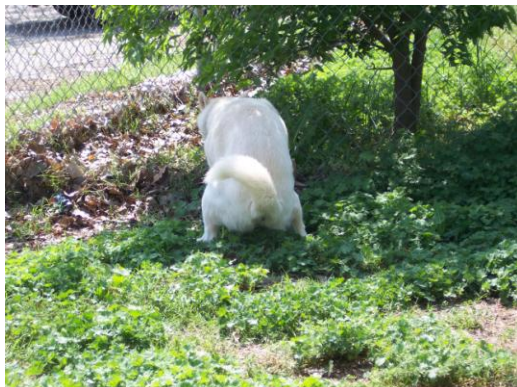
Commercially raised farm animals are a significant potential source of bacteria in all stream segments in the North Canadian River study area. Among the animal groups represented, cattle (an estimated 20,249 head near the bacterially-impaired streams) generate the largest amount of pathogenic bacteria and often have direct access to streams and tributaries. (Refer to the full TMDL report for the estimated number of all agricultural animals as well as their daily bacteria production rates.)

- **Failing Septic Systems** – If a septic system is not working properly, then raw sewage - a concentrated source of bacteria - can go directly to streams. Bacteria loading from failing septic systems can be transported to streams in a variety of ways, including runoff from

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<sup>8</sup> U.S. Fish & Wildlife Service, Title 50 of the Code of Federal Regulations, Section 10.13.  
<http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html>

surface ponding or through groundwater. Bacteria-contaminated groundwater can also enter creeks through springs and seeps. It is estimated that there are 1283 failing septic systems in the North Canadian River study area. Refer to the full TMDL reports on how these numbers were calculated.



- **Pets** - Bacteria from dogs and cats can get into streams by stormwater runoff. On average nationally, there are 0.58 dogs per household and 0.66 cats per household [American Veterinary Medical Association (2004)]. This means there are probably about 193,644 dogs and 220,353 cats in the North Canadian River study area. Domestic pets are a significant potential source of bacteria in five of the stream segments in the study area.<sup>9</sup>

- **Additional Non-Point Sources of Bacteria:** Not included in the above estimates is potential bacterial loading from two other potential sources - the Oklahoma National Stockyards Company and Murphy Products manure composting operations. The manure composting facility is on land owned by the Stock Yards which is located next to the North Canadian River (OK52052000010\_40) around S.W. 8<sup>th</sup> and Agnew. Neither facility operates under an NPDES permit. Animal waste manure from the Stock Yards is transported to the adjacent Murphy Products facility where it is composted and mixed with soil and other organic material. Stormwater runoff from both operations may enter the North Canadian River.

Because of the potential for bacteria to get into the North Canadian River, on July 1<sup>st</sup>, 2009, the Oklahoma Department of Agriculture, Food and Forestry issued an order against Murphy Products to stop all conditions which may lead to discharge of pollutants into the river. On July 14<sup>th</sup>, 2009, the U.S. EPA issued a cease and desist order to Murphy Products and the Oklahoma National Stock Yards Company for possible violations to the federal Clean Water Act.

## **Conclusions and Recommendations**

The North Canadian River study area is in violation of Oklahoma Water Quality Standards with respect to pathogens, with the exception of Airport Heights Creek. Most of the pathogens come from nonpoint sources though it is not known which sources these are specifically from without additional study. The health effects of pathogens should be a concern for the public who use these waterways for activities such as swimming, wading, or boating. This is because some waterborne bacteria can cause serious human illness or disease.

In order to meet water quality standards for Primary Body Contact Recreation, the levels of bacteria must be reduced by the following amounts:

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<sup>9</sup> Those stream segments are North Canadian River (OK52052000010\_30, OK52052000010\_40, OK520520000210\_00), Crutch Creek, and Crooked Oak Creek.

## TMDL Percent Reduction Goals Required to Meet Water Quality Standards for Impaired Waterbodies in the North Canadian River Study Area

WQM Station	Waterbody ID	Waterbody Name	Percent Reduction Required				
			FC	EC		ENT	
			Instant-aneous	Instant-aneous	Geo-mean	Instant-aneous	Geo-mean
NC-08	OK520510000110_20	N. Canadian River				<b>93.6%</b>	<b>86.4%</b>
520510000110-001AT	OK520520000010_00	N. Canadian River	<b>53.0%</b>			96.6%	<b>92.4%</b>
NC-07	OK520520000010_10	N. Canadian River	<b>78.9%</b>			99.3%	<b>97.0%</b>
NC-06	OK520520000010_20	N. Canadian River	<b>48.6%</b>			99.97%	<b>98.9%</b>
NC-05	OK520520000010_30	N. Canadian River	<b>86.7%</b>	95.6%	<b>26.5%</b>	99.8%	<b>98.0%</b>
NC-04	OK520520000010_40	N. Canadian River	<b>48.6%</b>			99.9%	<b>98.1%</b>
NC-03	OK520520000210_00	N. Canadian River				99.7%	<b>92.9%</b>
USGS07241000	OK520520000250_00	N. Canadian River	<b>68.0%</b>				
OK520520-00-0070G OK520520-00-0070B	OK520520000070_00	Crutcho Creek	<b>28.1%</b>				
OK520520-00-0150G	OK520520000150_00	Crooked Oak Creek	<b>64.1%</b>				
WCNCW654 & OK520520-00-0240G	OK520520000240_00	Mustang Creek		88.8%	<b>36.2%</b>		

### Providing comments

DEQ invites your comments. This is a draft document and is subject to change based on comments received during the 45-day public participation process. All official comments for the record must be submitted either in writing or by e-mail before the end of the comment period or orally at the public meeting. For clarity, written comments are preferred. DEQ will prepare a responsiveness summary addressing all comments received.

The comment period will be open for 45 days. Please submit your comments in writing to:

Dr. Karen Miles  
Water Quality Division  
Oklahoma Department of Environmental Quality  
P.O. Box 1677  
Oklahoma City, OK 73101-1677  
(405) 702-8192  
E-mail: [Karen.Miles@deq.ok.gov](mailto:Karen.Miles@deq.ok.gov)

**Comments must be received by close of business on October 1<sup>st</sup>, 2009.**

After evaluating comments received and making any necessary changes, the modification will be submitted to EPA for final approval. The final results of the TMDL will be incorporated into Oklahoma's Water Quality Management Plan.

### Obtaining copies

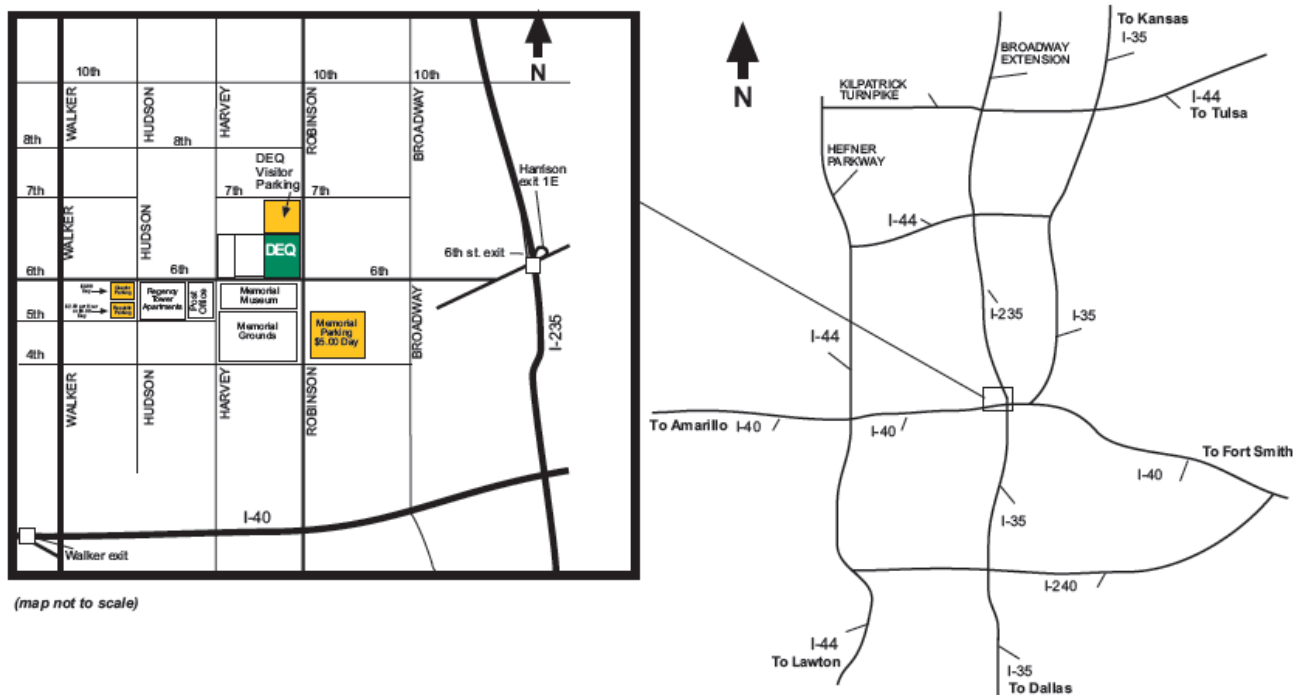
You may view the study this TMDL was based on by going to the DEQ website at: <http://www.deq.state.ok.us/WQDnew/index.htm> or pick up copies of the studies at the DEQ office, Water Quality Division, 707 North Robinson, Oklahoma City from 7:30 am – 5:00 pm. A document copying fee may apply.



# Informational Meeting

DEQ will host an informal meeting to help foster understanding of the TMDL report at **6:30 p.m. on Thursday, October 1<sup>st</sup>**. The meeting will consist of a short presentation, an informal question and answer session, followed by an opportunity for formal public comments on the record.

The TMDL meeting will be held in the Multipurpose Room on the 1<sup>st</sup> floor of the Oklahoma Department of Environmental Quality, 707 North Robinson in Oklahoma City (6<sup>th</sup> and Robinson just north of the OKC Bombing Memorial). There is visitor parking in the parking lot north of DEQ.



Directions to 707 North Robinson, Oklahoma City, OK 73102  
The DEQ is located between N. Robinson and N. Harvey and 6th and 7th streets in Downtown Oklahoma City.

**From the West** on I-40, take the Walker exit, go North on Walker to 8th or 10th Street, turn right, then go East to Robinson, turn right again to go South on Robinson to the Southwest corner of 7th and Robinson. DEQ visitor parking is on the right.

**From the East** on I-40, take the Northbound I-235 exit, on I-235 take Harrison/6th Street exit ramp. Stay in the right lane on the ramp and across the bridge. Take the right fork on West end of bridge to access 6th Street. Go West three blocks to Robinson, go North on Robinson, DEQ is on the left (NW corner of 6th & Robinson), parking is on the North side of the building. Entrances to the DEQ visitor parking lot are on the West side of Robinson and the South side of 7th (Southwest corner of 7th and Robinson). Entrances to the building are on the East side of the building.

**From all other directions, go to I-235.**

**Southbound I-235** take the 6th Street exit ramp. Go West three blocks to Robinson, go North on Robinson, DEQ is on the left (NW corner of 6th & Robinson), parking is on the North side of the building. Entrances to the DEQ visitor parking lot are on the West side of Robinson and the South side of 7th (Southwest corner of 7th and Robinson).

**Northbound I-235**, take the Harrison/6th Street exit ramp. Stay in the right lane on the ramp and across the bridge. Take the right fork on West end of bridge to access 6th Street. Go West three blocks to Robinson, go North on Robinson, DEQ is on the left (NW corner of 6th & Robinson), parking is on the North side of the building. Entrances to the DEQ visitor parking lot are on the West side of Robinson and the South side of 7th (Southwest corner of 7th and Robinson). Entrances to the building are on the East side of the building.

**After your visit to DEQ go South on Robinson then go East on 5th Street to access I-235 Northbound or Southbound to get to either I-40, I-44, or I-35.**

On 5th Street use the right lane to access Southbound I-235 where you can access I-35 or I-40.

On 5th Street use the middle lane until you get East of Broadway, then merge to the left lane (one way Eastbound on 5th of Broadway) to access Northbound I-235 to access I-44.



The Oklahoma Department of Environmental Quality  
P.O. Box 1677  
707 North Robinson  
Oklahoma City, OK 73101-1677  
(405) 702-1000  
www.deq.state.ok.us



OKLAHOMA  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
...for a clean, attractive, prosperous Oklahoma

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If you are receiving this in paper form, please help save money and the environment by receiving the notice in PDF format via e-mail. Just let us know your e-mail address at [Karen.Miles@deq.ok.gov](mailto:Karen.Miles@deq.ok.gov).