### 2018-2019 Public Lands Transportation Fellows Program



Presented by: Corinne Jachelski and Nick Kaczor,
Rocky Mountain Arsenal NWR











### Webinar logistics

- Duration is 1:00 2:30 PM Eastern
- Webinar recorded and archived. For quality of recording, phone will be muted during presentation
- If listening on the phone, please mute your computer
- To maximize the presentation on your screen click the 4 arrows in the top right of the presentation
- At the end there will be time for Q&A
- There is a handout pod at the bottom of the screen











# Today's Presenters



Nick Kaczor
Assistant Refuge Manager
RMANWR



Corinne Jachelski
Public Lands Transportation Fellow (PLTF)
RMANWR











### Goal of this Webinar

To document and archive the work completed by the PLTF at the Rocky Mountain Arsenal NWR from 2018-2019, including his lessons learned and tips and tricks for applying these to other USFWS units.











### Audience for this Webinar

### • Today:

 Educate unit, regional, and headquarters staff for public lands agencies on what a Fellow in the program can accomplish.

### • Future:

 Intended as a training for future classes of PLTF and will be used at orientation.











# Agenda

- Introduction by Refuge
   Manager
- 2. PLTF Projects
- 3. Lessons Learned
- 4. General Suggestions
- 5. Q&A



### Introduction













# Colorado Front Range NWRC Needs for a Transportation Fellow

- We are an urban wildlife refuge located just outside of downtown Denver.
- We are one of fast growing refuges in the National Wildlife Refuge
   System in terms of public visitation.
- As a former military base, we are transitioning from the former 'square peg' military layout, to the 'round hole' refuge experience.
- The neighborhoods beside us are requesting easier access to enjoy the outdoors. We also know this is important for future generations to develop an appreciation for conservation.
- Refuge staff consists of biologists, law enforcement officers, managers, park rangers, etc., which are not the best at planning and implementing transportation projects.











# Colorado Front Range NWRC Needs for a Transportation Fellow

- We selected Corinne based on her public and private transportation planning experience; as well as her passion for conservation
- Corinne worked on several projects (which you will shortly see) that benefited the public uses of the Refuge Complex.
- Corinne did a great job integrating into the Refuge Complex and solving many issues.
- The PLTF Program was a very positive experience for the Complex, and we would encourage others to participate.



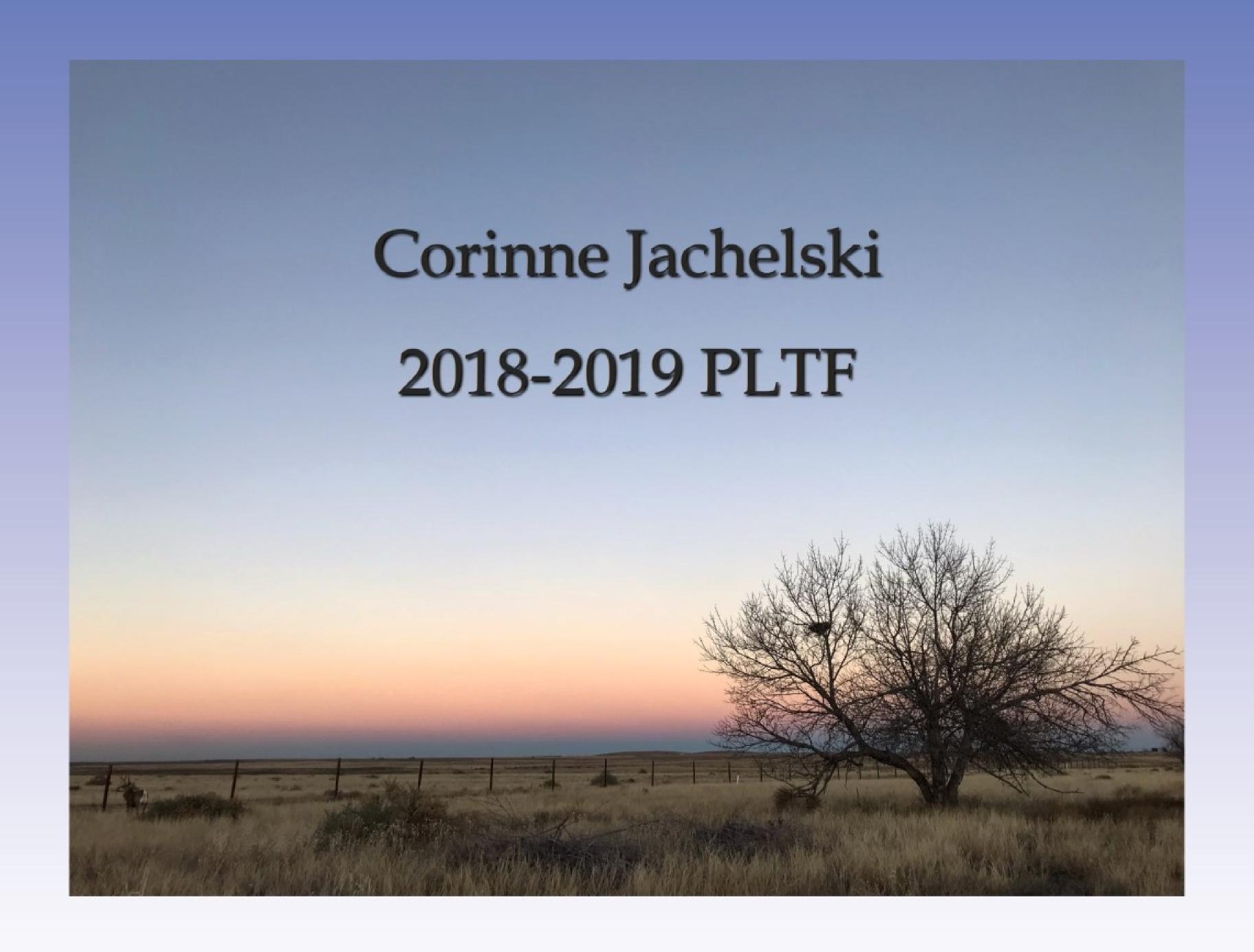








# RMANWR Projects & Lessons Learned













### Introduction

Name: Corinne Jachelski

Primary Refuge: Rocky Mountain

Arsenal

Start Date: June 18, 2018

Place of Birth: Baltimore, MD

Educational Background: B.A.

Geography and M.S. Environmental

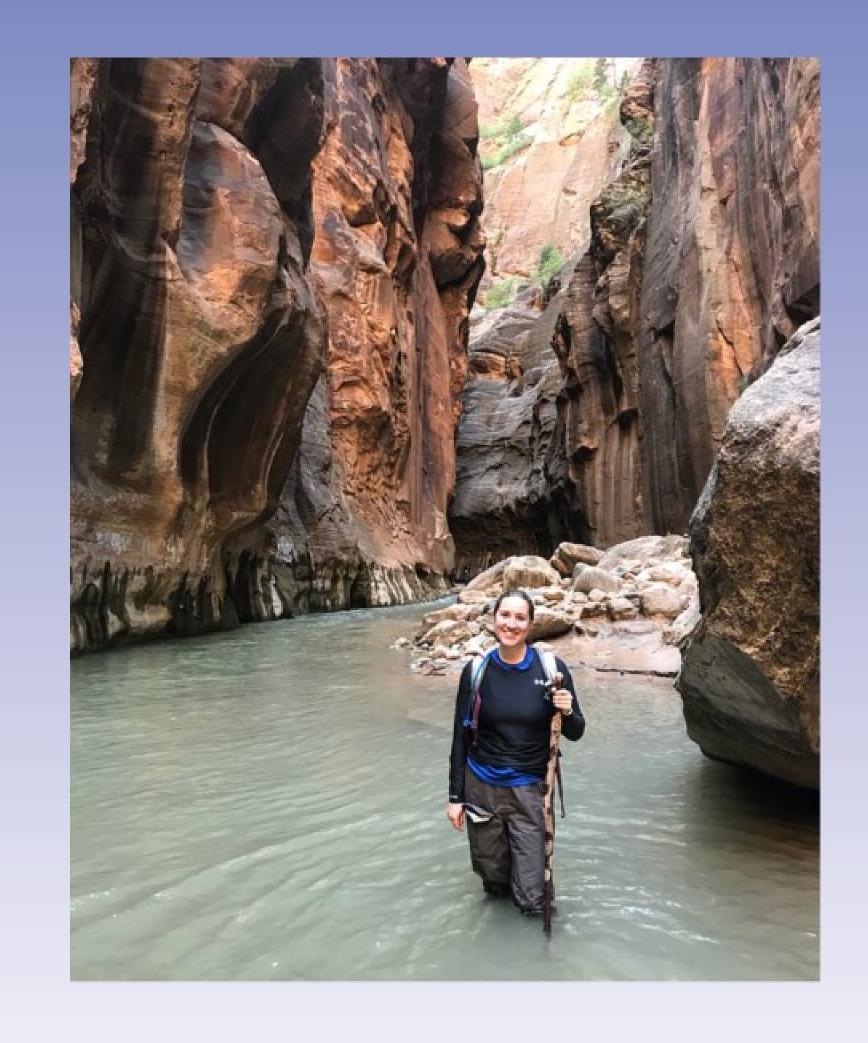
Science, Clark University

Academic Focus: sustainable urbanism,

active transportation

Fun Fact: Biked 200 miles through

Glacier National Park



### RMANWR



25 square miles; one of the largest urban refuges



12 miles northeast of downtown Denver, CO



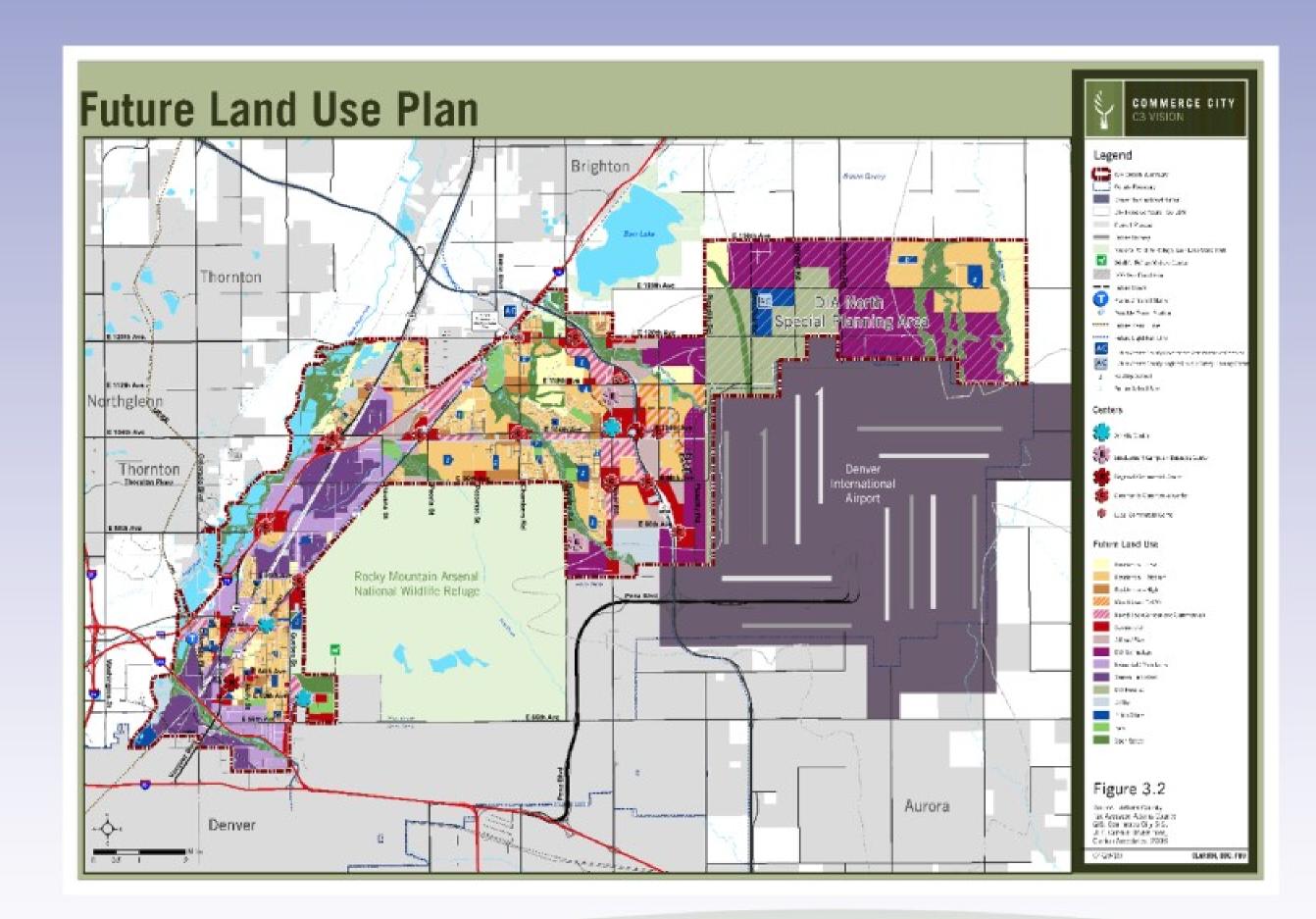
10 miles from Denver International Airport

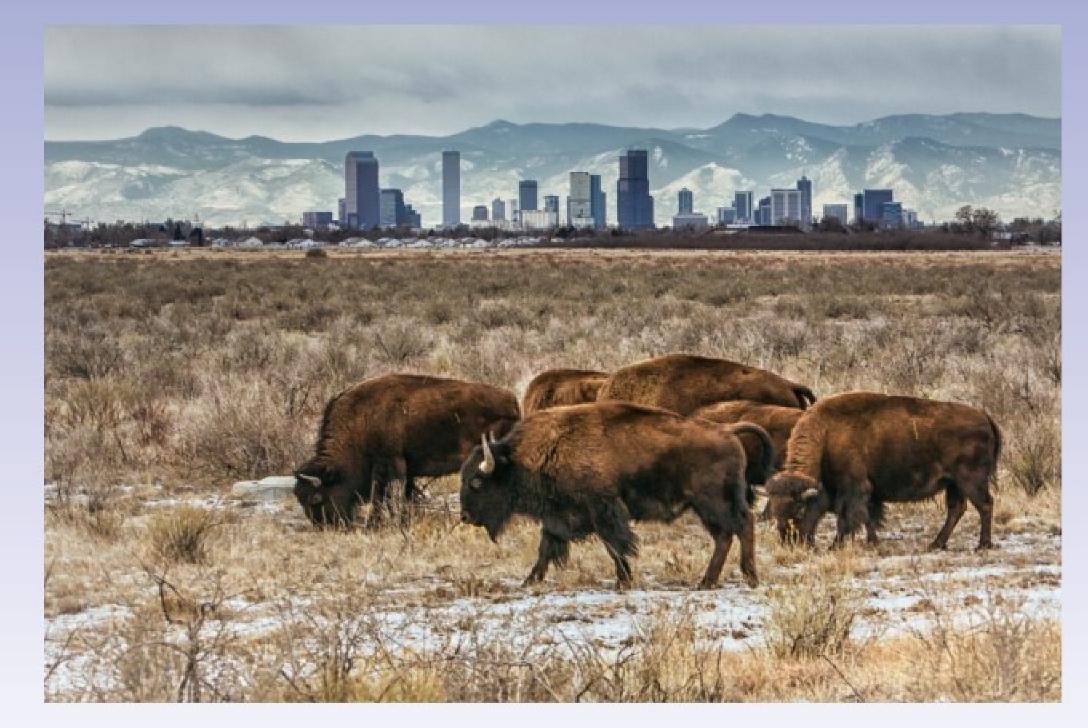


3 million in metropolitan area; fast growing



13% growth (2010-2016) in households in neighborhoods surrounding Refuge







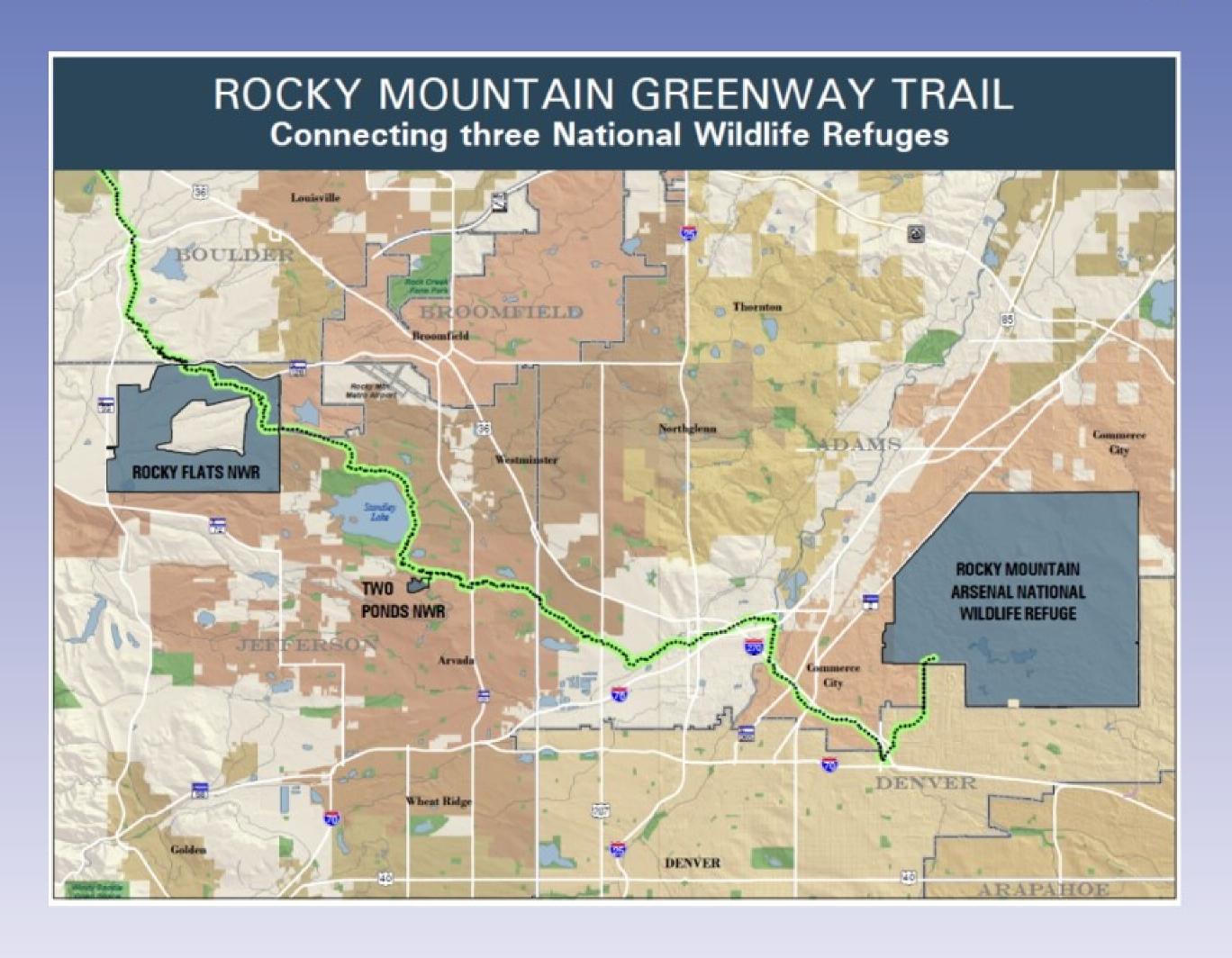








# Colorado Front Range Refuge Complex



- Complex contains the smallest urban refuge and largest urban refuge
- Rocky Mountain Greenway: 80-mile uninterrupted trail and transportation link
  - Passes through 10 municipal jurisdictions and 6 counties

Total Annual Visitors (year)			
Existing and anticipated visitation to federal land along the Rocky Mountain Greenway:	Rocky Mountain Arsenal NWR	200,000	2014
	Two Ponds NWR	15,000	2014
	Rocky Flats NWR	10,000	Future open years 1-3
	Rocky Flats NWR	85,000	Future open years >5









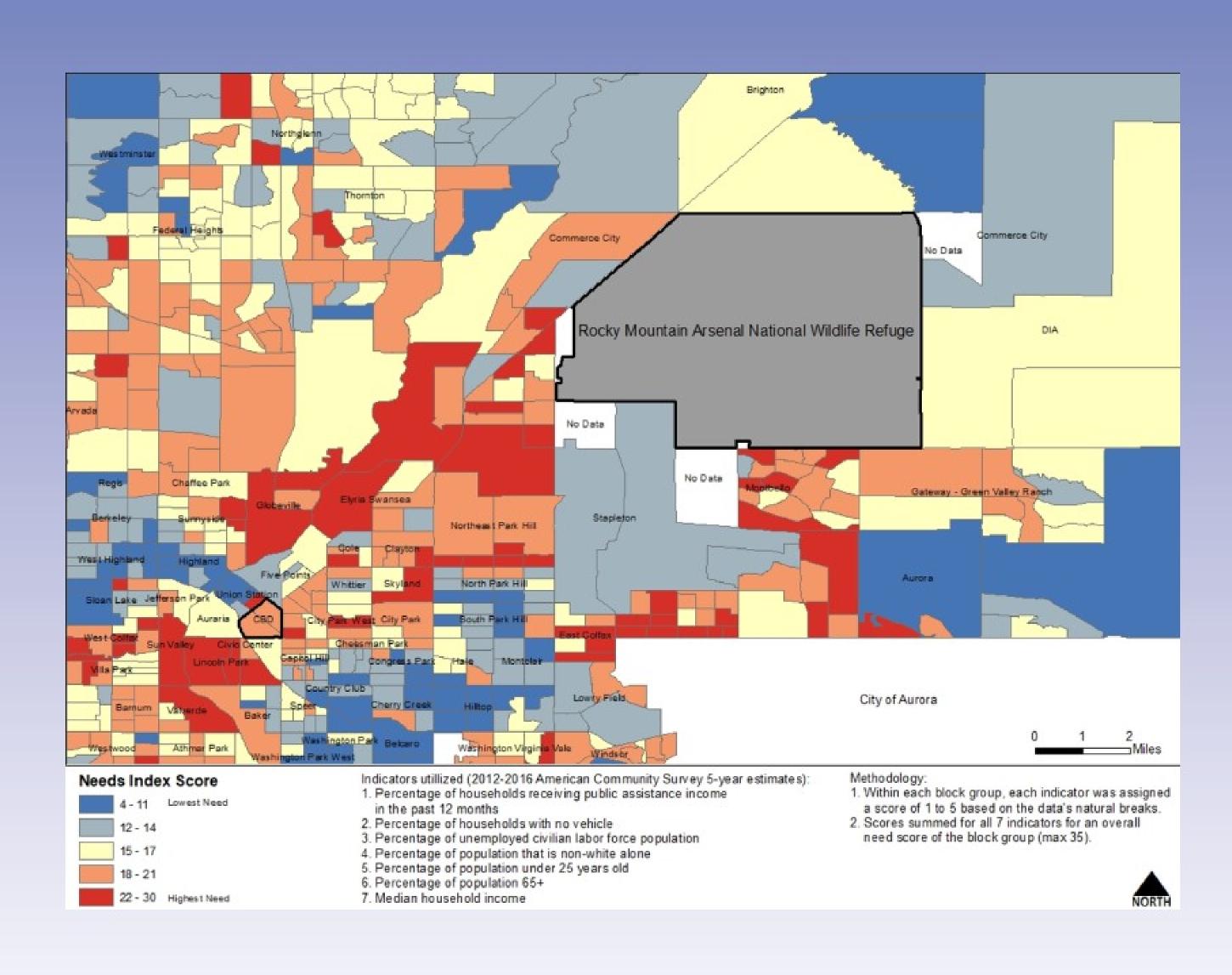


## Refuge Context

### Needs Index Map

Compared to region, communities surrounding Refuge tend to be:

- Lower income
- More diverse
- Less likely to own a vehicle
- Younger (high proportions of youth)













# PLTF Projects

### Statement of Work:

- Liaison on Trail Projects
- Outreach to Local Stakeholders
- Develop Advertising Materials
- Improve Transit and Rideshare Access

### Additional/Adaptive Items:

- Bicycle Management Plan
- Wayfinding Plan
- Site Plans





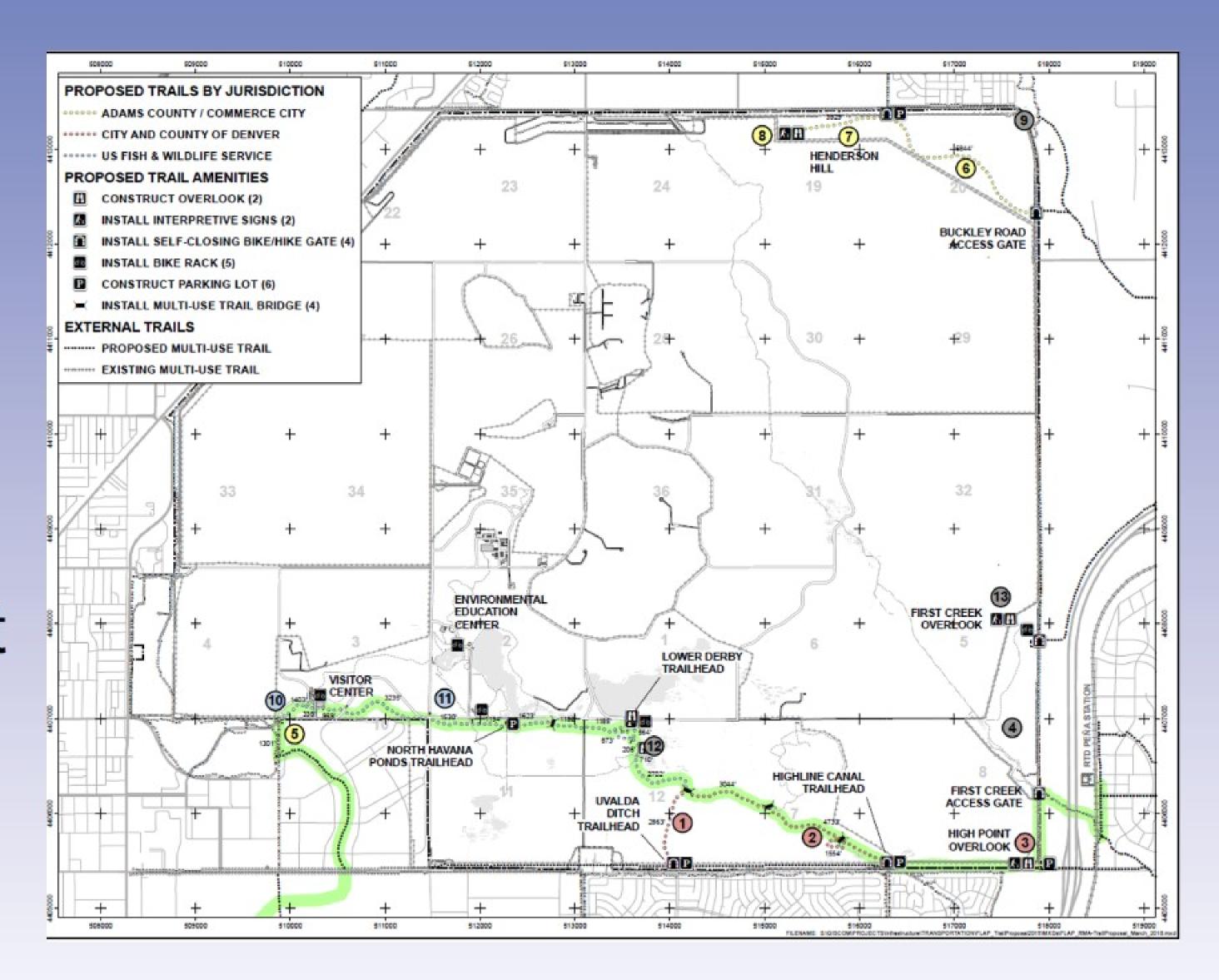






# FLAP Project

- Timeline/contracting delays
- 30% design process complete
- Construction of Lower
   Derby trail and parking lot
- Memorandums of Agreement













## FLAP Project

- Coordinating with stakeholders for call for applications due June 2019
- Encouraged eligible partners to apply for the missing links to the existing project













### FLAP – Lessons Learned

- Anticipate and adapt to timeline delays
- Don't be afraid to follow up repeatedly
- Keep your own record of notes and decisions, rather than relying on the consultant team
- Envision the finished product, phases, and missing pieces (right)













### Outreach

- Much of the public engagement process was done prior to my arrival
- Safe Routes to Parks grant Sand Creek Regional Greenway
  - Lessons learned: talk to more groups than just direct partners, bring everyone in the loop
- Worked on drafting a bicycle brochure and dynamic, online StoryMap











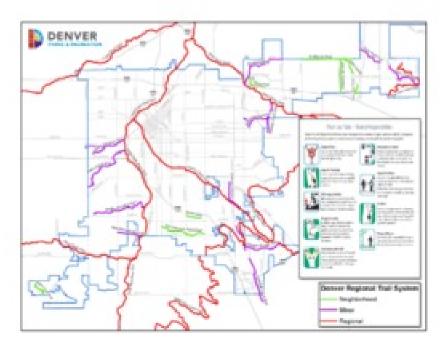
# Outreach Materials - Bicycle Brochure

#### Getting to the Refuge by Bicycle

#### Regional Bicycle Connections

The Rocky Mountain Greenway is a regional trail that goes through RMANWR and connects it to both Two Ponds NWR and Rocky Flats NWR. This is primarily along the Sand Creek Regional Greenway, Clear Creek Trail, and Little Dry Creek Trail

The map below shows the off-street multi-use trails in the greater Denver area that can be used for getting to the Refuge.



On-streets routes may be used as well, but exercise caution and plan your route ahead of time to find the safest streets.

Recommended Routes

From Downtown Denver:

From Stapleton: Central Park Boulevard

From Montbello:

From Commerce City:

From Green Valley Ranch:

From transit: identify closest stops

#### Online Resources

For more information, visit <a href="https://www.bicyclecolorado.org/ride-colorado/bike-maps-resources/">https://www.bicyclecolorado.org/ride-colorado/bike-maps-resources/</a>

#### Safety Tips

- Come prepared to deal with unexpected flats or other repairs.
- Dress adequately according to the weather.
- Carry plenty of water and stay hydrated.
- Use the proper protective gear while riding; children are strongly encouraged to wear a helmet and other protective gear.
- Carry a cell phone in case of emergencies. Please note that cell phone service may be unavailable in parts of the refuge.
- Use sunscreen and wear a hat.
- Bring insect repellent.
- Bring a lock and chain to secure your bike while hiking a trail.
- Do not ride in the dark. All visitors must be off the refuge before sunset.

Rocky Mountain Arsenal National Wildlife Refuge 6550 Gateway Road

Commerce City, CO 80022-1748 303 / 289 0930

rockymountainarsenal@fws.gov http://www.fws.gov/refuge/rocky\_mountain\_arsenal

For State Relay Service TTY / Voice: 711

For Refuge Information 1 800 / 344 WILD





U.S. Fish & Wildlife Service

### **Rocky Mountain Arsenal**

National Wildlife Refuge

### Bicycle Guide and Regulations



#### About Rocky Mountain Arsenal

Rocky Mountain Arsenal National Wildlife Refuge (RMANWR) is a 15,000-acre expanse of short and mixed grass prairie located northeast of Denver, Colorado. We invite you to enjoy the sights and sounds of the Refuge. More than 330 species of wildlife, including bald eagles, bison, black-footed ferrets, deer, coyotes, burrowing owls, and prairie dogs call the Refuge home. The Refuge also provides important feeding and nesting grounds for resident and migratory song birds.

To protect wildlife and habitat, visitor access is limited to designated trails and roads only. All other Refuge lands and staff roads are closed to visitor

#### Safety

Make your riding experience a safe one. Our bike routes are a combination of paved roads and crusher fines trails that may be rough in places. These routes are designed to provide visitors access to the more remote areas of the refuge, with opportunities to view wildlife. Please note that biking on pedestrian trails is not allowed. Follow the designated routes as marked in this guide and follow the signs at all times.

#### **Biking Regulations**

- Bicycle use is limited to Refuge operations hours of sunrise to sunset year-round.
- NO bicycles allowed in bison habitat areas.
- Do not approach or harass wildlife.
- Follow flow of traffic.
- Follow the designated bike routes and signage.
- Riding on pedestrian-only trails is strictly prohibited and strongly enforced. Violators will be prosecuted.
- Share the road and yield to pedestrians; pedestrians have the right of way.
- · Follow the speed limits.
- Ride in groups not exceeding 10 people. Large groups or excessive noise may be disturbing to wildlife.
- Do not bring pets; pets are not permitted on the refuge
- Do not carry alcohol, drugs or fireworks. Alcohol, drugs, fireworks or fires of any kind are prohibited.







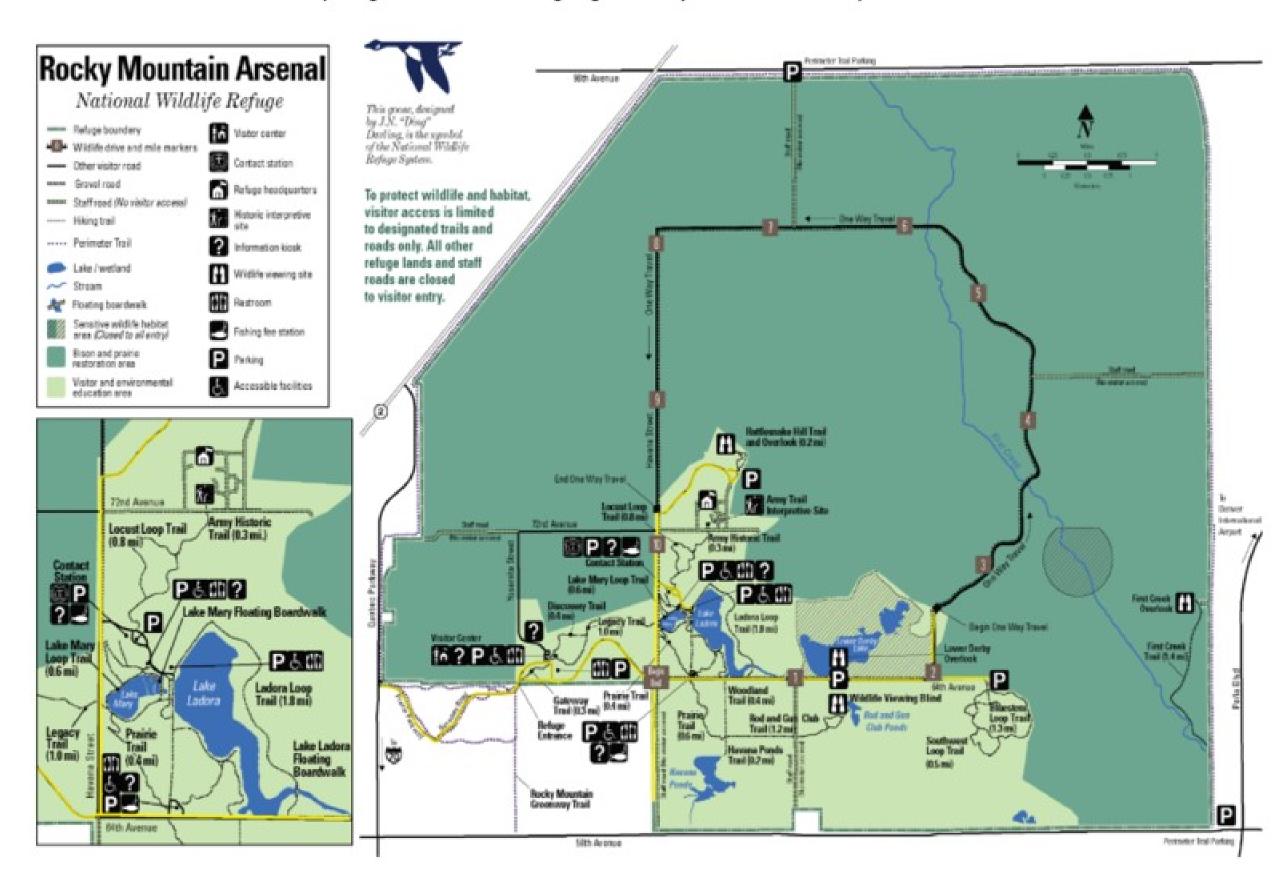




# Outreach Materials – Bicycle Brochure

### **Bicycle Routes**

Sections of road where bicycling is allowed are highlighted in yellow on the map.



### **Suggested Routes and Destinations**

Distances are from Visitor Center to destination one way.

#### Rattlesnake Hill (3 miles)

Get up high for great views of Denver, the Front Range, and the Refuge — you might be able to see some bison.

#### Bluestem Loop (4 miles)

Get in a nice ride along roads or the Rocky Mountain

Greenway, and then park your bike to meander 1.3 miles
through open prairie habitat. Options to add on an additional mile with the Southwest Loop Trail or Wetland Trails.

#### Lower Derby Lake/Rod and Gun Club (3 miles)

Cruise along the Rocky Mountain Greenway through sweeping prairie vistas. Take a break to look for birds and wildlife at Lower Derby Lake or the Rod and Gun Club viewing blind.

#### Lake Mary/Lake Ladora (2.5 miles)

A short road ride to the lakes for a quaint walk viewing wildlife.

### Buckley Road/First Creek Trail (6 miles)

Ride the Greenway all the way through the Refuge and along 56th Avenue on the multi-use trail to the far east side of the Refuge. Ride along the Buckley Rd trail and park your bike at the wooden arch to walk along the First Creek Trail to the overlook (1.3 miles one way).

#### Perimeter Trail (25 miles)

Bike around the entire Refuge! Travel through different neighborhoods of Commerce City





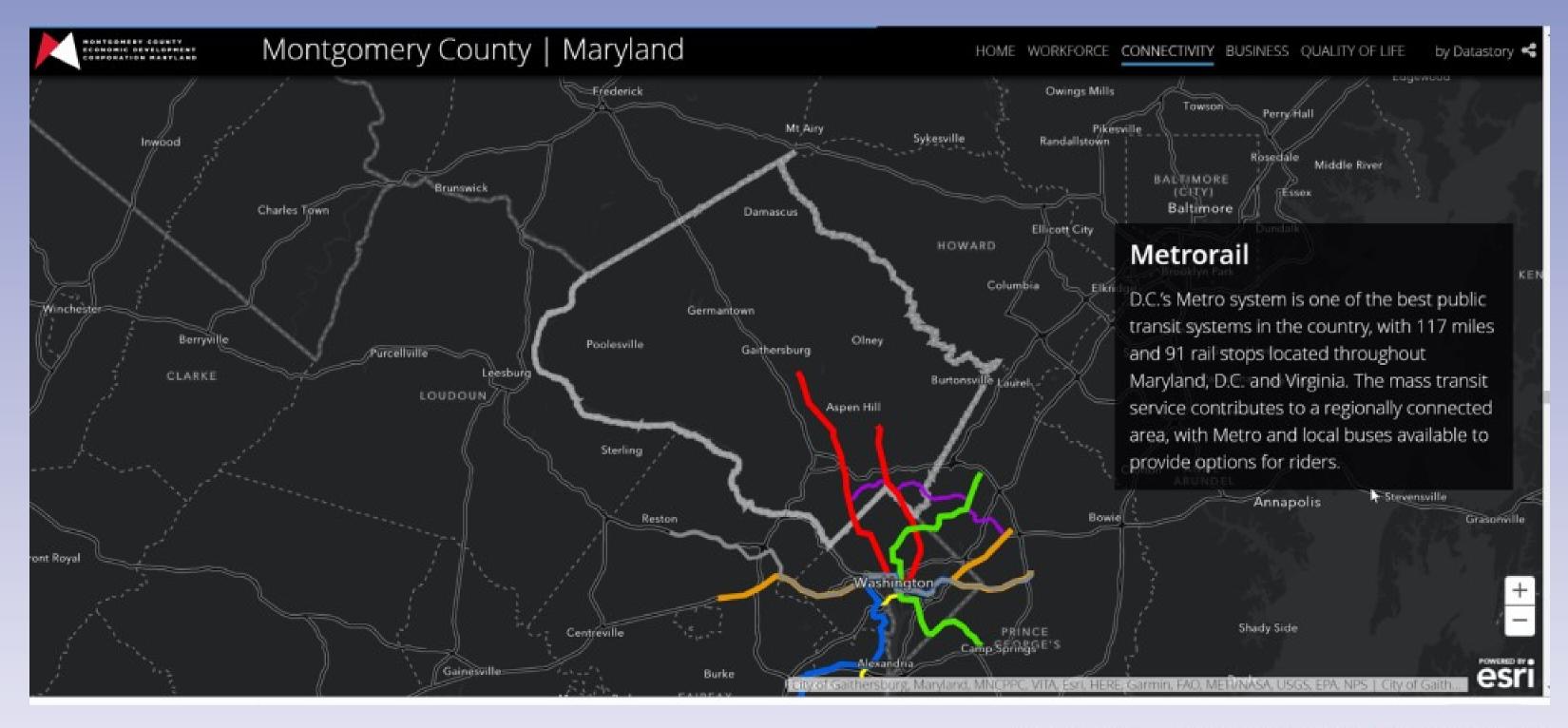






# Outreach Materials – esri StoryMap

- Dynamic maps
- Free to make with an ArcGIS Online account
- Various templates to choose from
- Upload your own data, photos, etc



Animated gif from Montgomery County StoryMap:

https://mcgov-gis.maps.arcgis.com/apps/Cascade/index.html?appid=260abfda8ef14d59a5a5ddf7ccb7be28





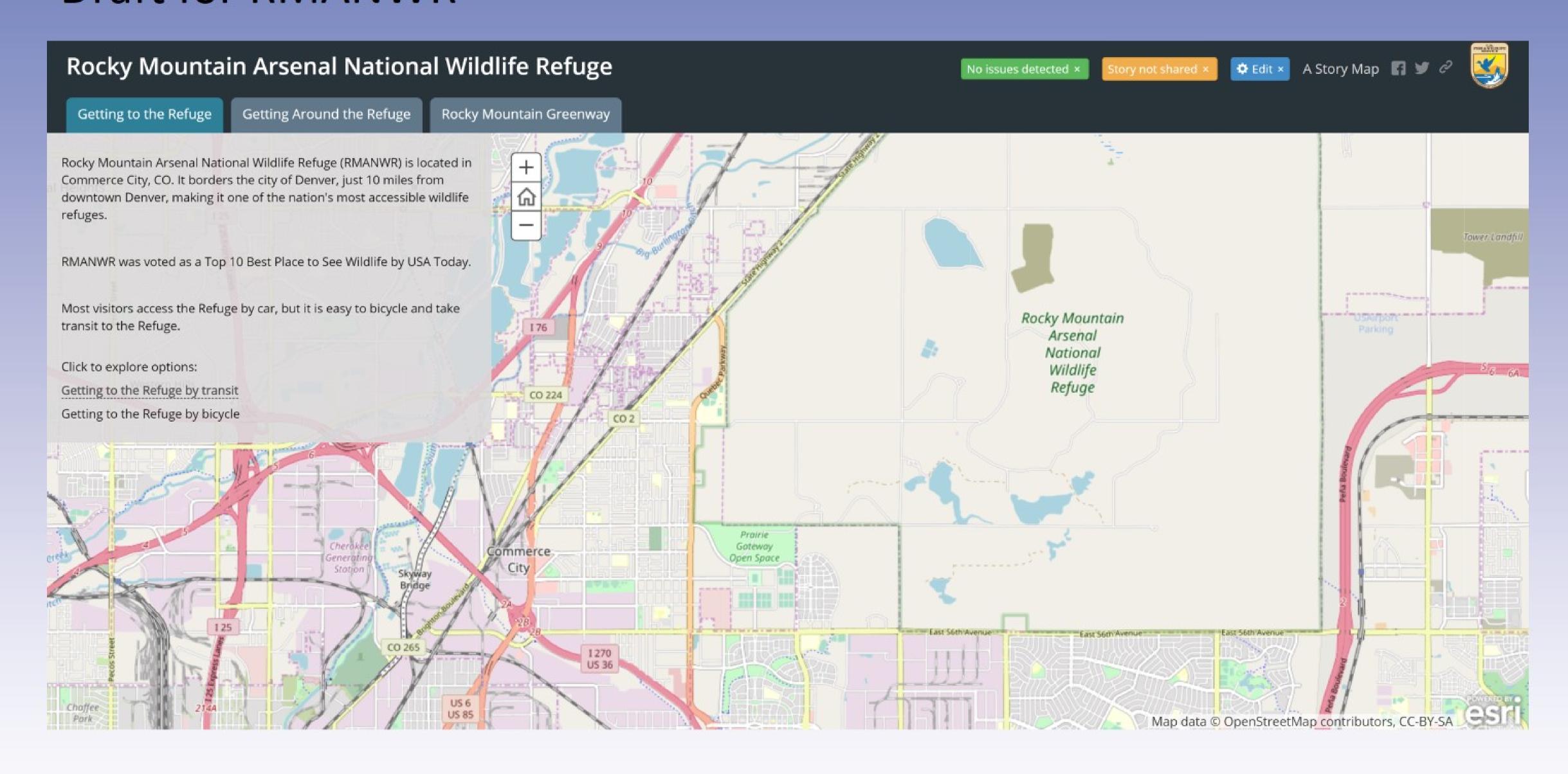






# Outreach Materials – esri StoryMap

### Draft for RMANWR













### Outreach – Lessons Learned

- Don't try to do things alone
- Talk to anyone relevant you never know who could be helpful
- Make connections early on while still trying to figure out your direction
  - Ask how your goals might align to work together
- Follow-up if you don't get a timely response
  - Ask who else they could connect you with











### Outreach – Lessons Learned

### Types of Stakeholders:

- Governments City, County, MPO, Parks & Rec, Health
- Schools
- Community Centers and Organizations
- Transportation transit operators, transportation management associations, bike share companies
- Environmental/bicycle advocacy groups
- Neighborhood Associations
- Youth
- Tourism
- Philanthropic/Grants (\$\$)











### Transit and Rideshare Access

 Rideshare (Lyft incentives developed by previous Fellow) contracts stalled in legal phases at HQ

- Bike-share
  - Refuge not ready for bicycles yet
  - Distance from downtown these services are primarily concentrated in denser area
  - Constantly evolving technology and leading companies





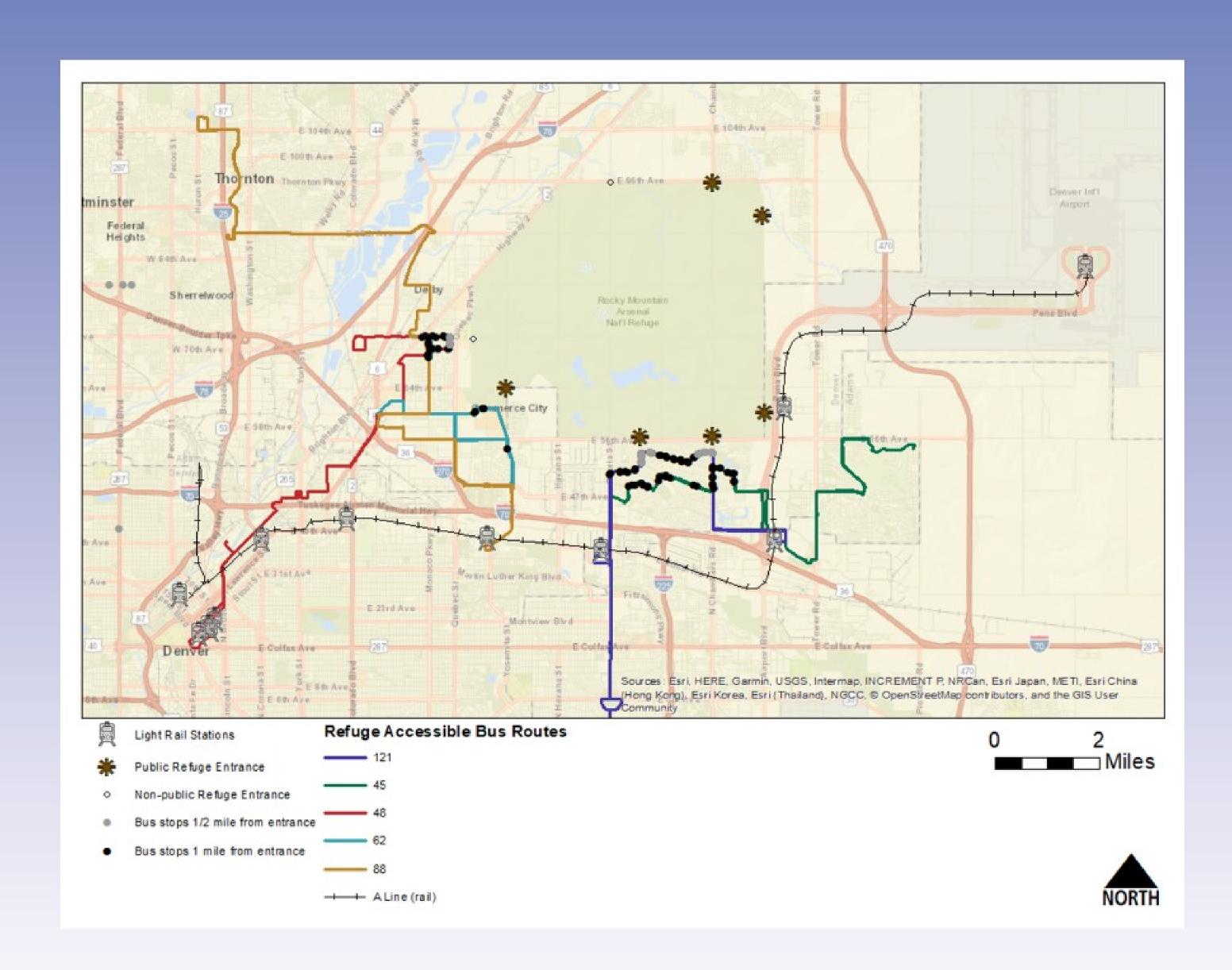






### Transit Access

- Stop nearest to Refuge entrance is 1 mile away
- New entrances create an opportunity for transit connections on multiple lines
- Connection to the light rail station at 61<sup>st</sup> and Peña is a crucial piece to link FLAP project together









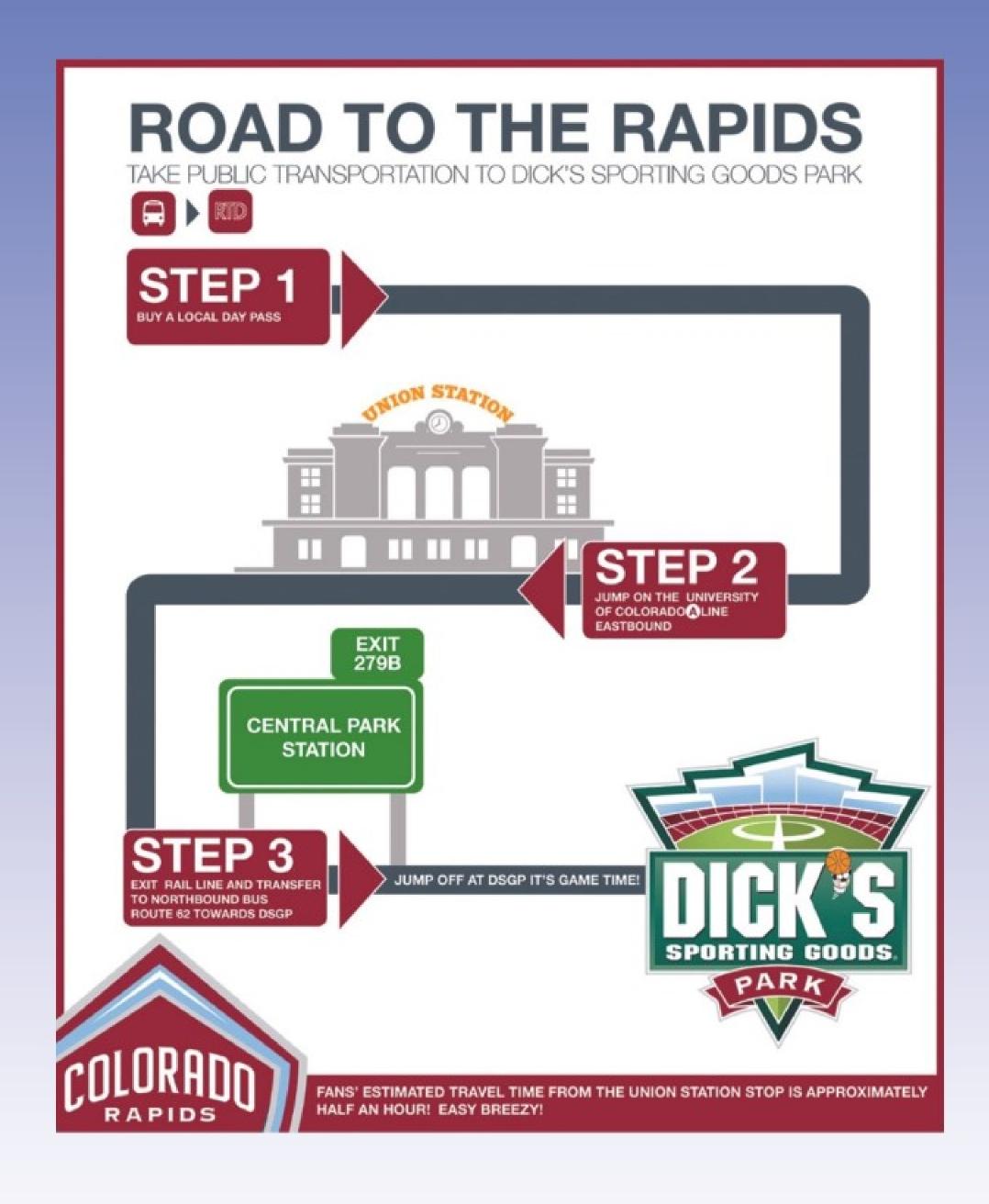




### Transit Access

### RTD Route 62 (1 mile from Visitor Center)

- Provides extended service for designated
   Colorado Rapids game days and additional
   events at nearby Dick's Sporting Goods Park
  - Only runs every hour
- Created advertisement for ease of transit use
- Refuge could pilot extended service in the summer
  - Develop similar advertisement to bolster ridership









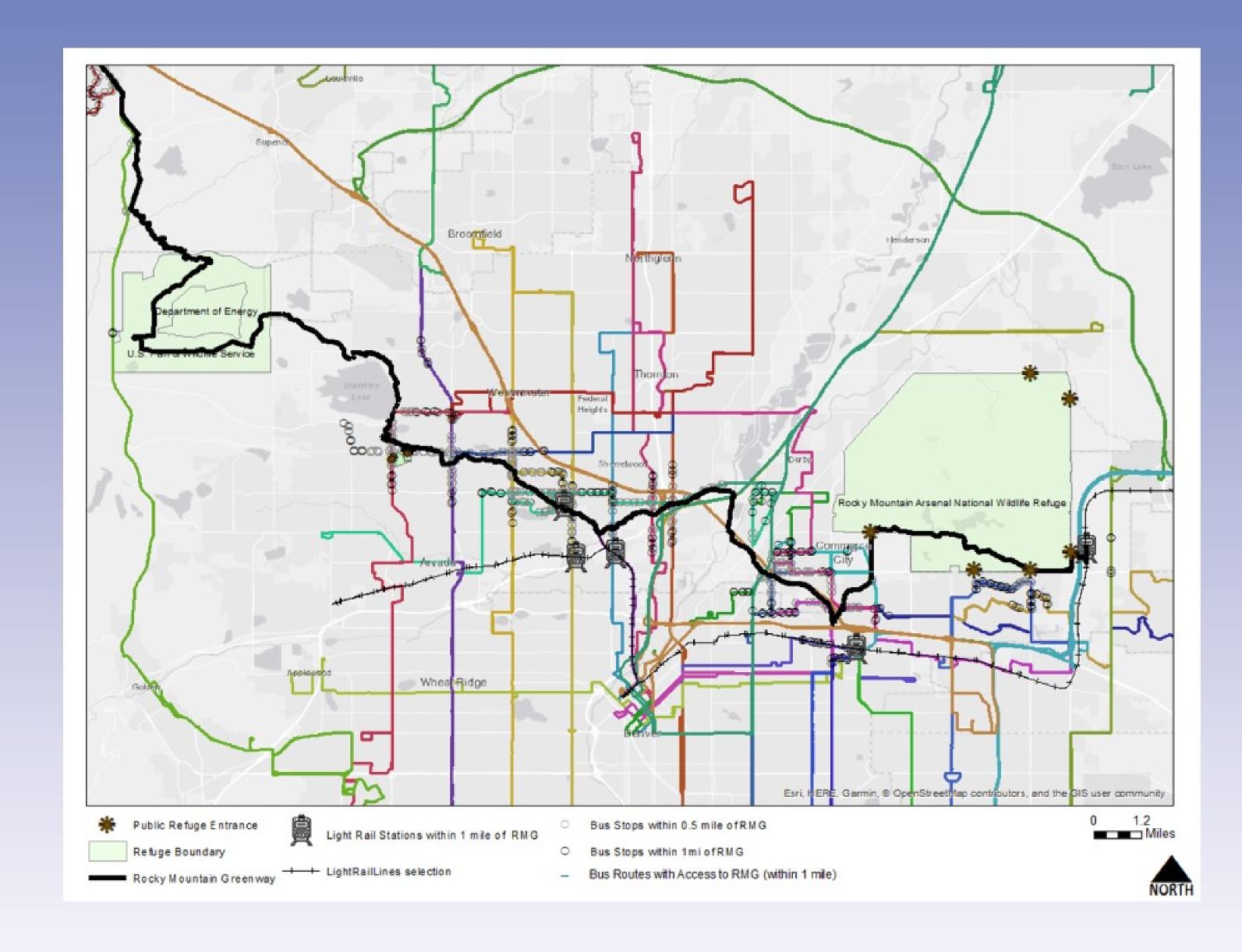




### Transit Access

# Connecting the 3 refuges via the Greenway and transit

- RMANWR to Two Ponds:
   16 miles one way
- Two Ponds to Rocky Flats:
   7 miles one way













## Transit Access - Lessons Learned

- Request in-person meetings
- Leverage precedents for extending service
- Offer to create (or just create) your own outreach materials
- Don't focus on the struggles of the system (low ridership on a specific line), focus on how you might be able to solve a problem (bolstering ridership)











## Bicycle Management Plan

### Why?

- Bikes not currently allowed on site past VC
- Rocky Mountain
   Greenway regional trail
   being constructed
   through site
- Shifting ways in which people get around



Family of cyclists on Perimeter Trail Source: Denver Post











### Bicycle Management Plan

### Process

- Formal refuge documentation
  - Compatibility Determination (description of use, anticipated impacts, justification)
  - NEPA Checklist
- Regulations
  - Adapted from Santa Ana NWR, which opened to bicycles in Fall 2018
- Road and trail maps
  - Based on current traffic speeds and volumes, no bike lanes are necessary initially
  - Deciding which trails will allow bikes and signing properly
- Bike rack locations







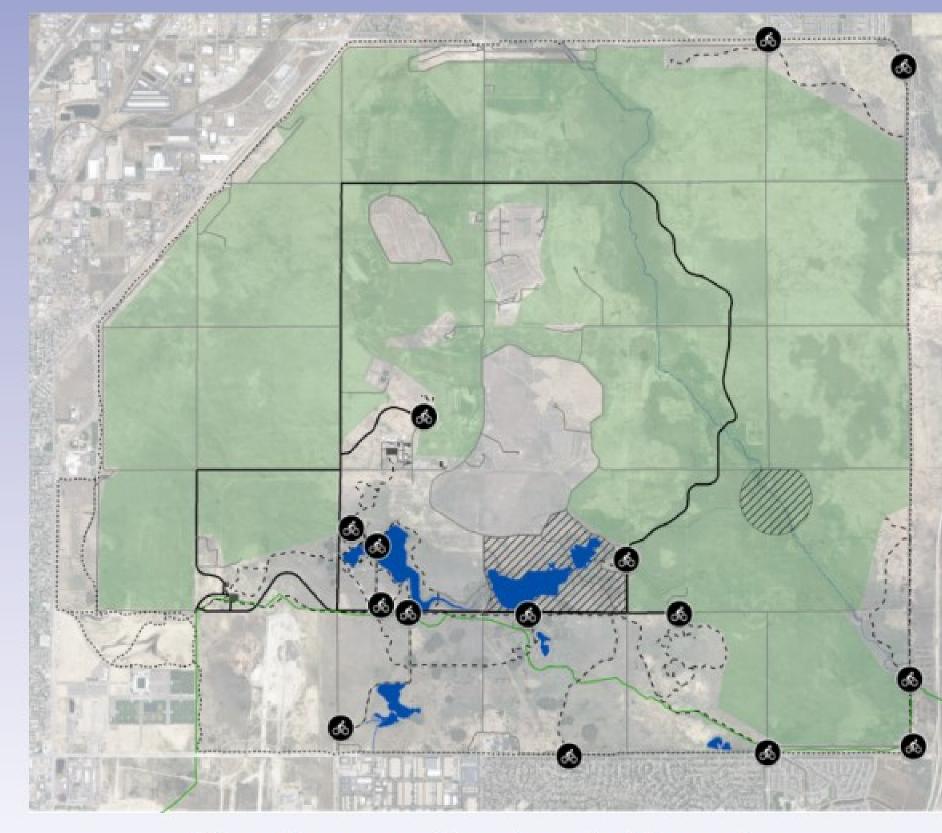




### Bicycle Management Plan

### Future needs for bikes

- Repair station
  - Could work with Commerce City to install one in the open space just outside the Refuge for mutual benefit
- Clear wayfinding/regulatory signage for bikes
- General information for public, awareness of safe routes for biking



Map of proposed locations for bike racks











# Bicycle Library

 Potential partnership with Northeast Transportation Connections (NETC)

- They have a number of "bicycle libraries" in their service area
  - Low-tech bicycle rentals/bike share
  - Members have a key to the shed and pay \$20 annual fee













## Bicycle Library

- NETC offered to fund and maintain one on the Refuge
  - Creates equitable opportunity for biking, as not everyone owns a bike
- Membership and fees would not apply
  - Visitors would leave a "security deposit" of some kind at the Visitor Center desk (an ID)
- Requires no cost from Refuge and minimal staff time to run
  - Visitor Center staff would need only basic training about the process of bike rentals and regulations associated with bike use











# Bicycle Library

 This potential partnership is already set up for the Refuge to pursue when they are ready



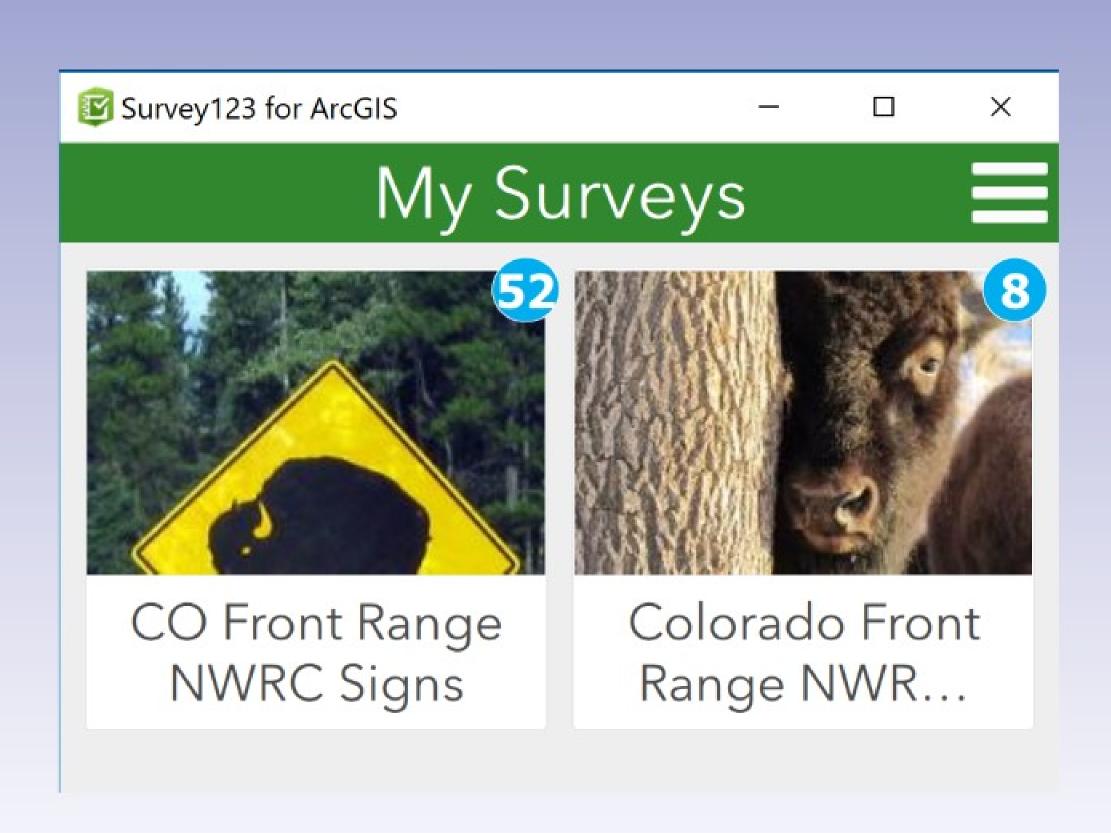


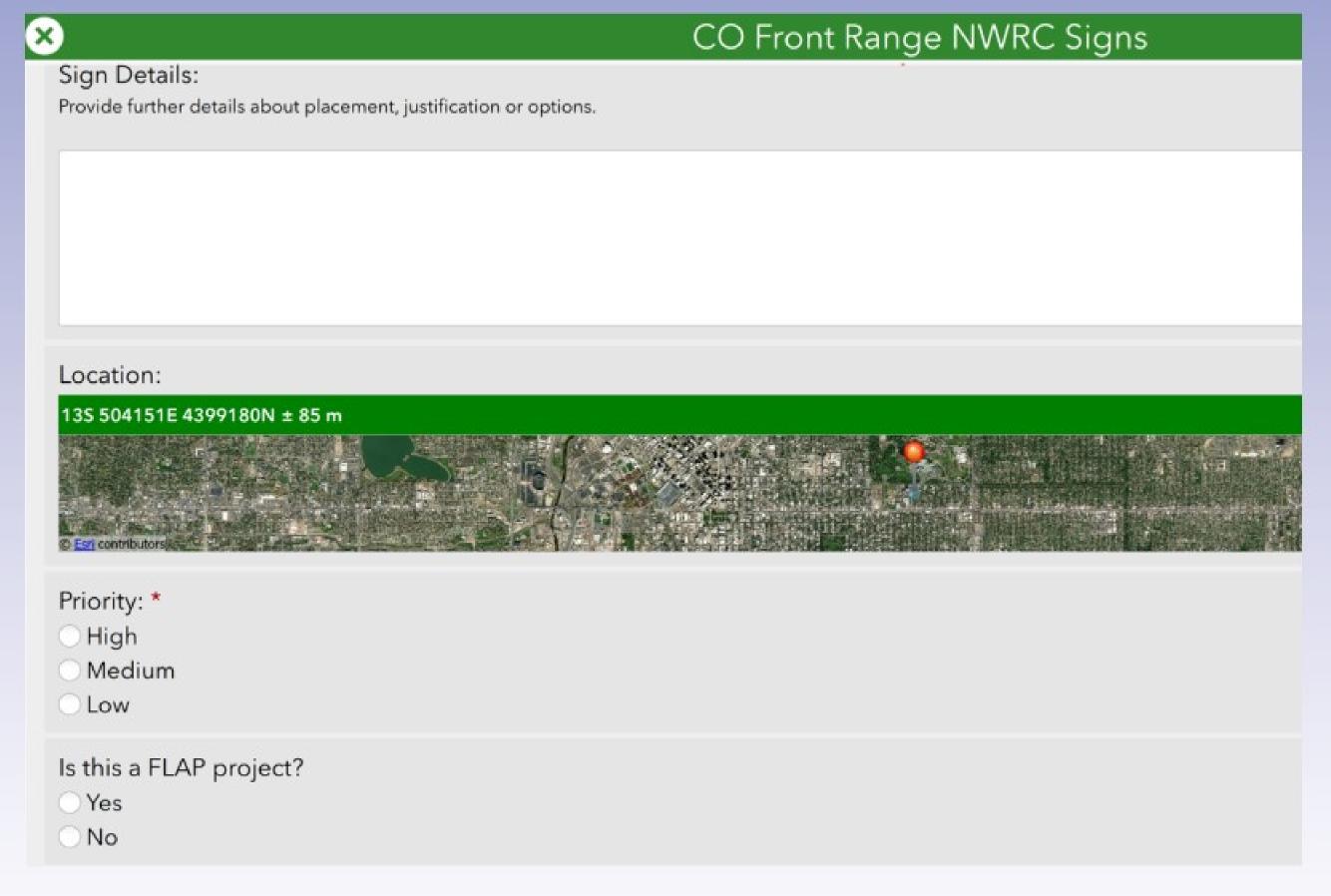




# Refuge Wayfinding

 Used Survey123 for ArcGIS to create a data collection form for wayfinding needs















# Refuge Wayfinding

- Form can be customized to your specific needs
- Allows Refuge staff to access the data for ease of implementation
- Picks up on your location in the field
  - Important for something as specific as sign locations



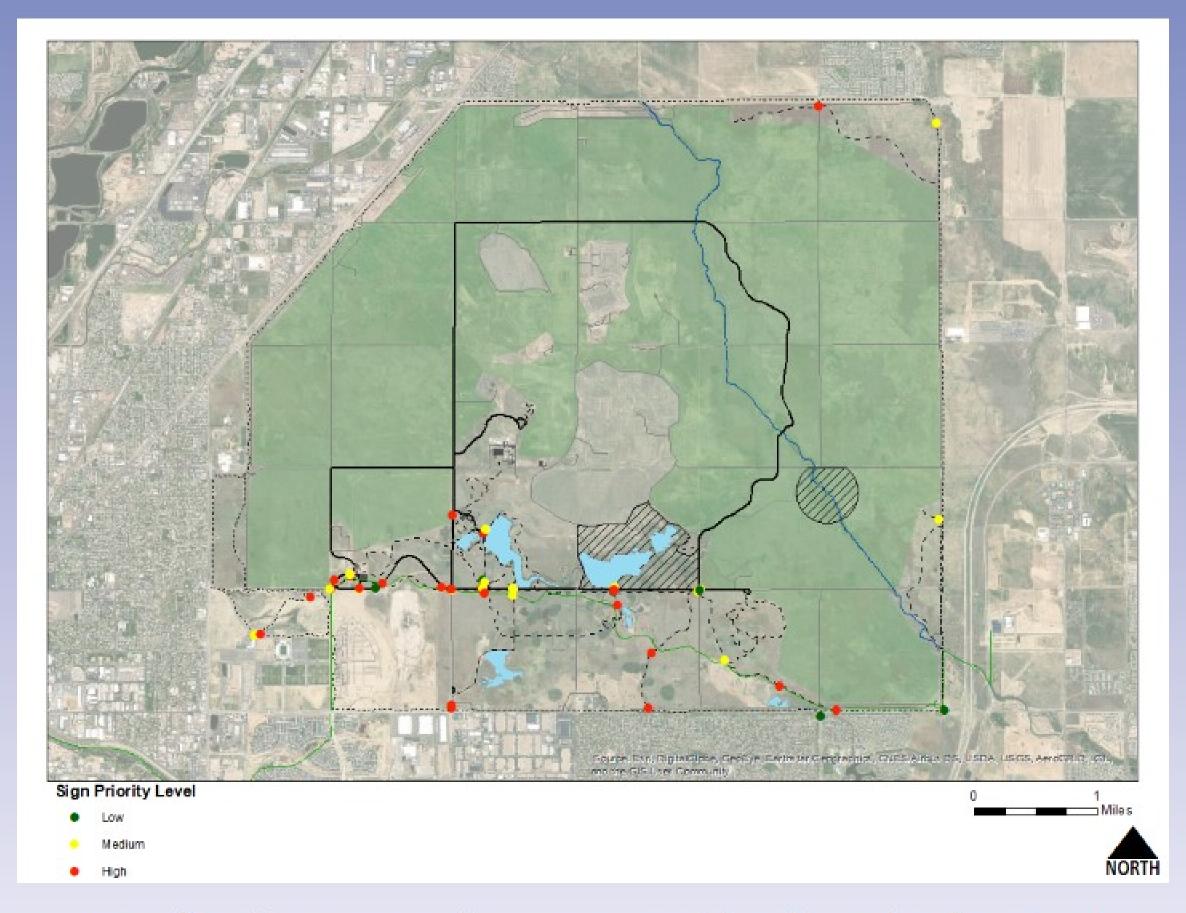




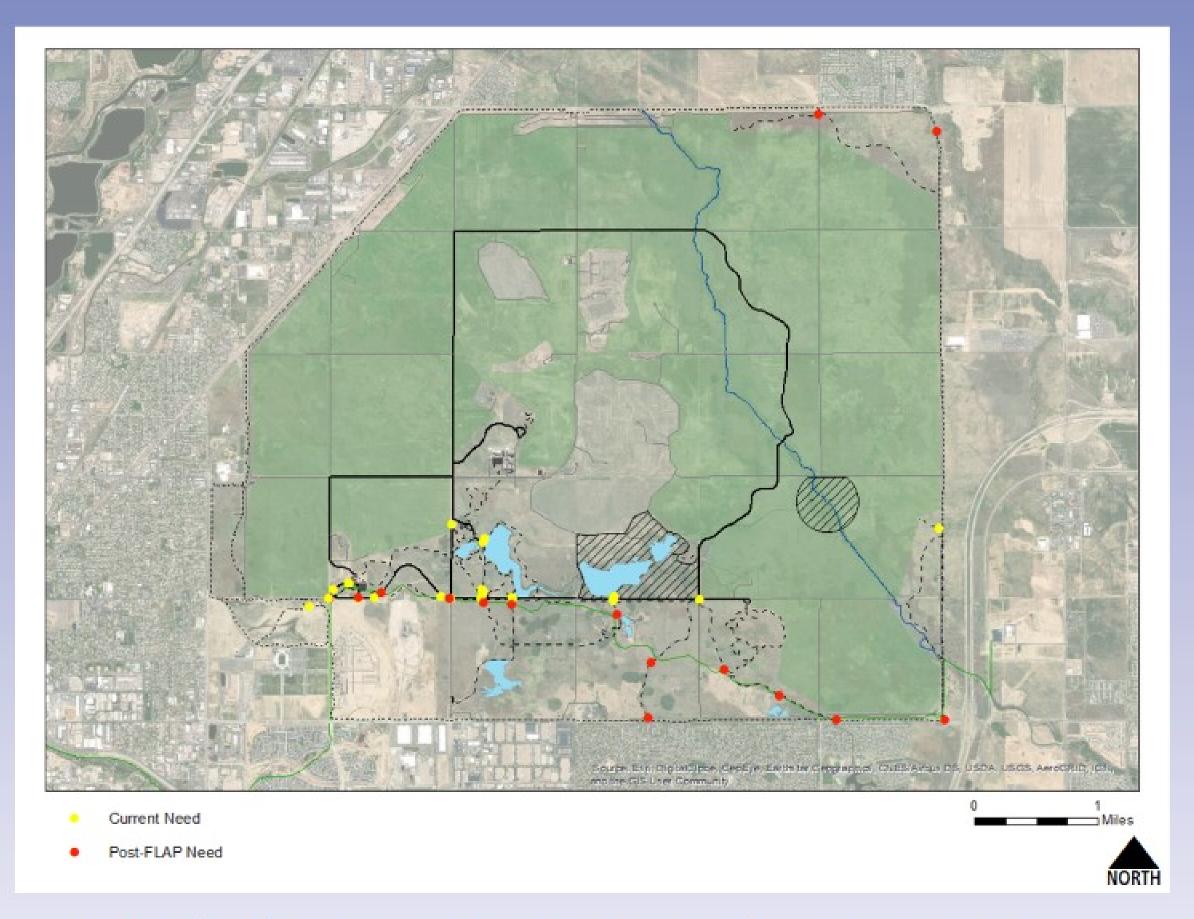




# Refuge Wayfinding



Wayfinding needs mapped by level of priority



Wayfinding needs mapped by current need and post-FLAP need





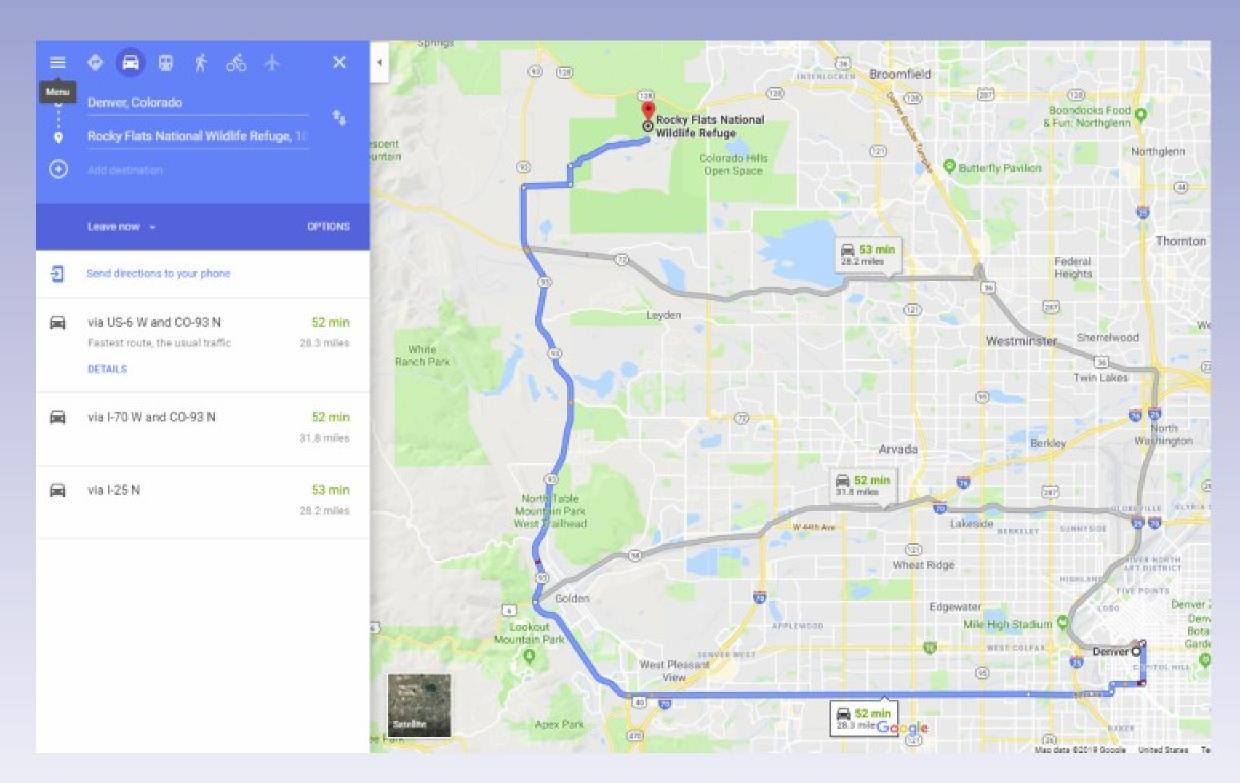


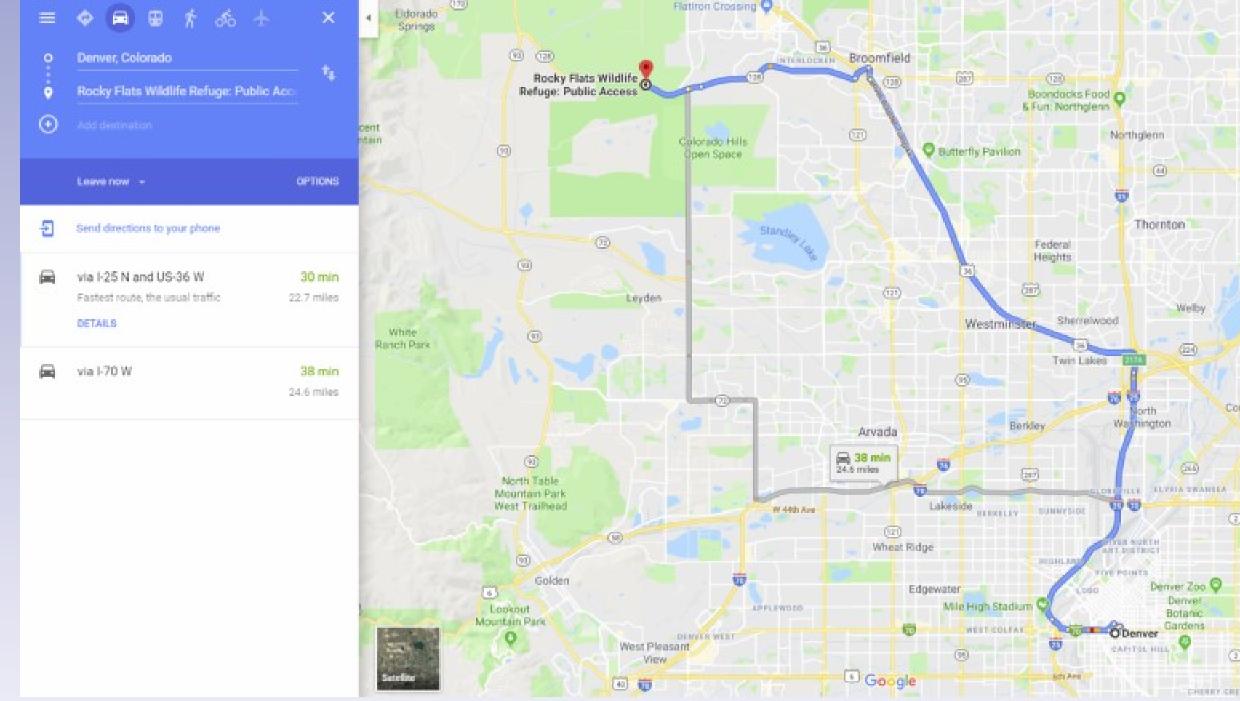




# Refuge Wayfinding - Google Maps

 Google Maps directed visitors to non-public entrances or confusing locations for both RMANWR and Rocky Flats















# Google Maps – Lessons Learned

- If you are going to "Claim this business," use a general refuge email address so that it can be accessed/changed in the future
- Submit edits multiple times
- Include in your comments that you work for the refuge and your FWS email address
  - FWS security settings on Google enterprise don't allow you to make edits from FWS account











#### Why?

- Guided tour of 11 mile Wildlife Drive
- Internal transit within the Refuge

#### Current constraints:

- Staff time/availability
- Volunteers with a commercial drivers license













 An estimated 245,000 visitors took the 11-mile Wildlife Drive in 2015. Each year, this equates to:



2,695,000 miles driven



1,089 tons of carbon dioxide emitted



163 homes' electricity use



- "If you can't measure it, you can't manage it"
- What would be the environmental impact (+) of adding more tours and replacing vehicle trips on the Wildlife Drive?











Live Demo of Greenhouse Gas Dynamic Spreadsheet

Variables	Inputs	Units		Results		Units
Auto-tour visitors	245,000	people	No Shuttle	Current total visitor miles driven (yearly)	2,695,000	miles
Shuttle capacity	30	people		Current visitor CO2 tons	924	tons
# of weekly tours	1	tours		Average weekly auto tour traffic	4,712	vehicles
			Shuttle	Weekly visitor traffic with (n) additional weekly tours	4,682	vehicles
These items are constants that are used in the calculations				Weekly Savings (# of vehicles)	30	vehicles
Shuttle emissions per mile can be modified based on specific vehicle model				Yearly savings (# of vehicles)	1,560	vehicles
Calculations	Constants	Units		Total visitor miles driven (yearly)	2,677,840	miles
CO2 per mile - passenger vehicle	343	grams		Visitor CO2 tons emitted	918	tons
CO2 per mile - shuttle (standard bus)	56	grams		Weekly miles driven by shuttle	11	miles
Auto-tour mileage	11	miles		Annual miles driven by shuttle	572	miles
			Savings Compariso	n Annual visitor miles saved	17,160	miles
				Annual visitor GHG savings (CO2)	6	tons
EPA GHG Equivalencies (1 ton)				Shuttle adjusted* CO2 grams saved yearly	5,853,848	grams
Gallons of gasoline saved:	113			Shuttle adjusted* CO2 tons saved yearly	5.85	tons
Pounds of coal not burned:	1093		Equivalencies	Gallons of gasoline saved	661.48	gallons
				Pounds of coal not burned	6,398.26	pounds
				*Shuttled adjusted accounts for emissions from shutt	tle	
			Assumptions:			
		1 visitor = 1 vehicle	1 visitor = 1 vehicle (could add average vehicle occupancy line)			
			Each shuttle tour v	Each shuttle tour would replace 30 vehicles (full capacity)		









- If people are the biggest constraint to offering more tours, what is the potential for an autonomous shuttle?
- Smart City 61<sup>st</sup> and Peña Plan Easymile and Panasonic
- Easymile is an electric, autonomous vehicle company
  - Deployed 200 projects in 21 countries and transported over 320,000 people in various environments (university campuses, corporate campuses, city centers, amusement parks, etc.)











#### TractEasy

- Can pull four trailers of 15' each (up to 60 passengers)
- Run for 14 hours of operation on each charge
- Significantly lower operating costs over a traditional bus
- Can be modified/customized for climate, comfort, and accessibility
- Can travel around 10-15 mph
- Seats can be designed to all face outwards, providing ideal viewing

conditions for each passenger















#### **Barriers and Constraints**

- Technology requires localization for validating its location.
  - Localization refers landmarks that are calibrated to the route for use in conjunction with GPS, tire rotations, and other technologies to verify its position.



- Reference points, such as rocks, would need to be placed along the route
  - It is possible that road signs could be used, however, these are located approximately every mile along the route and the AV may need more frequent points.











#### **Barriers and Constraints**

- Max speed of 15 miles per hour other vehicles would need ability to pass the tram, given its maximum speed
- 11 miles is the longest route they've covered
  - In all new deployments, the routes are initially driven with the assistance of humans to ensure accurate calibration. This typically takes one day per ½ mile to 1 mile, meaning that an 11 mile route might require weeks of preparation.
- What are the regulatory barriers to this technology on federal roads?
- At what level(s) of USFWS does this need approval?











- This technology is not a good fit currently
- Rapidly evolving
- Re-evaluate need and desire in 3-5 years
- Current costs:

#### Initial:

Purchase price of Tract Easy (autonomous	\$171,000
tractor)	
Purchase price of 15 passenger trailer	\$30K/trailer
Start-up costs (set-up and deployment)	\$15,000

Total first year costs for 30 passengers: \$246,000

Total first year costs 60 passengers: \$306,000

#### Ongoing:

Annual software license	\$7,500/year
RTK + 4G (technology	\$3,300/year
requirements)	
Maintenance*:	\$11,000/year

Total annual ongoing costs: \$21,800











#### Overall Lessons Learned

- Meet regularly with refuge leadership
- Set up in-person meetings with stakeholders
- Keep in mind your scope of work, but don't be afraid to adapt it while keeping program goals in mind and timeline feasibility









## Overall Lessons Learned

- Your results may not be tangible during your fellowship period
  - focus what you can do, rather than fixate on what you can't
- Follow up ... follow up again
- Integrate with other Refuge staff and take part in opportunities to participate in other work











# Thank you

#### Including, but not limited to:

- Nick Kaczor and David Lucas and the entire staff of RMANWR
- Melissa Bordewin USFWS Region 6 Transportation Coordinator
- Jaime Sullivan and Phil Shapiro
- Laurie Miskimins and Elijah Henley at FHWA
- Vince Ziols, Dylan Corbin, and all previous Fellows
- Linda MacIntyre at NPS
- USFWS Headquarters and Volpe Transportation Center staff
- The many organizations in the greater Denver area doing important conservation and community work











#### Resources

- FHWA Bicycle and Pedestrian Safety Resource Center: https://safety.fhwa.dot.gov/ped\_bike/
- Grants
  - Safe Routes to Parks: <a href="https://www.saferoutespartnership.org/healthy-communities/saferoutestoparks">https://www.saferoutespartnership.org/healthy-communities/saferoutestoparks</a>
  - People for Bikes: <a href="http://peopleforbikes.org/grant-guidelines/">http://peopleforbikes.org/grant-guidelines/</a>
- NPS Active Transportation Guidebook:
   https://www.nps.gov/subjects/transportation/upload/UPDATED
   NPS Guidebook July2018 Final UpdateSept2018-WEB lowres 2.pdf











# Directing your Questions via the Chat Pod

1. Chat pod is on left side of screen between attendees pod & closed caption pod

3. Answers will appear here unless addressed verbally



2. Type your question or comment here











#### Contact Information

If you have any questions related to this presentation, please contact:

Nick Kaczor at nick kaczor@fws.gov

or

Corinne Jachelski at cjachelski@gmail.com

#### Or contact the PLTF Program Manager at:

(774) 571-3505 or jaime.sullivan2@montana.edu

https://westerntransportationinstitute.org/professional-development/public-lands-transportation-fellows/









