Chapter 5

Environmental Profile

The University of Northern Colorado in Greeley. Image Credit: City of Greeley

Chapter 5: Environmental Profile

A variety of environmental considerations impact transportation planning and projects in the North Front Range Metropolitan Planning Organization (NFRMPO) area. These include air quality, historic and archaeological sites, agriculture, habitat and species, water and wetlands, and conservation areas, both current and potential. Of these, the NFRMPO has specifically designated responsibilities regarding air quality.

A. Air Quality

North Front Range air quality is regulated by stringent State and federal laws. The North Front Range Transportation and Air Quality Planning Council (NFRT&AQPC) is the designated lead air quality planning organization for carbon monoxide (CO), while the Regional Air Quality Council (RAQC) is the designated lead air quality planning organization for ozone. Air quality planning and conformity with the State Implementation Plan (SIP) is a federally and State-sanctioned function of the NFRMPO. The NFRMPO must address motor vehicle emissions which constitute a major source of CO and ozone pollutants. The region has been in violation of the National Ambient Air Quality Standards (NAAQS) for CO since the 1990's and ozone since early 2000's. The North Front Range area is currently designated as a maintenance area for CO and a marginal nonattainment area for ozone.

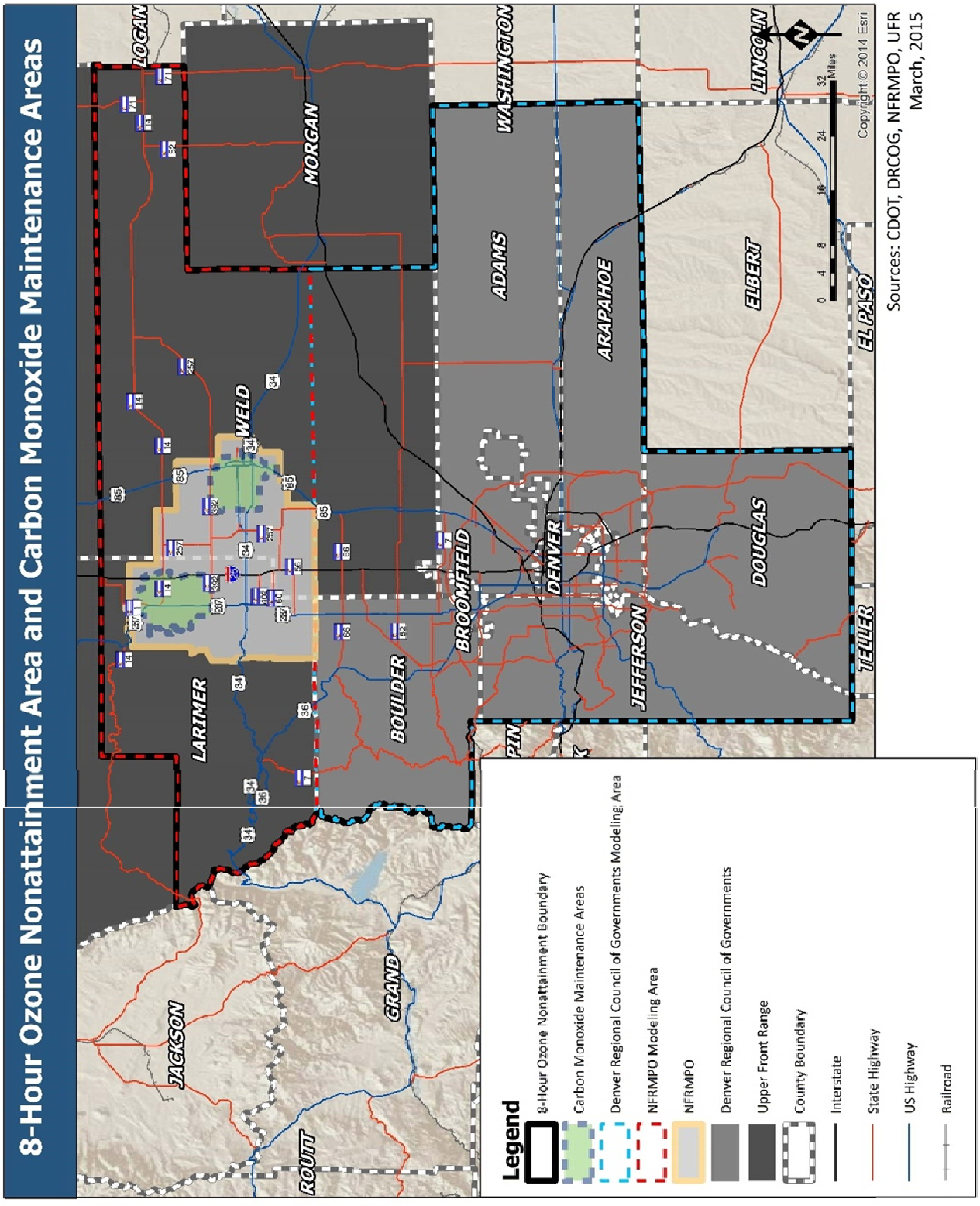
In 1993, the Governor of Colorado designated the NFRT&AQPC as the lead air quality planning organization for the Greeley and Fort Collins CO maintenance areas. In July 2013, Colorado Governor John Hickenlooper designated the RAQC as the lead air quality planning agency for the entire Denver/North Front Range Ozone nonattainment area. The Planning Council and RAQC, in cooperation with the Colorado Air Pollution Control Division (APCD), Colorado Department of Transportation (CDOT), and local governments are responsible for the development and implementation of transportation-related air quality planning projects within the NFRMPO Modeling Boundary, **Figure 5-1**.

A number of regional strategies are being implemented to offset the increase in emissions which accompanies high population growth rates. Strategies include a regional Transportation Demand Management (TDM) program with carpool and vanpool programs, regional transit planning, coordination with the Denver Regional Transportation District (RTD) on inter-regional transit services and planning for inter-regional bus service along the I-25 Corridor between Fort Collins and Denver funded by CDOT.

Carbon Monoxide Maintenance Areas—Fort Collins and Greeley

In the late 1980s, portions of Fort Collins and Greeley were in violation of the NAAQS for CO. As a result, the previous nonattainment status continued with the Clean Air Act (CAA) Amendments of 1991.

Figure 5-1: Carbon Monoxide Maintenance Areas and 8-Hour Ozone Nonattainment Area



Fort Collins was re-designated to maintenance status on July 22, 2003.[29] A revision to the SIP on July 22, 2003[30] removed the Inspection and Maintenance (I/M) program and the oxygenated fuels program as a federal requirement, effective January 1, 2004. Eight years after an area is re-designated to attainment, the CAA Section 175(B) requires a subsequent maintenance plan covering a second 10-year term, which was approved on September 12, 2013.[31]

In the mid-1990s, CO levels improved substantially from improved engine and vehicle technology and Greeley was re-designated to maintenance status on March 10, 1999,[32] with a revision to the SIP on August 19, 2005[33] which removed the I/M program and the oxygenated fuels program as a federal requirement. A subsequent maintenance plan covering a second 10-year term was approved on August 2, 2013 extending the maintenance period to 2019.[34] The two CO maintenance areas are shown in **Figure 5-1**. A summary of the conformity documentation for the Greeley and Fort Collins CO Maintenance Plans is provided in **Appendix B.**

Denver-North Front Range 8-Hour Ozone Nonattainment Area

In November 2007, the US Environmental Protection Agency (EPA) designated the Denver/North Front Range region as a nonattainment area for the 8-hour ozone standard of 80 parts per billion (ppb), adopted in 1997, when a deferral expired. This was due to violations of the 8-hour ozone standard which occurred in the summer of 2007. The official nonattainment designation effectively terminated the Early Action Compact (EAC) of previous years, explained later in the section, and necessitated adopting a SIP for ozone within one year, per EPA requirements. In addition, nonattainment status meant businesses requiring air quality permits would have more stringent requirements. Ozone conformity determinations are now required for all Transportation Improvement Programs (TIP) and Regional Transportation Plans (RTP). The designated ozone nonattainment area is shown in **Figure 5-1**. A summary of the conformity documentation for the Denver-North Front Range Ozone SIP is provided in **Appendix B.**

In March 2008, EPA established a more stringent 8-hour standard for ozone, based on a review of the most recent health effects information. The standard is currently set at a level of 75 ppb averaged over an 8-hour period. A revised SIP for the new ozone standard was submitted by the governor to the EPA on June 18, 2009. However, according to the *2008 Ozone Action Plan*, it contains provisions intended to begin moving the region to compliance with the 2008 standard. During this time, EPA implemented a five-year NAAQS review process of the 2008 standard to have a newly-revised standard by 2014.

In 2010, the motor vehicle I/M program expanded from the Denver Metro area into parts of Larimer and Weld counties to include Fort Collins, Greeley, and nearby jurisdictions within the nonattainment area. The expansion was implemented in November 2010, and was required by the *2008 Ozone Action Plan*.

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[29] 68 FR 43316, https://federalregister.gov/a/03-18303, 2003
[30] 68 FR 43316, https://federalregister.gov/a/03-18303, 2003
[31] 78 FR 56164, https://federalregister.gov/a/2013-21987, 2013
[32] 64 FR 11775, http://www.gpo.gov/fdsys/pkg/FR-1999-03-10/pdf/99-5661.pdf, 1999
[33] 70 FR 48650, https://federalregister.gov/a/05-16486, 2005
[34] 78 FR 46816, https://federalregister.gov/a/2013-18439, 2013

In 2012, the Denver Metro and North Front Range were classified as a marginal nonattainment area under the 2008 Ozone NAQQS by EPA.[35] This designation required areas to meet the standard by December 31, 2015. On December 17, 2014, EPA proposed a new NAAQS for ozone. This would change the primary and secondary standard to a level between 65 and 70 ppb. EPA is required to make its final ruling by October 2015. On December 23, 2014, the D.C. Circuit Court rejected the EPA's 2008 Ozone Air Quality Standard. This changed the attainment deadline to July 31, 2015 and revoked the 1997 NAQQS. On March 6, 2015, EPA issued a final rule[36] implementing the 2008 NAAQS for ozone and SIP requirements. The Denver Metro and the North Front Range will be reclassified as moderate nonattainment in January 2016.

Background - Early Action Compact for Ozone

Prior to 2007, the NFRMPO was included in the nonattainment area by EPA because of identified ozone precursor contributions from the region and air quality monitors exceeding the 1997 8-hour ozone NAAQS. In 2004, EPA included all of the NFRMPO area and additional portions of Larimer and Weld counties with the highest concentration of emissions inside the nonattainment boundary.

Larimer and Weld counties joined with the Denver Metro region in an EAC with EPA to defer nonattainment status. The EAC outlined control measures in place by the end of 2005 and required ozone readings to be back in compliance by the end of 2007. Control measures affecting the NFRMPO were emissions controls on stationary sources at oil and gas wells. In addition, EPA required the Reid Vapor Pressure (RVP), or evaporation rate, of gasoline be reduced to 7.8 pounds per square inch (psi) from the previous 9.0 psi RVP gasoline in the Denver area.

The EAC did not require any controls on mobile sources in the North Front Range region. At the time, the Denver Metro area was subject to an automotive inspection and maintenance program, but the EAC did not require it for the NFRMPO area.

Ozone Action Plan (2008)

In 2008, after several months of analysis, evaluation, and public input the RAQC and NFRMPO proposed an Ozone Action Plan to the State. The Air Quality Control Commission (AQCC) approved the plan in December 2008. The Ozone Action Plan includes a range of control measures to be included in the SIP, including federally-enforceable measures and State-only enforceable measures.

Federally-Enforceable measures:

1. Increase the system-wide control requirements for all condensate tanks to 85 percent by May 1, 2010 and 90 percent by May 1, 2011.
2. Remove exemptions for selected small sources required to file air pollution emission notices and obtain permits.
3. Require general application of permit requirements and reasonably available control technology (RACT) for all Volatile Organic Compound (VOC) stationary sources greater than two tons per year and Nitrogen Oxide (NOx) stationary sources greater than five tons per year in the whole nonattainment area.

[35] 77 FR 30098, https://federalregister.gov/a/2012-11618, 2012
[36] 80 FR 12264, https://federalregister.gov/a/2015-04012, 2015

State-Only Enforceable measures:

1. Implement an I/M program in the North Front Range (portions of Larimer and Weld counties).
2. Implement more stringent cut-points for the Denver metro area I/M program.
3. Continue implementing the high-emitter pilot program in the Denver metro area.
4. Tighten State collector plate requirements (currently all vehicles 25 years and older) by limiting collector plates to true collector vehicles and requires emissions testing for old, non-collector vehicles.
5. Implement statewide control requirements for reciprocating internal combustion engines (RICE).
6. By 2009, require low-bleed control devices on all new and existing pneumatic valves in oil and gas operations.
7. Expand current requirements for VOC controls in the entire nonattainment area.

In response to the AQCC October 2012 directive to consider full adoption of EPA's *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution,*[37] on February 23, 2014, AQCC fully adopted:

- EPA's New Source Performance Standard Support Subpart Quad O into Regulation Number 6: *Standards of Performance for New Stationary Sources*, Part A;
- Corresponding revisions to the emissions reporting and permitting framework in Regulation Number 3: *Stationary Source Permitting and Air Pollutant Emission Notice Requirements*, Parts A, B, and C; and
- Complementary oil and gas control measures in Regulation Number 7: *Control of Ozone via Ozone Precursors and Control of Hydrocarbons via Oil and Gas Emissions (Emissions of Volatile Organic Compounds and Nitrogen Oxides)* to regulate methane emissions and reduce VOCs.[38]

These oil and gas control measures revisions concentrate on identifying and repairing leaks in the oil and gas sector, as well as additional recordkeeping and reporting requirements. These oil and gas control measures are estimated to reduce VOC emissions by approximately 93,500 tons per year and methane/ethane emissions by approximately 65,000 tons per year, at a cost of approximately $42.5 M per year.[39]

B. Historic and Archeological Sites

Section 106 of the National Historic Preservation Act (NHPA) outlines the process federal agencies and their designated representatives must follow when planning projects with the potential to affect significant historic and prehistoric properties. The Colorado State Register of Historic Places and the National Register of Historic Properties identify sites, areas, and communities that reflect the State's cultural heritage and resources. Areas and sites on the National Register of Historic Properties are automatically added to the Colorado State Register of Historic Places.

The region contains a wide variety of historical and archaeological sites. The National Register of Historic Places and the Colorado State Register of Historic Places organize historic sites into districts, resources, and structures. **Figure 5-2** displays the different sites located within the North Front Range. While most of the sites are located within Fort Collins, Greeley, and Loveland, there are sites located throughout the region. As of 2014, the region

[37] 40 CFR Part 60, Subpart OOOO (NSPS OOOO), http://www.ecfr.gov/cgi-bin/text-idx?node=sp40.7.60.oooo, 2014
[38] https://www.colorado.gov/pacific/sites/default/files/003_030614-729AM-R3-6-7-fact-sheet-003_1.pdf
[39] https://www.colorado.gov/pacific/sites/default/files/003_030614-729AM-R3-6-7-fact-sheet-003_1.pdf

had a total of 55 historic places, three resource districts, four historic structures, one cultural resource, and seven cultural districts. The most up-to-date information can be found on the Office of Archaeology and Historic Preservation's website.[40]

As each community grows, they should evaluate the potential impacts of transportation improvements relative to the historic and archaeological sites. Additional sites may be added as deemed necessary with the help of historians or archaeologists.

Mitigation

Colorado is required to update its Statewide Preservation Plan every 10 years. The underlying objective of this plan is to safeguard places, traditions, cultural connections, and the richness of Colorado's heritage through education.[41] The 2020 Colorado Statewide Preservation Plan lists six overall goals for historic preservation in the State that build off the overarching objective:

1. Preserving the Places that Matter
2. Strengthening and Connecting the Colorado Preservation Network
3. Shaping the Preservation Message
4. Publicizing the Benefits of Preservation
5. Weaving Preservation Throughout Education
6. Advancing Preservation Practices

Using this preservation plan as a guide, communities can make informed decisions about how transportation planning impacts historic preservation within the North Front Range. The Statewide Preservation Plan can be found online at the Office of Archaeology and Historic Preservation's website (historycolorado.org).

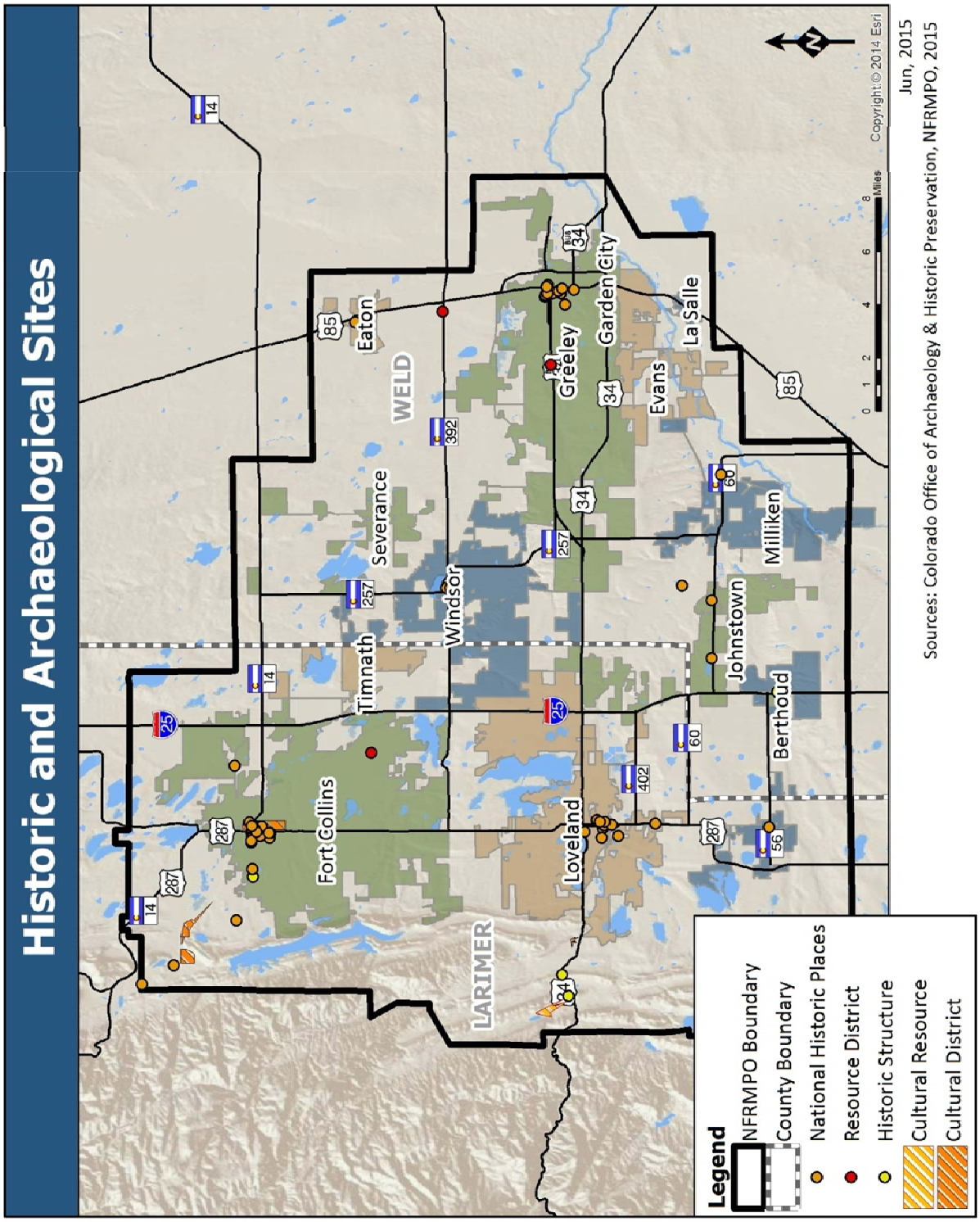
The potential impact of implementing a transportation improvement project relative to identified historic sites, as well as other sites considered for inclusion in the historic registers, must be evaluated prior to project initiation.

For construction projects and many maintenance activities, a certified historian and an archaeologist conduct on-the-ground surveys to identify, record, and evaluate cultural resources for eligibility to the National Register of Historic Places. When significant sites are identified within a proposed project area, an interdisciplinary team determines how best to avoid the sites or minimize adverse impacts during construction.

Fort Collins, Greeley, and Loveland maintain Historic Preservation Commissions, tasked with reviewing the impacts of development projects on historic sites and places. In 2011, Fort Collins undertook the Historic Preservation Process Improvements Study. Through a mix of public involvement and studying other communities' best practices, Fort Collins has implemented revisions in its code, increased public notice, and improved the appeals process.

[40] http://www.historycolorado.org, 2014
[41] http://www.historycolorado.org/sites/default/files/files/OAHP/Programs/StatePlan.pdf, 2014

Figure 5-2: Historic Preservation Sites



C. Agricultural Land

Agriculture in the North Front Range is a major contributor to the economic vitality of the region. With over 2.5 Million acres of agricultural land, Weld County is one of the largest agricultural centers in Colorado. Weld County is one of the largest producers of livestock in the country, including two of the largest cattle feeding operations in the State.[42] Due to the fertile and well-irrigated land, Weld County is a large producer of hay, wheat, corn, sugar beets, barley, dry beans, onions, and carrots.[43] Larimer County also maintains an active agricultural sector, producing corn for grains, wheat, and vegetables.[44]

A large percentage of the rural land under cultivation within the North Front Range region is irrigated by an intricate network of canals, making it highly productive. These canals and their lateral ditches are crossed by streets, roads, highways, bike paths, sidewalks, and railroads. These crossings can pose engineering, project scheduling, and funding/contractual challenges during the development and implementation of transportation projects. These risks are covered in the *Natural Hazards* section of this chapter.

In addition, the conversion of agricultural land to urban and transportation uses is a regional and community issue. Conversions for transportation uses are typically addressed at the project level through actions to avoid or minimize such impacts.[45] The potential conversions are coordinated with federal agencies, particularly with regard to National Environmental Policy Act (NEPA) processes. Reporting of these kinds of conversions to the Natural Resources Conservation Service of the U.S. Department of Agriculture (USDA) is coordinated through CDOT.

The loss of farmland is an issue in both Larimer and Weld counties. Between 2007 and 2012, the number of farms in Larimer County decreased from 1,757 to 1,625, with a drop in acreage from 489,819 to 450,389. The average size of the farms in Larimer County decreased slightly. Meanwhile, Weld County decreased its number of farms from nearly 4,000 to approximately 3,500, with a decrease in farmland acreage from 2.08 M to 1.96 M. Conversely, Weld County increased the average size of farms by more than 20 acres.

The USDA conducts an agricultural census every five years and provides county profiles with the results. The results for the 2012 Census compared to the 2007 Census are shown in **Table 5-1**. Compared to the 2007 Agricultural Census, pastureland in both Larimer and Weld counties increased its percentage of the total, while all other categories decreased.

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[42] http://www.co.weld.co.us/assets/c88682A241c8B23c0837.pdf

[43] Weld County 2012 Agricultural Census (http://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Colorado/cp08123.pdf)

[44] Larimer County 2012 Agricultural Census (http://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Colorado/cp08069.pdf)

[45] See the Farmland Protection Policy Act [PL 97-98; 7 U.S.C. 4201 et seq.]

Table 5-1: Agricultural Production Statistics (2007 and 2012 Inventory)				
Type of Land	Larimer (%)		Weld (%)	
	2007	2012	2007	2012
Woodland	6.4%	5.2%	--	--
Cropland	24.5%	23.6%	47.3%	43.5%
Pasture	64.0%	67.8%	48.8%	53.2%
Other uses	5.2%	3.3%	4.0%	3.4%
Source: *Colorado Agricultural Statistics, USDA, Census for Agriculture, County Profiles, 2007 & 2012*				

D. Threatened and Endangered Species

Wildlife habitat and its ability to support diverse species is important in the North Front Range region. Numerous laws and regulations protect wildlife species and their habitats. **Figure 5-3** illustrates some of the region's bird and mammal species which are either threatened or important to this area. Short-grass prairie is the major habitat which supports a variety of species. Threatened and important species ensure a diverse, healthy environment, and are determined on a State and federal level. The Endangered Species Act of 1973 grants the US Fish and Wildlife Service (USFWS) the power to oversee listing and protection of terrestrial animals, plants, and freshwater fish. Colorado Parks and Wildlife (CPW) provides assistance at the State level. Riparian areas along major waterways are important as well, including the Cache la Poudre, Big Thompson, Little Thompson, and South Platte Rivers.

Along with individual pockets of habitat, some larger habitat areas cover the entire region. These include the Preble's Meadow Jumping Mouse and Mule Deer ranges.

Preble's Jumping Mouse. Source: USFWS

Mule Deer. Source: USFWS

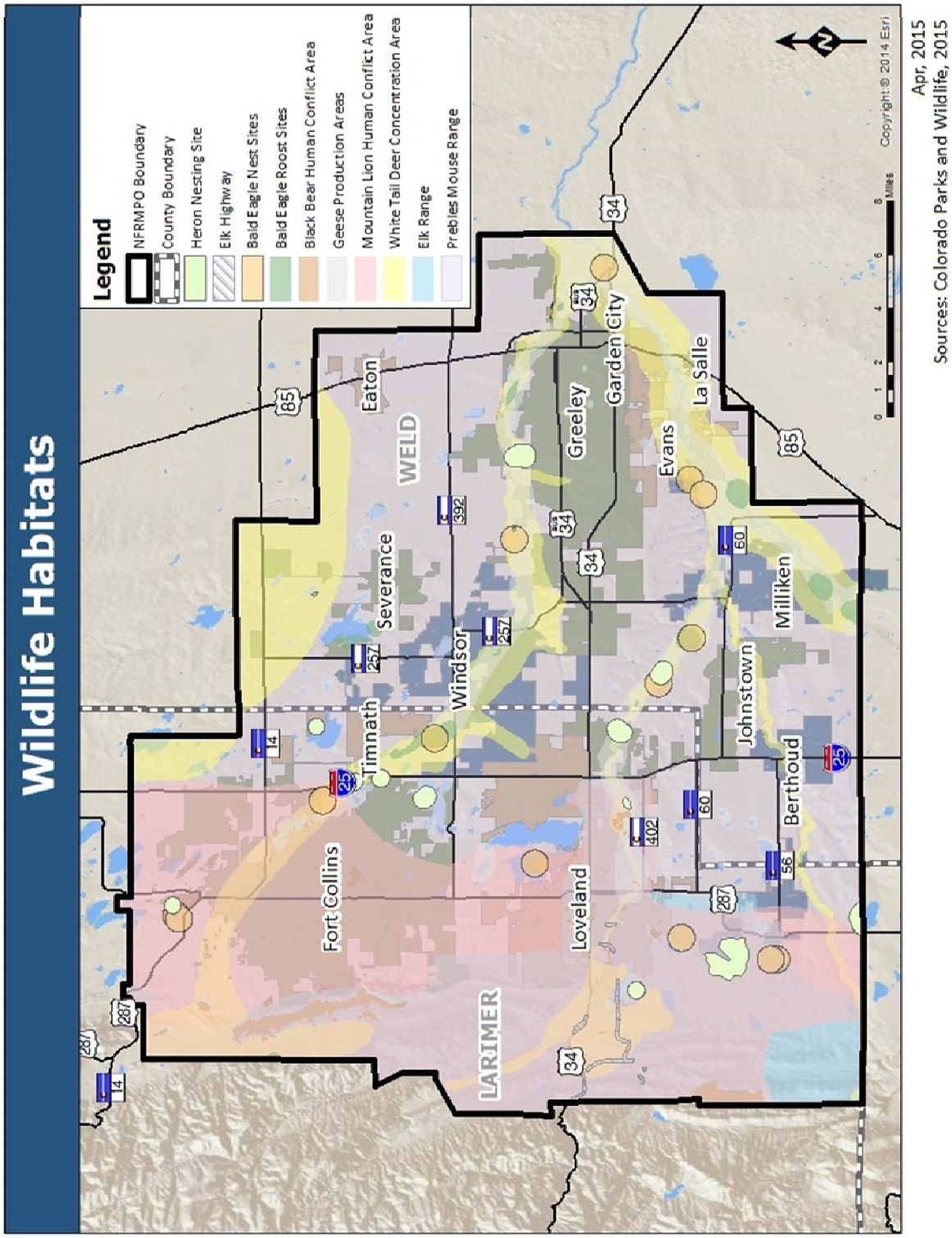
Many agencies assist in the compilation of important habitat and designated wildlife areas including: USFWS, CPW, and the Colorado Natural Heritage Program (CNHP).

The NFRMPO recognizes threatened and endangered bird, mammal, plant, and fish species inhabit Larimer and Weld counties. Further research must be conducted before a transportation project begins to determine if threatened or endangered species are an issue within the given project's area.

Wildlife Habitat Mitigation

Owing to the diverse environment found in the North Front Range, the region has a variety of plant and animal species. Wildlife species and their habitats are protected by numerous laws and regulations. Habitats for regionally significant or endangered animals are shown in **Figure 5-3**.

Figure 5-3: Wildlife Habitats



CDOT has recognized the importance of the short-grass prairie habitat and created a proactive mitigation strategy by participating in the Short-Grass Prairie Initiative (SGPI). This initiative started in 2001 and covers over a third of the State, extending out to the eastern border with Kansas and Nebraska and from the northern border with Wyoming to the southern border with New Mexico. The SGPI includes the Nature Conservancy, USFWS, and other federal agencies and will protect up to 50,000 acres of the short-grass prairie in eastern Colorado over the next 20 years. This allows for CDOT projects which impact short-grass prairie to offset a project's impacts against the areas that have been created through the SGPI.

Colorado Senate Bill 40 requires any agency of the State to obtain wildlife certification from CPW when the agency plans construction in any stream or its bank or tributaries. CPW, a division of the Colorado Department of Natural Resources (DNR), is responsible for protecting and preserving the State's fish and wildlife resources through conservation, recreation, and wildlife management activities.[46] Certification from CPW must be obtained for actions with adverse impacts to streams or its bank or tributaries. Certification is provided by CPW which includes appropriate mitigation measures to eliminate or diminish adverse effects to such streams or their banks or tributaries. The Migratory Bird Treaty Act (MBTA) is a federal law that protects migratory birds, their nests, and eggs. This protection is extended to all birds in the region, with the exception of the rock dove (pigeon), English sparrow, and European starling.

E. Natural Hazards

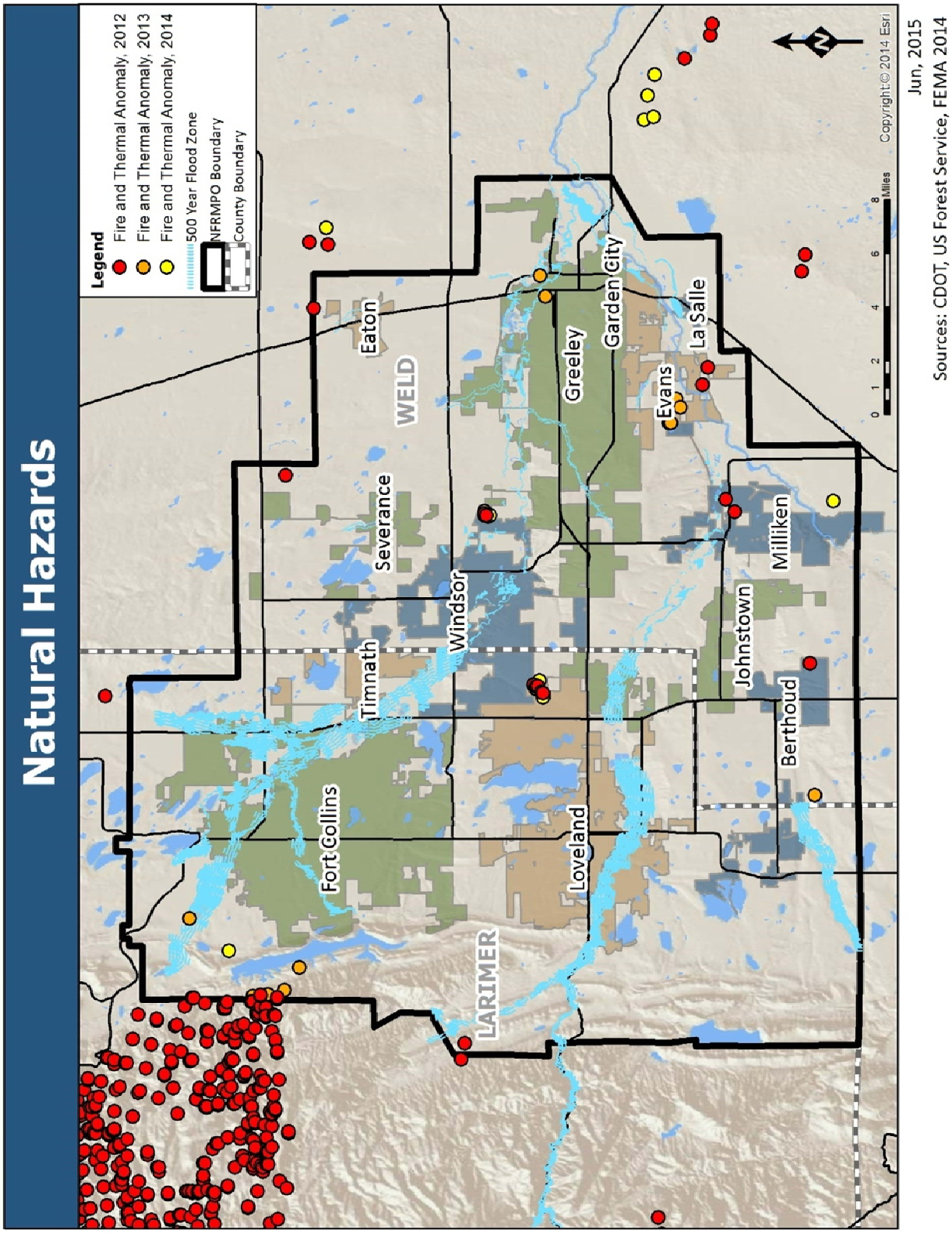
Owing to its location in the foothills of the Rocky Mountains, the North Front Range region experiences the risk for natural hazards. In recent years, wildfires and flooding have become an increasingly important issue. Each year the region faces multiple instances of snow, which can stick to roads and create dangerous conditions. Heavy flooding in 2013 left roads and bridges in a state of disrepair and have taken time to repair. In 2012, wildfires damaged property on the outskirts of the NFRMPO's western boundary. **Figure 5-4** shows the location of wildfires between 2012 and 2014 in addition to the 500-year flood zones in Larimer and Weld counties.

As shown in **Figure 5-4**, eastern Evans, northeastern Fort Collins, northern Greeley, LaSalle, southern Loveland, and Timnath are located near flood plains. These areas received heavy flooding during the 2013 floods. Additionally, the Horsetooth Reservoir separated and protected much of Fort Collins from the severe 2012 wildfire season.

As transportation projects are programmed, the risks of developing in or near a flood plain or close to wildfire-prone areas should be acknowledged. Recovery can be expensive, but being prepared and aware can help to mitigate future issues.

[46] CPW, 2015 (http://cpw.state.co.us/aboutus/)

Figure 5-4: Natural Hazards



To deal with snow, local municipalities have prioritized the street networks within their jurisdictions. Seven communities offer some sort of snow removal process. Highest priorities include emergency routes, namely the routes connecting hospitals, fire stations, police stations, and rescue squad units. Second priority is given to streets which carry the highest traffic volumes, followed by schools and bus routes. Residential streets are usually not plowed, but intersections may be sanded. In every local jurisdiction, the highest priority takes precedence over the lower priorities; this means some lower priority streets may not be plowed to ensure resources are used on the highest priority streets.

F. Water Features and Water Quality

Numerous water bodies lie within and run through the North Front Range region. These include major rivers such as the Cache la Poudre, Big and Little Thompson, and South Platte Rivers, along with their minor tributary creeks and streams. The region also contains many lakes and reservoirs such as the Horsetooth and Windsor reservoirs, and Boyd, Carter, and Loveland Lakes. Two aquifers, Laramie and Laramie-Fox Hills, flow under the southeastern portion of the NFRMPO region. The water features and aquifers are illustrated in **Figure 5-5**.

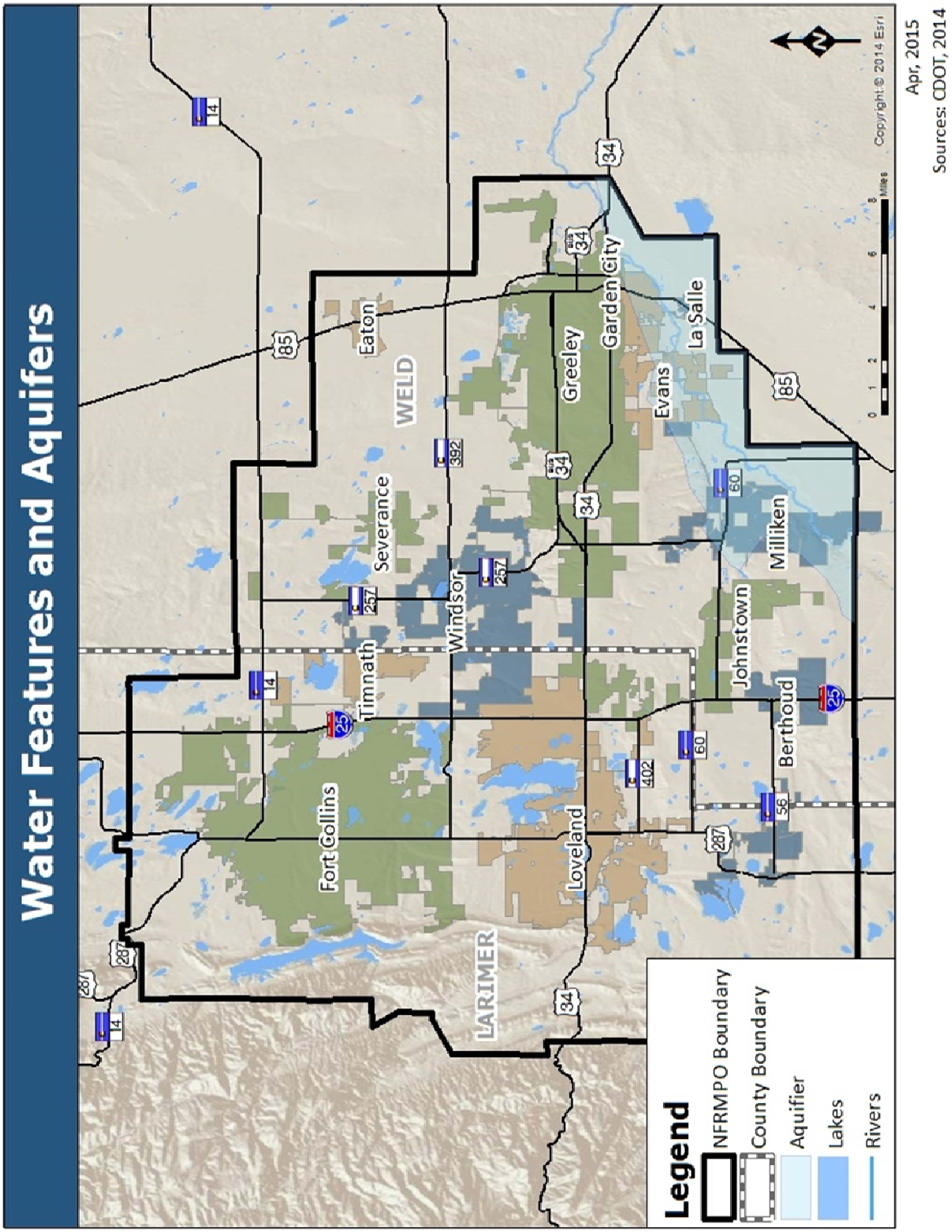
The Federal Clean Water Act (CWA) protects the waters throughout the US. From this act, the National Pollution Discharge Elimination System (NPDES) was created to develop water discharge standards to prevent pollution from entering the nation's waterways. The EPA oversees the CWA throughout the nation, but has granted CDPHE this duty in Colorado.

Water Quality Mitigation

In accordance with CDOT's Statewide Transportation Plan, mitigation strategies are used for water quality. The primary method is to control storm water discharges through best management practices which avoid or control runoff. CDOT is working with local municipalities, permit holders, and private developers to construct and maintain watershed scale water quality facilities. Using $6.5M in a Permanent Water Quality Mitigation Pool (PWQ), CDOT will design and construct on-site PWQ control measures within CDOT's Municipal Separate Storm Sewer System (MS4) area. The first call for projects was held in spring 2015.

The region works to maintain clean water through an efficient system of reservoirs and water treatment facilities. The City of Fort Collins operates two Water Reclamation Facilities within the Lower Cache la Poudre River watershed and a single Water Treatment Facility. These facilities filter wastewater to meet or exceed all State and federal pollution control standards and to protect the Cache la Poudre downstream. Additionally, the City of Loveland is in the process of expanding its Water Treatment Plant in a $20.5M project with expected completion in March 2016. Greeley operates two Water Treatment Plants and a Wastewater Reclamation Plant.

Figure 5-5: Water Features and Aquifers



G. Wetlands

Wetlands are areas inundated or saturated by surface or ground water at a frequency or duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.[47] In the North Front Range region, wetlands are primarily found adjacent to streams or rivers where the ground stays saturated. Wetlands are regulated by standards set by Section 404 of the CWA. **Figure 5-6** shows the wetlands within the region.

Wetland Mitigation

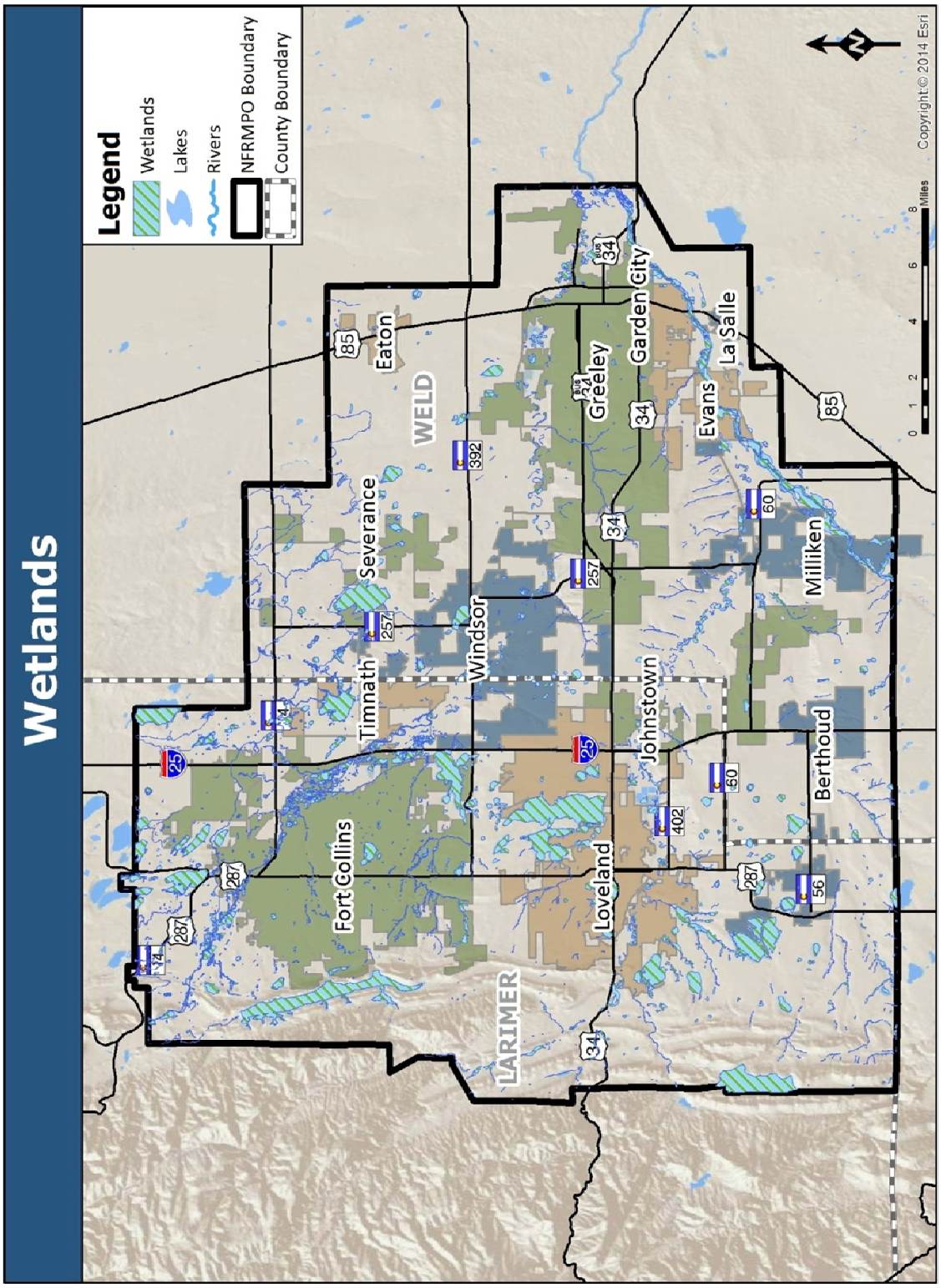
CDOT projects are required by federal law to first avoid and, if not possible, minimize impacts to wetlands. Where impacts are unavoidable, they must be mitigated. Preference must be given to the use of wetland banks where the project impacts occur within the service area of an approved wetland bank. Use of wetland banks is not appropriate where locally important ecological functions should be replaced on-site. Outside of an approved wetland bank's service area, mitigation should be on-site or within the same watershed where the impacts are occurring.

As Colorado communities continue to grow, mitigating for wetland impacts is becoming increasingly difficult and expensive. Anticipating and planning for future projects and operations to avoid and minimize impacts as much as possible is increasingly important, as is proactive identification of methods to mitigate unavoidable impacts.

CDOT is currently involved in the identification and development of proactive mitigation programs for wetlands. Current programs include the development of new wetland banks and cooperative partnerships with state, local, and federal agencies for the development of wetland enhancement and restoration programs.

[47] EPA, 2015 (http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm)

Figure 5-6: Wetland Areas



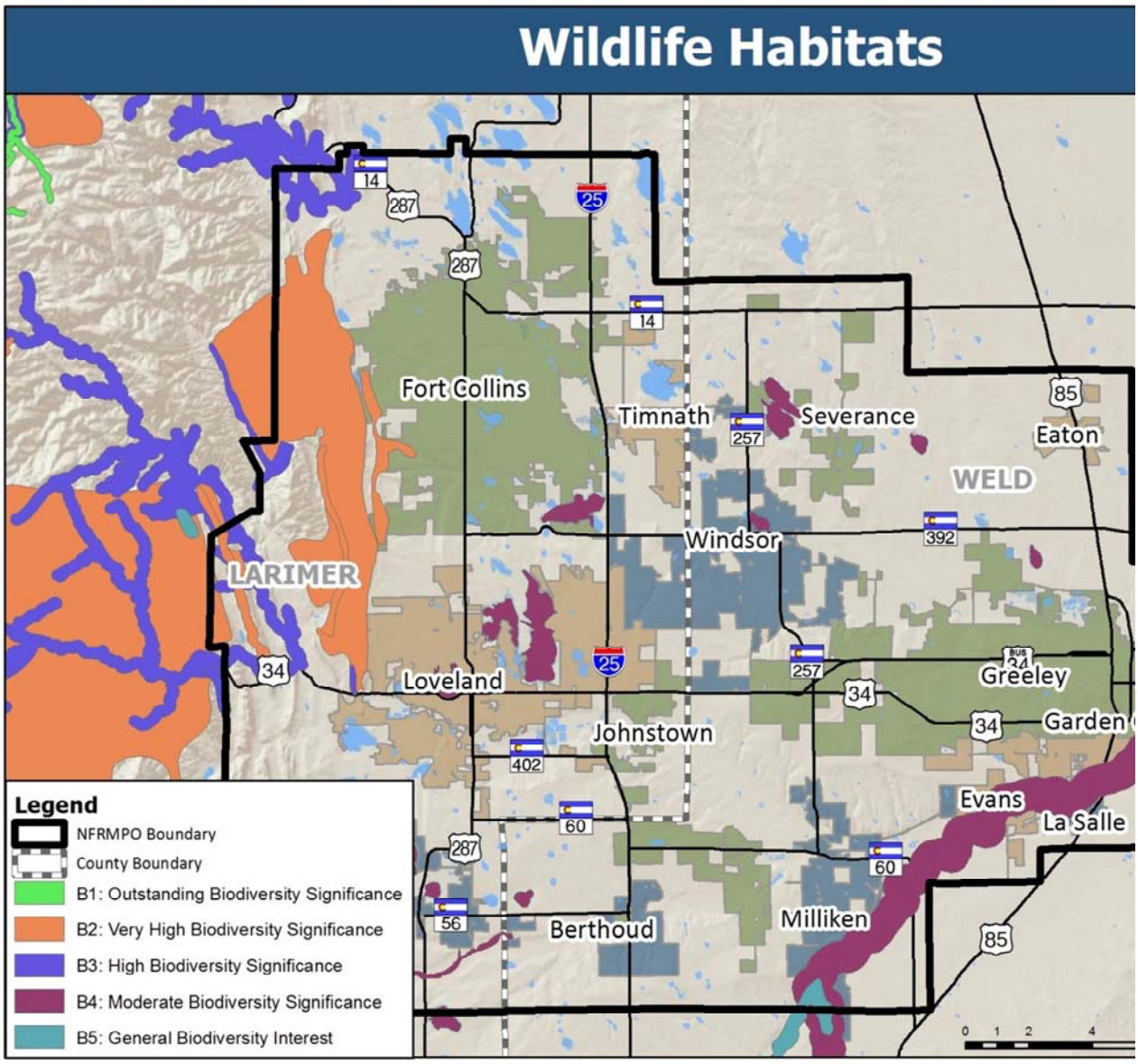
H. Conservation Areas

The CNHP identifies Potential Conservation Areas (PCA) on a Statewide basis regularly. A PCA is an ecologically sensitive area that provides species, suites of species, or a natural community upon which they depend, for its continued existence.[48] **Figure 5-7** identifies these areas within the NFRMPO. These areas are the best estimate of the primary area required to support the long-term survival of targeted species or natural communities. The size and configuration of a PCA is dictated by what species, communities, or systems the CNHP seeks to conserve at a given location. The PCAs do not necessarily preclude human activities, but the target's ability to function naturally might be greatly influenced by them, and the areas may require management to limit human use. The areas with "very high" and "high" biodiversity significance are generally found around Horsetooth Reservoir, Devil's Backbone, hogbacks, and along waterways in the foothills on the western edge of the region. The area along the South Platte River also has general biodiversity interest.

The Regionally Significant Corridors (RSCs) identified in **Chapter 2** have minimal contact with the PCAs, with the main contact points crossing over rivers. Proposed bicycle and pedestrian trails could potentially have more of an impact on the PCAs than RSCs, especially along the South Platte River because of its biodiversity interest.

[48] http://www.landscope.org/colorado/priorities/cnhp_pca/

Figure 5-7: Potential Conservation Areas



Sources: Co

I. Energy

Significant oil and gas production has been underway in the region for most of the past century. Consequently, it is not unusual to see drilling rigs and operations equipment being transported from one place to another. Much of the petroleum is transported away from wellheads by tanker trucks rather than through pipelines.

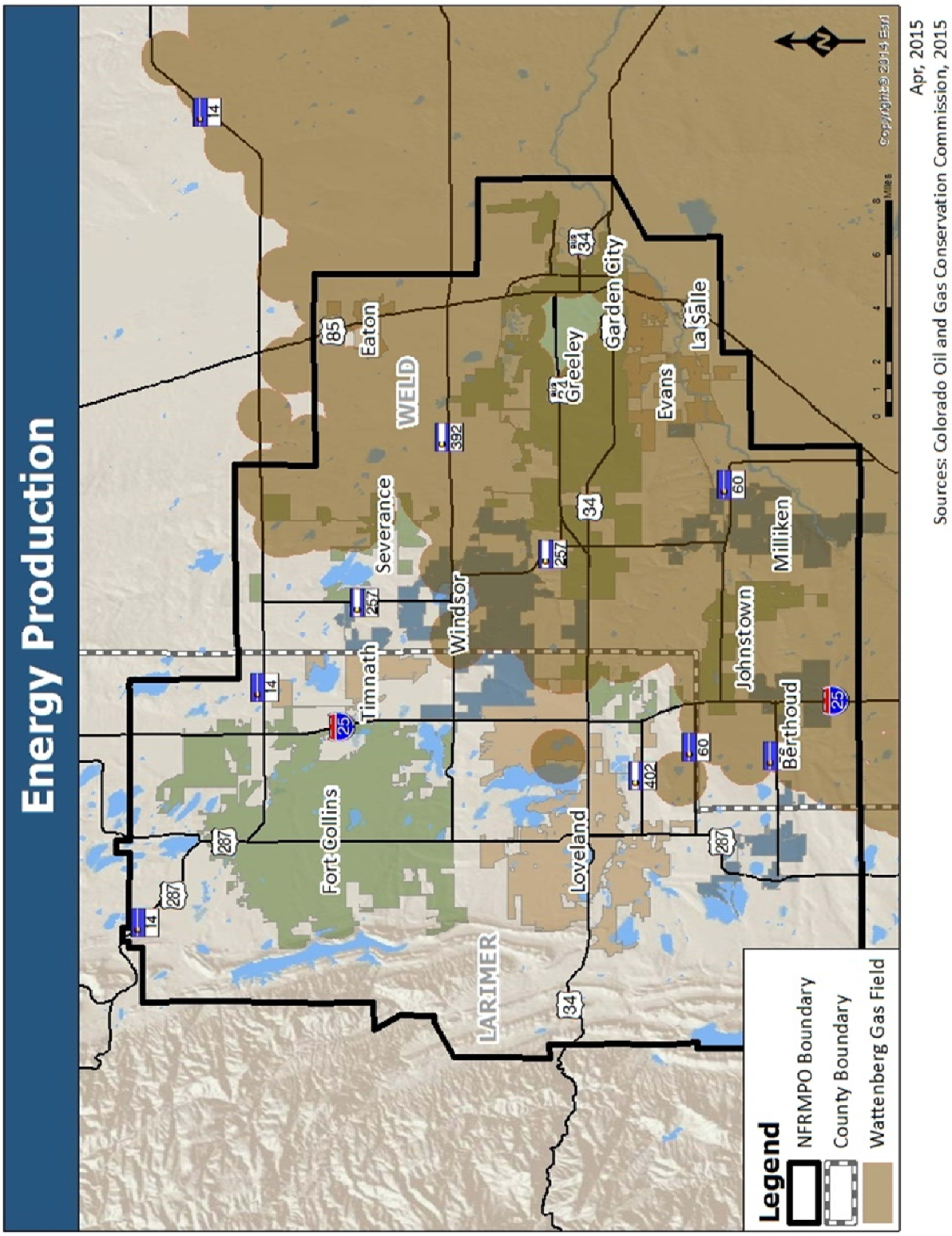
As shown in **Figure 5-8**, a large portion of Weld County and a small portion of Larimer County sit within the Wattenberg Gas Field. The Wattenberg Gas Field extends throughout Weld County south to Denver. Much of the economic growth in Weld County has been a result of the oil and gas industry. Weld County had more than 2,300 existing permits and 400 pending permits in 2014, while Larimer County had four permits and 15 pending in 2014. In 2012, Weld County produced 36,648,474 barrels of oil out of 49,384,913 barrels produced Statewide.[49] By comparison, Larimer County produced 171,772 barrels in 2012.

The presence of a thriving oil and gas production industry has had air quality consequences due to the emissions of gaseous pollutants from wellheads. Modeling of air quality for transportation conformity analyses is required to take these emissions into consideration (see the **Air Quality** section of this chapter). Consequently, some unique dependencies exist in the region between the oil and gas industry and the expansion and maintenance of the transportation system.

The Niobrara Shale is a shale rock formation covering Northeastern Colorado, Southeast Wyoming, Southwest Nebraska, and Northwest Kansas. Oil and natural gas can be found within these rock formations beneath the ground surface at depths of approximately 7,000 feet or greater. Companies drill wells vertically and horizontally to access the oil and gas, and use a complex fracturing system to extract the resource. Companies are still in the early stages of exploration of the Niobrara play; however, results appear to be promising and an assessment of long-term production is underway. In 2013 and 2014, oil and gas companies were actively expanding their mineral interests and leases in Weld County.

[49] COGCC Reports: http://cogcc.state.co.us/COGCCReports/

Figure 5-8: Energy Production



J. Planning and Environmental Linkages

Process and Guidance

The Federal Highway Administration (FHWA) defines the Planning and Environmental Linkages (PEL) process as a collaborative and integrated approach to decision-making that considers environmental, community, and economic goals early in the transportation planning process. The PEL process uses information, analysis, and products developed during the planning stages to inform the environmental review, or NEPA process. MAP-21 acknowledges the FHWA PEL process and states a PEL study is beneficial to the planning process by incorporating environmental and community values into transportation decision making at the beginning stages of project planning and development. Additionally, PEL processes allow non-transportation agencies, such as federal, State, local, and tribal government resource agencies, to be an important part of the decision making process.

The 2035 RTP 2011 Update referenced an environmental streamlining project (Strategic Transportation and Environmental Planning Process for Urbanizing Places (STEP UP)) for Colorado to develop an improved process for addressing environmental impacts of transportation projects at early stages of planning. The project was initially a partnership between the NFRMPO, CDOT, EPA, FHWA, USFWS, US Army Corps of Engineers (USACE), USDOT, Colorado State Historic Preservation Office, and the CPW to develop tools to assist with more comprehensive and effective transportation, land use, and environmental planning. The target for STEP UP was to provide high quality data, limit environmental impacts, and have coordination early on with Resource Agencies and other public officials with environmental responsibilities.

CDOT has not implemented STEP UP as originally intended due to the challenges of organizing data being greater than anticipated. CDOT continues to pursue PEL studies in an effort to improve efficiency, reduce environmental impacts, and lower the costs of implementing transportation projects through the environmental review stages. The PEL process also helps to streamline projects and shorten decision-making by identifying planning studies before a full NEPA process, which requires evaluation of relevant environmental effects of a federal project or action, including developing alternatives, occurs.

In December 2012, CDOT, in coordination with FHWA, released a PEL Handbook to provide guidance on integrating transportation planning efforts with the NEPA process. CDOT's PEL process demonstrates the need to streamline decision-making and project implementation while focusing on environmental considerations to coordinate with the NEPA process. PEL studies are also used as tools to identify varying political needs and desires when a corridor spans multiple jurisdictions by combining efforts with multiple community technical experts and elected officials. Additional information on CDOT's PEL guidance can be found on the CDOT website at www.codot.gov/programs/environmental/planning-env-link-program.

Examples of PEL Studies in the North Front Range Region

US 34 Optimization Plan

The intent of the US 34 Optimization Plan was to identify basic needs for a 25-mile segment of US 34 from I-25 east to Kersey. The study was intended to identify specific needs of the corridor to determine services needed to meet future travel needs. The plan was a collaborative effort between Evans, Greeley, Johnstown, Kersey,

Loveland, Milliken, Windsor, and Larimer and Weld counties. The plan also identified environmental constraints along the corridor, which will be used in any future NEPA process.

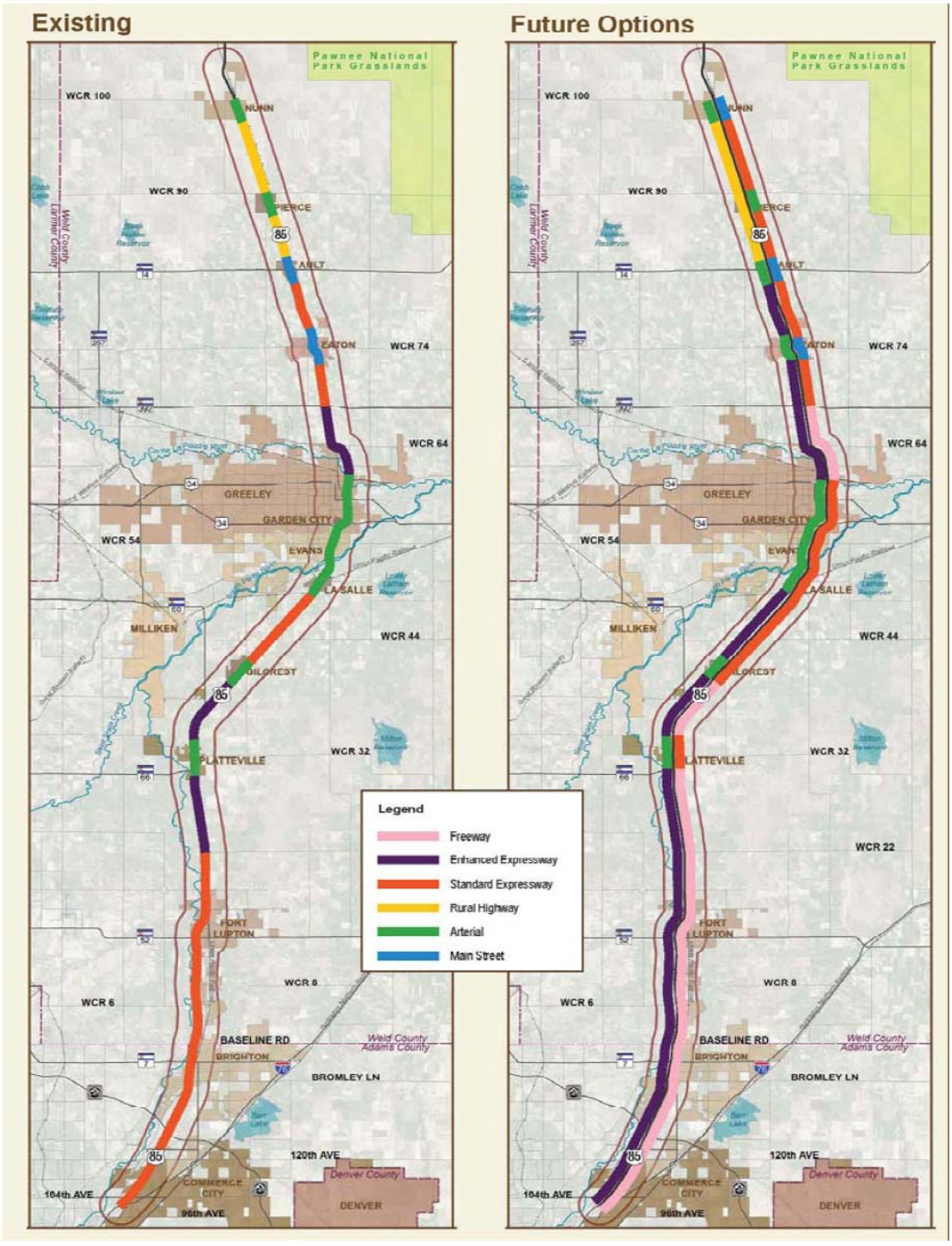
US 85 PEL

The US 85 PEL Study, currently underway, aims to develop a vision for the US 85 Corridor between I-76 and the Town of Nunn. The study uses considerations from the US 85 Access Control Plan and incorporates prioritization and implementations strategies for the different sections of the corridor. The US 85 PEL process is a collaborative approach between CDOT, local community representatives, MPOs, and the public. The PEL Study also aims to review the environmental, economic, and developmental impacts of individual communities along the corridor to develop alternatives to address needs, funding, and project prioritization. The PEL is scheduled to be completed in Fall 2015.

The NFRMPO participates in the US 85 PEL study as a member of the Technical Advisory Committee (TAC) and the Executive Committee. The TAC is comprised of representatives from communities along the corridor, regional and local transportation planning staff, CDOT representatives, as well as members of special interest groups. The NFRMPO will be used as a source of information and funding in future call for project cycles as priorities along the corridor arise in member communities. Outputs from the NFRMPO travel demand and land use allocation models could also be utilized when studying future travel demand and community population and employment growth predictions along the corridor.

Figure 5-9 shows the US 85 Corridor Sections as defined in the US 85 PEL.

Figure 5-9: US Highway 85 Classification Diagram



Source: *Felsburg, Holt, & Ullevig, 2015*

K. Environmental Mitigation

Much progress has been made in mitigating transportation's effects on the environment. According to 23 CFR §450.104, environmental mitigation activities are "*policies, programs, actions, and activities that, over time, will serve to avoid, minimize, or compensate for (by replacing or providing substitute resources) the impacts to or disruption of elements of the human and natural environment associated with the implementation of a long-range statewide transportation plan or metropolitan transportation plan*." Mitigation efforts should benefit neighborhoods and communities, cultural resources, parks and recreation areas, wetlands, water sources, natural areas, endangered and threatened species, and the ambient air. Project impacts are considered in the planning phase rather than after the project finishes.

Regional and statewide mitigation efforts have been discussed throughout this chapter. CDOT programs are aimed at improving air and water quality, preserving the delicate ecosystem of Eastern Colorado via the SGPI, and moving toward sustainable and cleaner energy production. All of these mitigation efforts are in line with CDOT's Statewide Transportation Plan and policies set and enforced by CDPHE.

Mitigation for disruption to the human environment is addressed in the *Environmental Justice* section of **Chapter 3**.

National Environmental Policy Act (NEPA)

Signed in 1970, NEPA is the federal environmental policy, which aims to incorporate the environment into the decision-making process. The three step NEPA process is important to transportation planning across the country, and includes:

- **Categorical Exclusion**
  Projects that meet federal agency's criteria for no significant environmental impact may be excluded from further NEPA examination.
- **Environmental Assessment (EA) / Finding of No Significant Impact (FONSI)**
  The EA is a report which determines whether a project significantly impact the environment. If the project will not significantly affect the environment, then the agency issues a finding of no significant impact or FONSI.
- **Environmental Impact Statement (EIS)**
  An EIS is prepared when a noteworthy impact is expected to significantly impact the environment. The EIS considers alternatives and proposed actions. Outreach must be provided.

State Level Requirements

Colorado enforces federal requirements for environmental mitigation, specifically for air quality and the environment. CDPHE works alongside the EPA to enforce the federal EAs and EISs. CDPHE is also the lead for air quality regulations for the State and local agencies in Colorado, including the NFRMPO.