Metro Denver Nature Alliance

Connecting Communities. Championing Nature.
Our mission is to facilitate an inclusive regional alliance that enhances the alignment and impact of nature-based efforts in order to champion more equitable access to nature and to promote healthy people, communities, and natural places in the metro Denver region.
Agenda

8:00 - 8:30 am  Overview + Introductions + Grounding Activity

8:30 - 9:45 am  Equity in Action!

9:45 - 10:00 am  Networking + Bio Break

10:00 - 11:45 am  Regional Vision for People + Nature Workshop

11:45 - 12:00 pm  Sharing Out + Questions + Next Steps
Permission to doodle granted!

Step 1:
Think about how you spend time in nature...

Step 2:
Use the sheet to illustrate some of your most common experiences.
Introductions + Grounding Activity

Name, Organization

Name a wildlife species occurring in the region that you resonate with.
Equity Principles & Commitments

Turning aspirations into action...
DEAR PEOPLE,

We are polluting our earth. We are throwing trash in the oceans, beaches, and more. I am just 9 I hate to think what it would be like when I am 25. We should put trash in the litter can and burn the trash that could be burned. Because we are preparing environment for our children and our children's children and so on. So please keep our environment clean.

Love,

Charnell Mc Mullen
REPRESENTATION
1. The Green Ceiling
   Despite increasing racial diversity in the United States, the racial composition in environmental organizations and agencies has not broken the 12% to 16% “green ceiling” that has been in place for decades.

2. Unconscious Bias, Discrimination, and Insular Recruiting
   Confidential interviews with environmental professionals and survey data highlight alienation and “unconscious bias” as factors hampering recruitment and retention of talented people of color.

3. Lackluster Effort and Disinterest in Addressing Diversity
   Efforts to attract and retain talented people of color have been lackluster across the environmental movement.

The Result: An overwhelmingly white “Green Insiders’ Club.”
MINORITIES PRESENT AS BOARD MEMBERS OR STAFF
Conservation and Preservation Organizations

- Members of the Board: 4.6%
- Paid Staff Members: 12%
- Staff Hired in the Last 3 Years: 12.8%
- Interns Hosted in the Last 3 Years: 22.5%
1900s–1970s
10–13% minority population

1985
20% minority population

2010
34% minority population

2035
46% minority population

Core museum visitors in 2010
9% minority population

Source: Reach Advisors analysis of census data and survey data.
VOLUNTEERISM DEMOGRAPHICS 2011-2015
Race and ethnicity of U.S. National Park Service employees (2012)

- White, 81.4%
- Hispanic or Latino, 3.2%
- Black or African American, 9.8%
- Asian, 2.1%
- American Indian, 2.3%
- Multiracial, 1.2%
WHY DO WE STILL HAVE THESE DISPARITIES?
EXAMINING HISTORY
Bias

Biased

Biased

Biased

Biased

Biased

Biased
Implicit (Unconscious) Biases

- Implicit biases are one of the most robust and replicable phenomena in the field of psychology.
- Held by everyone, including non-majority groups.
- Implicit bias is not a code word for racist/misogynist.
- They are a product of our culture: Over time, stereotypes become automatic associations.
They’re not too young to talk about race!

Young children notice and think about race. Adults often worry that talking about race will encourage racial bias in children, but the opposite is true. Silence about race reinforces racism by letting children draw their own conclusions based on what they see. Teachers and families can play a powerful role in helping children of all ages develop positive attitudes about race and diversity and skills to promote a more just future—but only if we talk about it!

Do some learning of your own to get ready for conversations with children. Here are some good places to seek information and training:

- Teaching Tolerance — tolerance.org
- Raising Race Conscious Children — raceconscious.org
- Embrace Race — embracerace.org
- Teaching for Change — teachingforchange.org
- AORTA Cooperative — aorta.coop
- Fortify Community Health (CA) — fortifycommunityhealth@gmail.com
- Delaware Valley Assoc. for the Education of Young Children (PA) — dveyec.org
Culturally Competent Organizations

Dominate Ideologies

Interpersonal Interactions

Institutional Operations

Interpersonal Interactions
Ideological
Ideological: any oppressive system has at its core the idea that one group is somehow better than another, and in some measure has the right to control the other group

-patriarchy: system of social organization where men hold power

-heteronormativity: belief that people fall into distinct genders (man or woman) w/ natural roles in life. assumes that heterosexuality is the only sexual orientation or the norm, and states that sexual and marital relations are most fitting among people of opposite sexes
Self-Reflection Tool

STONGLY DISAGREE
DISAGREE
NEUTRAL
AGREE
STONGLY AGREE
Ideological  Institutional
Institutional: A systemic oppression manifested in institutions by ideological ideas.

- Housing
- Law
- Transportation
- Political Power
- Medical
- Education
- Financial
Interactions b/w people where people use oppressive behavior, insults, or violence.
Ideological
Ableism
• Cultural stories that associate disability with sad, scary, undesirable.
• Cultural values that place people with disabilities as less valuable, important.

Institutional
Ableism
• People with disabilities have higher rates of unemployment, poverty, and homelessness. How many jobs really require lifting 50lbs regularly.

Interpersonal
Ableism
• Using words like “crazy,” “stupid,” “lame,” “gimp,” that equate disability with brokenness.
• Not looking people with disabilities in the eye when passing them on the sidewalk, talking to them, etc.
Ideological

Classism
- Cultural narrative that people who have access to money deserve to have it and have earned it, and those who don't haven't worked hard enough, don't want it, it's their fault, etc.

Interpersonal

Classism
- An individual believing that poor and low income people don't want to eat healthy.
- Talking to a poor or low income person as though they are less intelligent.

Institutional

A hospital keeps a medicaid patient for fewer days than a privately insured patient with the same condition because the amount paid to the hospital is less.
Ideological
Racism
• The cultural narrative that white folks are safer, less violent, and better citizens (prominently communicated through main stream media).

Institutional
Black men and boys are incarcerated at 6 times the rate of white men and boys in the US.

Interpersonal
Someone crossing the street or locking their doors when a Black man is walking towards them.
EXAMINING THE OPPRESSION AT AN ORGANIZATIONAL LEVEL

- Ideological
- Institutional
- Interpersonal
Equity Principles

Why these principles exist... To achieve our vision, it is vital that Metro Denver residents have equitable opportunities to access nature through recreation, education, conservation, and other ways that are meaningful to them. We believe that individuals with unique voices and viewpoints must be heard and honored in meaningful, substantive ways.

Building A Learning Community... Metro DNA is committed to continue learning and adapting together to best support a collaboratively built regional vision for people and nature. We acknowledge that our goals will be best achieved by creating an open, shared, and adaptive learning environment that actively seeks to include broadly diverse perspectives.
To achieve our vision, it is vital that Metro Denver residents have equitable opportunities to access nature through recreation, education, conservation, and other ways that are meaningful to them.
Get Connected

LACY Consulting Services

MetroDNA

eco

Inclusive Denver

Culture Energized

Equity and Accessibility Summit for Action
Networking + Bio Break
Regional Vision for People + Nature

Learning from others
Permission to doodle granted!

Step 1:
Think about how you spend time in nature...

Step 2:
Use the sheet to illustrate some of your most common experiences.
Regional Vision for People + Nature

Collective vision
Inspiration
Blueprint for conservation
Green Infrastructure
Stitching together
Leveraging funding
More, faster, better together

Meaningful work is achieved together
Resilient + Connected Landscapes

Chris Hawkins, Urban Conservation Program Manager, The Nature Conservancy in Colorado

Terri Schultz, Acting Director of Science, The Nature Conservancy in Colorado
THE GROWING POWER OF BIOLOGICAL DATA
Biodiversity Analysis in Los Angeles (BAILA)

Jane Li\textsuperscript{1,2}, Sophie Parker\textsuperscript{1}, Gregory Pauly\textsuperscript{2}, John Randall\textsuperscript{1}, Brian Brown\textsuperscript{2}, Brian Cohen\textsuperscript{1}

\textsuperscript{1}The Nature Conservancy
\textsuperscript{2}Natural History Museum of Los Angeles County
There's A LOT of occurrence data for species in cities
9 Urban Types

- 1. Low development with natural vegetation
- 2. Dams, reservoirs, and wetlands
- 3. Foothill areas
- 4. Urban parks and open space
- 5. Valley arterial areas
- 6. Valley less developed areas
- 7. Basin less developed areas
- 8. Most developed areas
- 9. Furthest from regional parks with natural vegetation
Urban Types

1. Low development with natural vegetation
2. Dams, reservoirs, and wetlands
3. Foothill areas
4. Urban parks and open space
5. Valley arterial areas
6. Valley less developed areas
7. Basin less developed areas
8. Most developed areas
9. Furthest from regional parks with natural vegetation

iNaturalist Observations

1,200 square miles
59,842 observations
2,281 species
Western Fence Lizard

Number of western fence lizard observations under each urban type

Urban Types
1. Low development with natural vegetation
2. Dams, reservoirs, and wetlands
3. Foothill areas
4. Urban parks and open space
5. Valley arterial areas
6. Valley less developed areas
7. Basin less developed areas
8. Most developed areas
9. Farthest from regional parks with natural vegetation
Garden Snail

Number of garden snail observations under each urban type

Urban Types
1. Low development with natural vegetation
2. Dams, reservoirs, and wetlands
3. Foothill areas
4. Urban parks and open space
5. Valley arterial areas
6. Valley less developed areas
7. Basin less developed areas
8. Most developed areas
9. Furthest from regional parks with natural vegetation

Copyright © 2017-2019 The Nature Conservancy and the Natural History Museum of Los Angeles County. All rights reserved.
Neighborhoods with Few iNaturalist Observations
Los Angeles
1,200 sq.mi.
59,842 obsv.
2,281 species
50 sp. x sq.mi.

Metro Denver Area
9,053 sq. mi.
57,372 obsv.
2,882 species
6 sp. x sq.mi.

City & County of Denver
155 sq. mi.
4,091 obsv.
688 species
26 sp. x sq.mi.
<table>
<thead>
<tr>
<th>Category</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>4,880</td>
<td>6,371</td>
</tr>
<tr>
<td>Species</td>
<td>739</td>
<td>980</td>
</tr>
<tr>
<td>Identifiers</td>
<td>313</td>
<td>416</td>
</tr>
<tr>
<td>Observers</td>
<td>322</td>
<td>432</td>
</tr>
</tbody>
</table>
THE GROWING POWER OF BIOLOGICAL DATA
Resilient and Connected Landscapes for Colorado
1) Focus on resilient sites.

2) Provide connecting linkages.

3) Start with confirmed biodiversity.
Resilient Sites are:

• Areas that, together, contain the full suite of physical and climatic settings.
• Areas that have greater physical and climatic variety
1) Resilient Sites

Map Produced by TNC North American Science 2018

Resilience Score
- Far above average (>2 SD)
- Above average (1 to 2 SD)
- Slightly above average (0.5 to 1 SD)
- Average (0.5 to -0.5 SD)
- Slightly below average (-0.5 to -1 SD)
- Below average (-1 to -2 SD)
- Far below average (<-2 SD)
- Developed land
- Water
2) Connecting Linkages

Climate Flow Categorized
- 1 Constrained Flow (Low)
- 2 Constrained Flow (High)
- 3 Diffuse Flow (Low)
- 4 Diffuse Flow (Medium)
- 5 Diffuse Flow (High)
- 6 Concentrated Flow (Medium)
- 7 Concentrated Flow (High)

Possible path for species movement

Map Produced by TNC North American Science 2018
3) Biodiversity
Our Resilient and Connected Landscape

Resilient and Connected Network
- Climate Corridor
- Climate Corridor Confirmed Biodiversity
- Climate Flow Zone
- Climate Flow Zone Confirmed Biodiversity
- Resilient Confirmed Biodiversity
- Resilient Secured
- Resilient Only
Our Resilient and Connected Landscape

Resilient and Connected Network

- Climate Corridor
- Climate Corridor Confirmed Biodiversity
- Climate Flow Zone
- Climate Flow Zone Confirmed Biodiversity
- Resilient Confirmed Biodiversity
- Resilient Secured
- Resilient Only
Stacked Benefits Analysis

Claudia Browne, Bioregion Team Leader, Biohabitats

Cathy McCague, Program Manager, High Line Canal Conservancy
Review of Highline Canal Benefits Analysis
Ecological and Social Data for Stacked Benefit Projects

October 8, 2019
Harriet Crittenden LaMair/Cathy McCague High Line Canal Conservancy
Claudia Browne, Biohabitats

1. HLCC STEP Program Introduction
2. Community and Livability Integration
3. Pilot Project Development
Stormwater Transformation and Enhancement Program

Introduction

STORMWATER
It can make the world green.

THAT’S THE POWER OF STEP

STORMWATER IN THE HIGH LINE CANAL

The Stormwater Transformation and Enhancement Program (STEP) will bring a new life and a renewed utility to the High Line Canal as a green infrastructure system that provides for stormwater quality management.

The High Line Canal Conservancy is working with Denver Water, Mile High Flood District and local jurisdictions through STEP to advance stormwater solutions in the Canal for both existing and new conditions.

Two Main Goals of STEP

1. Plan for and implement stormwater management projects in the Canal that transform it into a stormwater

“"The story of the Canal and its beginnings was like a promise of a better future. Those who used it were able to enhance their lives and enhance their property. This is a new way for us to bring that promise of a new future.”
— Tracy Young, High Line Canal Conservancy Board Member

STORMWATER STUDIES
Program area
Pisces Grant: High Line Canal Benefits Analysis

Select Key Benefits → Select/Develop Method → Establish Assessment Framework → Preliminary Data Analysis → Scenario Testing
Priority Environmental & Social Values

- **Water:**
  - Stormwater quality treatment
  - Local flood management
- **Natural Environment**
  - Plant communities
  - Wildlife habitat & connectivity
- **Resiliency**
  - Heat island mitigation
- **Community Health & Livability**
  - Measure of community need; propose to use Social Vulnerability Index (SVI)
Mapping priorities depends on potential stormwater-related goals and strategies:

- **Increase stormwater quality** treatment in canal
- **Protect** high quality riparian areas by providing supporting stormwater
- **Improve** ecosystem benefits (services) through stormwater projects **in areas of vulnerable population**
- **Reduce risk of** uncontrolled **canal overflows** by providing waste gate structures in reaches with little to no freeboard
- **Reduce risk of local flooding** by directing additional stormwater to reaches with moderate to high available freeboard
- **Improve** poor quality riparian areas by providing stormwater and planting
- **Maintain** areas of high climate resiliency through stormwater related projects
- **Improve** below average climate resiliency areas through provision of stormwater to support riparian corridor
Stormwater inputs
Natural Environment/Riparian Benefits

HIGH LINE CANAL 2018 BOTANICAL SURVEY
Prepared for the High Line Canal Conservancy by Denver Botanic Gardens

Contact: Christina Alba
ChristinaAlba@denverbotanicgardens.org
Vegetation Mapping

- High Resolution Land Use/Land Cover Pilot Partnership of DRCOG, Babbitt Center for Land and Water Policy (Lincoln Institute of Land Policy), the Chesapeake Conservancy’s Conservation Innovation Center (CIC)
  - 6-inch resolution in most places

- Habitat areas: Prairie/grassland/natural ground cover, tree canopy & water
  - total area in 75 ft corridor
  - connectivity potential within ¼-mile based
Review existing data for opportunities/needs (example inputs)
Community Health & Livability: Social Vulnerability

STRATEGIES FOR ACCESS AND CONNECTIVITY INCLUDE:

- Preserve the Canal as an open and accessible public space.
- Embrace new users and ensure safe access for all.
- Provide access to areas of high need.
- "Expand the reach" of the Canal to the existing communities.
- Promote connections to existing:
  - Trail networks
  - Community assets
  - Open spaces and natural areas.

Framework Plan
Social vulnerability index (SVI) considerations

Pros:
- readily available & documented data
- covers multiple metrics
- easy to use for high level: uses percentile comparison of census tracts within the state (eg avoids having to figure out *What is a high unemployment rate, what is a high minority rate, etc?*)

Cons:
- uses tract versus block scale
- Counties may have more nuanced methods
- does not include health metrics

https://svi.cdc.gov/
Biohabitats

Social vulnerability index (SVI)

Study Inputs: Community Health and Livability
## Other method

### Area Deprivation Index (ADI)

- block level

- ADI compared to SVI has:
  - more socioeconomic inputs
  - fewer household composition & disability
  - no additional health inputs

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>Social Vulnerability Index</th>
<th>Area Deprivation Index (Singh 2003)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Poverty</td>
<td>Family Poverty Rate</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>Unemployment Rate</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>Median Family Income</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Income Disparity</td>
<td></td>
</tr>
<tr>
<td>No High School Diploma</td>
<td>No High School Diploma</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Occupational Composition</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Percentage of population below 150% of the poverty rate</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Home Ownership</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Median Home Value</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Median Gross Rent</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Median Monthly Mortgage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household Composition &amp; Disability</th>
<th>Social Vulnerability Index</th>
<th>Area Deprivation Index (Singh 2003)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aged 65 or Older</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aged 17 or Younger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian with a Disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-Parent Households</td>
<td>Single-Parent Household Rate</td>
<td>Divorce Rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minority Status &amp; Language</th>
<th>Social Vulnerability Index</th>
<th>Area Deprivation Index (Singh 2003)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>Percentage of immigrant population</td>
<td></td>
</tr>
<tr>
<td>Speak English &quot;Less than Well&quot;</td>
<td>English language proficiency</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Housing &amp; Transportation</th>
<th>Social Vulnerability Index</th>
<th>Area Deprivation Index (Singh 2003)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Unit Structures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile Homes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crowding</td>
<td>Household Crowding</td>
<td></td>
</tr>
<tr>
<td>No Vehicle</td>
<td>% of households without access to motor vehicles</td>
<td></td>
</tr>
<tr>
<td>Group Quarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>% of households without access to telephone</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>% of households without access to plumbing</td>
<td></td>
</tr>
<tr>
<td>?</td>
<td>% of urban population</td>
<td></td>
</tr>
</tbody>
</table>
Community Health and Livability

Health Data: 500 Cities Obesity
Community Health and Livability
Stakeholder input summary:

- Many other data sets and regional/local jurisdiction approaches are available, but evaluating them all for Phase 1 is beyond current scope

- SVI was used by at least one planning group. DRCOG noted value in off-the-shelf approach and noted that for high level output is probably similar to what we’d get using other indicators

- Can integrate and refine in future phases
Pilot Project Development
Screening process outcome

- **Selection of pilot project locations based on:**
  - Screening process for eco & social values
  - Stakeholder input
  - HLCC guidance

- Selected reaches:
  - Reach 21- de Koevend
  - Reach 34 – US of Quebec

- Added CCD’s Eisenhower Park project (Reach 30)
Concept Development
Reach 21 example

Note: not all schools within a quarter mile buffer were included in the provided data.

Also, social, tree inventory
Potential Riparian and Resiliency Improvements:

Possible design elements:

A. Upstream waste gate
B. Water quality berm placement
C. Ecological Improvement Zones
   1. Cottonwood enhancement
   2. Floodplain widening
   3. Weedy species thinning
   4. Biodiversity
D. Adaptive management strategy
   1. Cottonwood care
   2. Water detention
E. Activation elements
   1. Human water access
   2. Gathering spaces
F. Educational opportunities
   1. Wayfinding
   2. Habitat/Corridors
   3. Water
G. Network connectors
   1. Trail access (creation/improvements)
H. Health improvements
   1. Mental
   2. Physical
   3. Social
Concept: Native tree enhancement + gathering spaces

- Enhance riparian community canopy layer
  - Replace dead + dying cottonwoods
  - Provide shade for gathering spaces

- Utilize relatively flat areas for passive social gathering spaces
Reach 21: Downstream design elements DRAFT

Legend
- Water quality berm
- FEMA floodplain
- 75ft canal buffer
- Structures
- Impervious Surfaces
- Water
- Prairie/Grassland/Natural Ground Cover
- Tree Canopy
- Turf/Irrigated Land
- Barren Land
- Educational opportunity

Environmental and social opportunities
- Community Health & Livability
- Landscape Natural Environment
- Water Quality & Flood

Integrated detention facility; create gentle sloping floodplain to expand water detention supply for healthy vegetation

Diverse + healthy ecology: protect and enhance wetland complex

Diverse + healthy ecology: enhance riparian community canopy layer

Interpretive signage: habitat/producer

Water quality berm: support healthy vegetation

Wayfinding kiosk + interpretive signage: habitat/producer

In-canal activation: water access

Water quality berm: support healthy vegetation

Gathering space: specialty seating, picnic tables, and open landscape

Human health: social, mental
### Scenario development for cost/benefit analysis

<table>
<thead>
<tr>
<th>Category</th>
<th><strong>DRAFT Example Scenarios</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Maximum Stacked Benefits</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater Improvements</td>
<td>Water Quality volume = $ to treat grey v green</td>
</tr>
<tr>
<td>Landscape Natural Environment</td>
<td>+Natural lands (acres) = $/acre + Tree density (#/ac) = $/tree lifetime + Connected (acres) =</td>
</tr>
<tr>
<td>Maintenance Cost summary</td>
<td>Current $ + stormwater $ from RESPEC + ? Added acres</td>
</tr>
</tbody>
</table>
Cost/benefit analysis:
example template set up

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Cost/Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Capital Expenditures (CapEx)</td>
</tr>
<tr>
<td>Financial</td>
<td>Operations and Maintenance (O&amp;M)</td>
</tr>
<tr>
<td>Financial</td>
<td>Avoided CapEx on Additional Detention</td>
</tr>
<tr>
<td>Financial</td>
<td>Avoided O&amp;M on Additional Detention</td>
</tr>
<tr>
<td>Financial</td>
<td>Avoided CapEx on Additional Piping</td>
</tr>
<tr>
<td>Financial</td>
<td>Avoided O&amp;M on Additional Piping</td>
</tr>
<tr>
<td>Financial</td>
<td>Replacement Costs</td>
</tr>
<tr>
<td>Financial</td>
<td>Residual Value of Assets</td>
</tr>
<tr>
<td>Social</td>
<td>Heat Island Effect (Mortality)</td>
</tr>
<tr>
<td>Social</td>
<td>Heat Island Effect (Morbidity)</td>
</tr>
<tr>
<td>Social</td>
<td>Flood Risk</td>
</tr>
<tr>
<td>Social</td>
<td>Property Value</td>
</tr>
<tr>
<td>Social</td>
<td>Water quality</td>
</tr>
<tr>
<td>Environmental</td>
<td>Carbon Emissions from Concrete</td>
</tr>
<tr>
<td>Environmental</td>
<td>Air Pollution Reduced by Vegetation</td>
</tr>
<tr>
<td>Environmental</td>
<td>Carbon Reduction by Vegetation</td>
</tr>
<tr>
<td>Environmental</td>
<td>Air Pollution from Energy Use Reduction</td>
</tr>
<tr>
<td>Environmental</td>
<td>Carbon Emissions from Energy Use Reduction</td>
</tr>
</tbody>
</table>

Reference: Triple Bottom Line Cost Benefit Analysis of Green Infrastructure/Low Impact Development (GI/LID) in Phoenix, AZ Results Report Prepared by Autocase for the City of Phoenix, June 20th, 2018
Cost/benefit analysis: next steps

- Quantifying improvements for Reach 21
- Selecting/referencing unit costs
- Completing analysis for scenarios
- Repeat for other pilot locations
Questions?

THANK YOU!!!
Goal: Increase stormwater quality treatment in canal

STEP Strategy:
Prioritize reaches where stormwater quality projects have been identified, i.e., to install treatment berms in canal to improve stormwater quality
Screening process by goal & strategies

**Goal:** Protect high quality riparian areas by providing supporting stormwater

**STEP Strategy:** Prioritize reaches where stormwater quality projects will help maintain high quality riparian area.
Screening process by goal & strategies

**Goal:** Improve ecosystem benefits (services) through stormwater projects in areas of vulnerable population

**STEP Strategy:** Prioritize reaches where stormwater quality projects will provide opportunity to enhance low quality riparian areas in areas with vulnerable populations.
Imagine a Great Region: Our Mile High Advantage

Samantha Albert, OREC:
State-identified impact areas for the outdoor recreation industry

Jackie Miller, GOCO:
GOCO investments in parks and outdoor amenities

Travis Warziniack, USFS:
How to valuate benefits provided by the natural environment
Our Mile High Advantage: Key Takeaways

- Outdoor recreation industry is critical to Colorado’s success
- GOCO: $1.2B invested since 1992
- Need new, innovative ways to raise funds for conservation efforts
- Think more broadly about economic value of nature; “investing in natural capital”
Group Discussion - a glimpse of the future

Step 1: Identify your illustrator
Step 2: Identify your spokesperson
Step 3: Share your individual nature connection (individual exercise)
Step 4: Draw elements of your **ideal** system of outdoor amenities
Step 5: Describe your **ideal** system, including challenges and opportunities
What we heard - an overview (challenges)

- transportation and equitable access
- etiquette and education
- funding
- lack of diversity among users
- conflicts between users (e.g. hikers vs. bikers)
What we heard - an overview (opportunities)

- education and strategic partnerships (e.g. youth/schools)
- collaborative funding and policy approaches
- wayfinding and other ways to communicate connections
- density, parks and paths as a conservation strategy
What we heard - an overview
What we heard - an overview
What we heard - an overview
Youth Engagement

Shane Wright, Fundraising Manager, Lincoln Hills Cares
Metro DNA/Lincoln Hills Cares/El Laboratorio
South Platte River YAC (Youth Advisory Committee)
Connecting people to nature on the South Boulder Creek since 1922, during times of segregation when Denver was the Harlem of the West.
Partners: Our Community
Lincoln Hills Cares/Metro DNA/El Laboratorio
Citizens/Youth/Colorado State University (CSU)
Environmental Protection Agency (EPA)
Colorado Health Foundation/Nature Conservancy
Colorado Parks Wildlife (CPW)/City and County of Denver/National Western Center/North Denver Cornerstone Collaborative (NDCC)/Upward Bound/Beacon Fund/Kiewit Construction…Maybe you?
South Platte River (Denver’s Moon)

“A RIVER IS MORE THAN AN AMENITY, IT IS A TREASURE.”
OLIVER WENDELL HOLMES
Why Youth? Why nature? Why youth in nature?
Environmental and Social Justice.
The Confluence of Public and Environmental Health.

#WEARENATURE

#WEARENATURE
Youth Advisory Committee

We are not doing that great. Our youth opportunity and income inequality gaps are growing in the wrong direction. We need new ideas and youth have them. Youth need more opportunities, and we can offer them this leadership development and civic engagement process to restore our river. Our South Platte River is polluted. It is most polluted and industrialized as it flows through lower income communities that have a higher proportion of hispanic and African American residents. This is an environmental and social justice issue. As we work to redevelop Denver, we have to consider our environment and our lower income communities.
Stewardship Mapping

Travis Warziniack, Research Social Scientist, US Forest Service, Rocky Mountain Research Station
Stewardship Mapping and Assessment Project (STEW-MAP)

Who takes care of Denver?

Urban environmental stewards:
- conserve,
- manage,
- monitor,
- advocate for
- educate the public about

the local environment

STEW-MAP Data Include:

Organizational Characteristics
STEW-MAP provides information about the organizational characteristics of each group including year founded, mission, primary work sites, services offered, budgets and staff. At the same time, STEW-MAP allows you to better understand how each group functions through their expressed goals, impacts and modes of communication.

Geographic Turf
STEW-MAP displays the area of activity, or ‘stewardship turf,’ of each group. Stewardship turf could be an entire park, a forest patch, or a watershed. Those geographic data can demonstrate the overlaps and gaps in stewardship capacity across a landscape and can be analyzed in concert with demographic and environmental characteristics of communities.

Networks
STEW-MAP displays a group’s social network to understand how civic environmental organizations are connected. This enables us to examine the structure and function of environmental stewardship across a city or region. From social network analyses, we can assess which organizations are operating as brokers of information, funding, and services; the role of government in relation to these civic stewardship organizations; and which organizations are more isolated than others.
What’s next? YOU are Metro DNA!

Become a partner.

Join a committee or working group.

Attend workshops and events.

Tell a friend.

www.metrodna.org