

# Inventory & Analysis Process

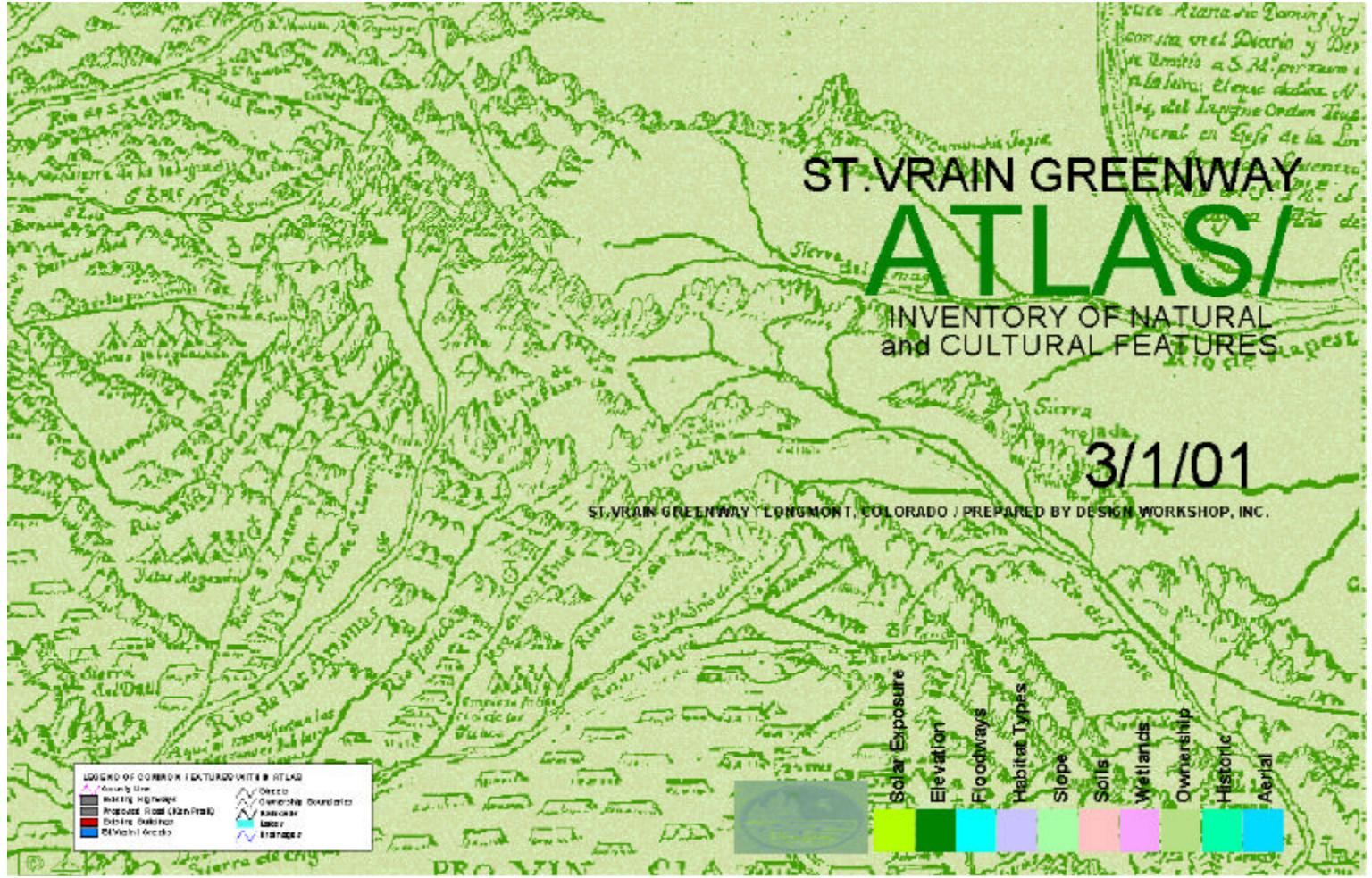
## INVENTORY

### Natural and Cultural Feature Atlas

The nature of siting recreational elements adjacent to a natural river system can become extremely sensitive. For this reason a detailed inventory of natural and cultural features was needed to address these concerns. Opportunities such as historic sites need to be understood, as well as site limitations like wetlands. The following maps represent a summary of the GIS Atlas for the St. Vrain River. These maps were used extensively for the analysis and design of the Greenway system. A version of this Atlas was placed on CD-ROM's, so that, during this planning process, participants would have easy access to this inventory. A version was placed in the Public Library to improve community access to these planning materials.

The Table of Contents for the Atlas is as follows and the maps have been included as Appendix A.

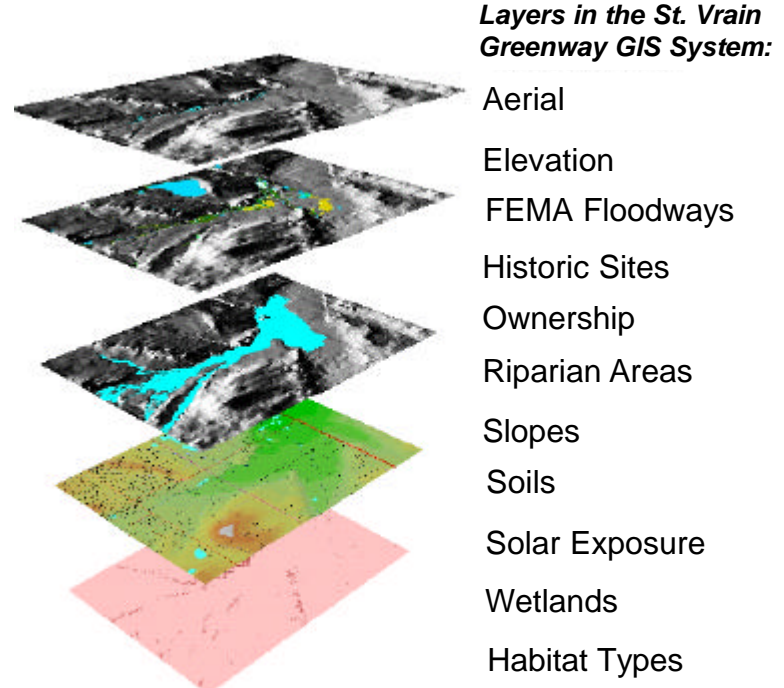
- 1) **Solar Exposure** - This map was important to understand vegetation restoration considerations.
- 2) **Elevation** - This map shows elevation data for entire study area - used to calculate slope maps and contour intervals.
- 3) **Floodways** - The floodways map depicts the FEMA 100-year floodway data for Left Hand Creek, St. Vrain and Boulder Creek. It has been updated to anticipate the impacts of channel improvements to Left Hand Creek.
- 4) **Habitat Types** - This is riparian inventory of the Corridor showing the vegetative communities adjacent to the St. Vrain River.
- 5) **Slope Map** - This map depicts the entire range of slopes broken into categories most useful for land planning and trail design.
- 6) **Soils** - This is Soil Conservation Service soil series information that includes attributes for depth to bedrock, water table and shrink swell.
- 7) **Wetlands** - This map shows delineation and identification of wetlands along the St. Vrain River.
- 8) **Ownership** - An inventory of individual land ownership and their holdings along the St. Vrain Greenway.
- 9) **Historic** - Includes an inventory of elements listed with the state archaeology office as historic or pre-historic. This has been augmented with known historic sites provided by participants in this planning process.
- 10) **Aerial** - An aerial photo from Oct. 1999 that has been used as a means of registration and element identification.



Many other features have been included within the GIS database for the St. Vrain that have not been published as a specific map. Some of these features include:

- Roads
- Buildings
- Road Names
- River Channel
- Creeks and Canals
- Lakes & Reservoirs
- Lot Lines

The Inventory process also produced three stand alone reports specific to this study area: Vegetation Study, Wetland Report, Jumping Mouse Report. These reports are also found in Supplemental Appendix Two.



**Layers in the St. Vrain Greenway GIS System:**

- Aerial
- Elevation
- FEMA Floodways
- Historic Sites
- Ownership
- Riparian Areas
- Slopes
- Soils
- Solar Exposure
- Wetlands
- Habitat Types



## ANALYSIS

The Analysis process was critical to understanding the landscape sensitivities for a range of potential recreation, restoration and preservation concerns. The results of the analysis were used to inform the design process and will become instrumental for long range management issues and ongoing design concerns.

The Technical Advisory Team was used to identify the spectrum of criteria associated with defining landscape sensitivity. Issues and goals defined at public meetings began to identify the primary siting issues. Three broad landscape evaluations were conducted: 1) Construction Cost Evaluation, 2) Environmental Sensitivity, and 3) Social Desirability. The Technical Advisory Team defined the criteria that characterized each of these evaluations. The side bar on the next page that reflects the results of criteria identification and the number in parentheses reflects how often participants identified those criteria.

The spatial criteria defined by this evaluation were isolated using the GIS inventory and overlaid with multiple characteristics to depict the landscape's sensitivity for each concern. Combining the criteria identified for each map created an Economic Feasibility, Environmental Capability and Social Desirability Map.

For example, the Economic Feasibility Criteria included implication of slopes on trail and recreation design, plus accessibility, land ownership, environmental permitting costs, floodways, etc.

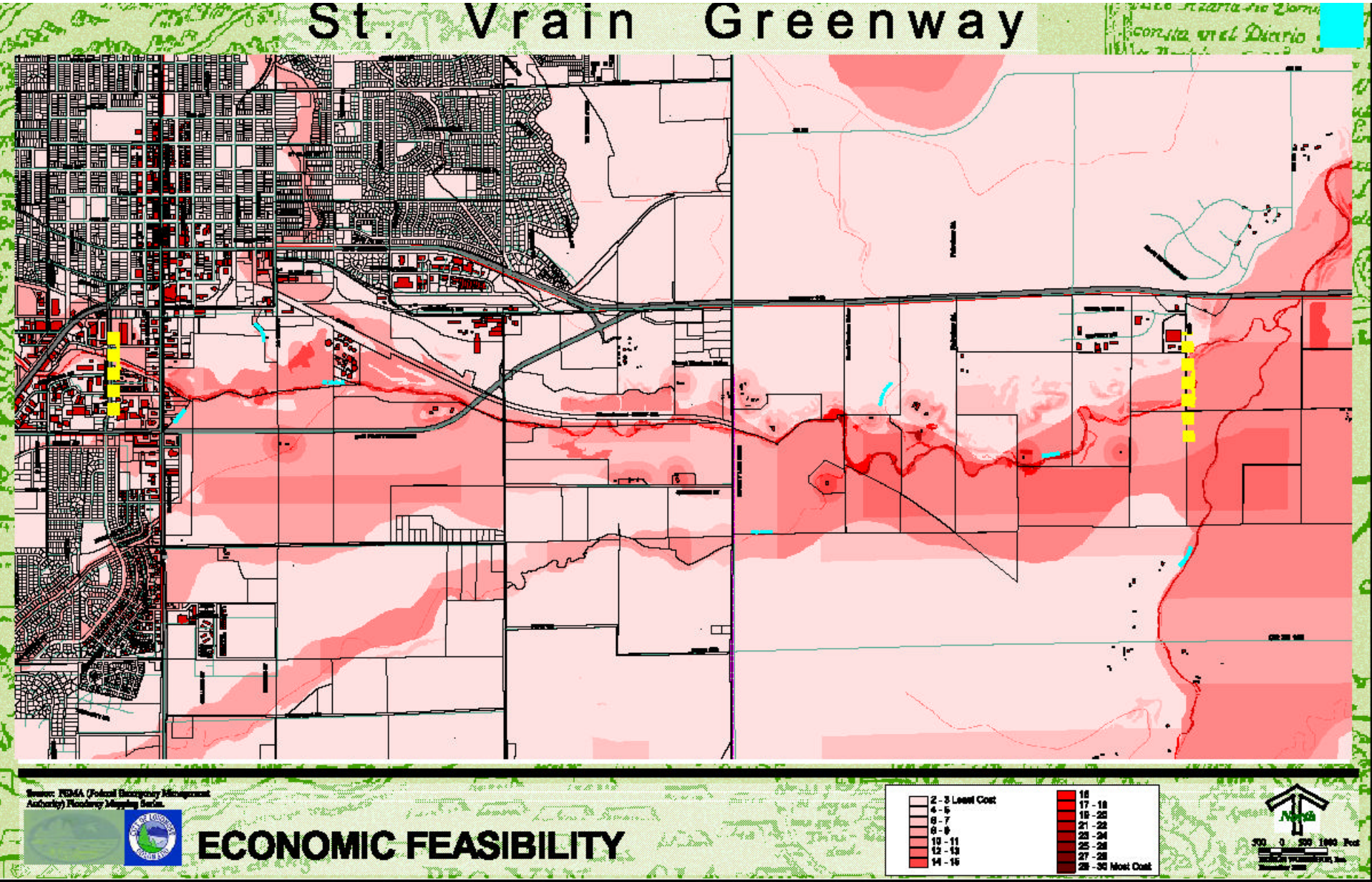
The Environmental Capability involved criteria such as wetlands, habitat areas, rare biological communities, restoration potential, erosion potential and geologic features.

The criteria available within GIS and relevant to this scale of planning were isolated and combined for form the following three evaluation maps:

- 1) Economic Feasibility
- 2) Social Desirability
- 3) Environmental Capability

The following three maps are the results of this step of the analysis.

Economic Feasibility Map



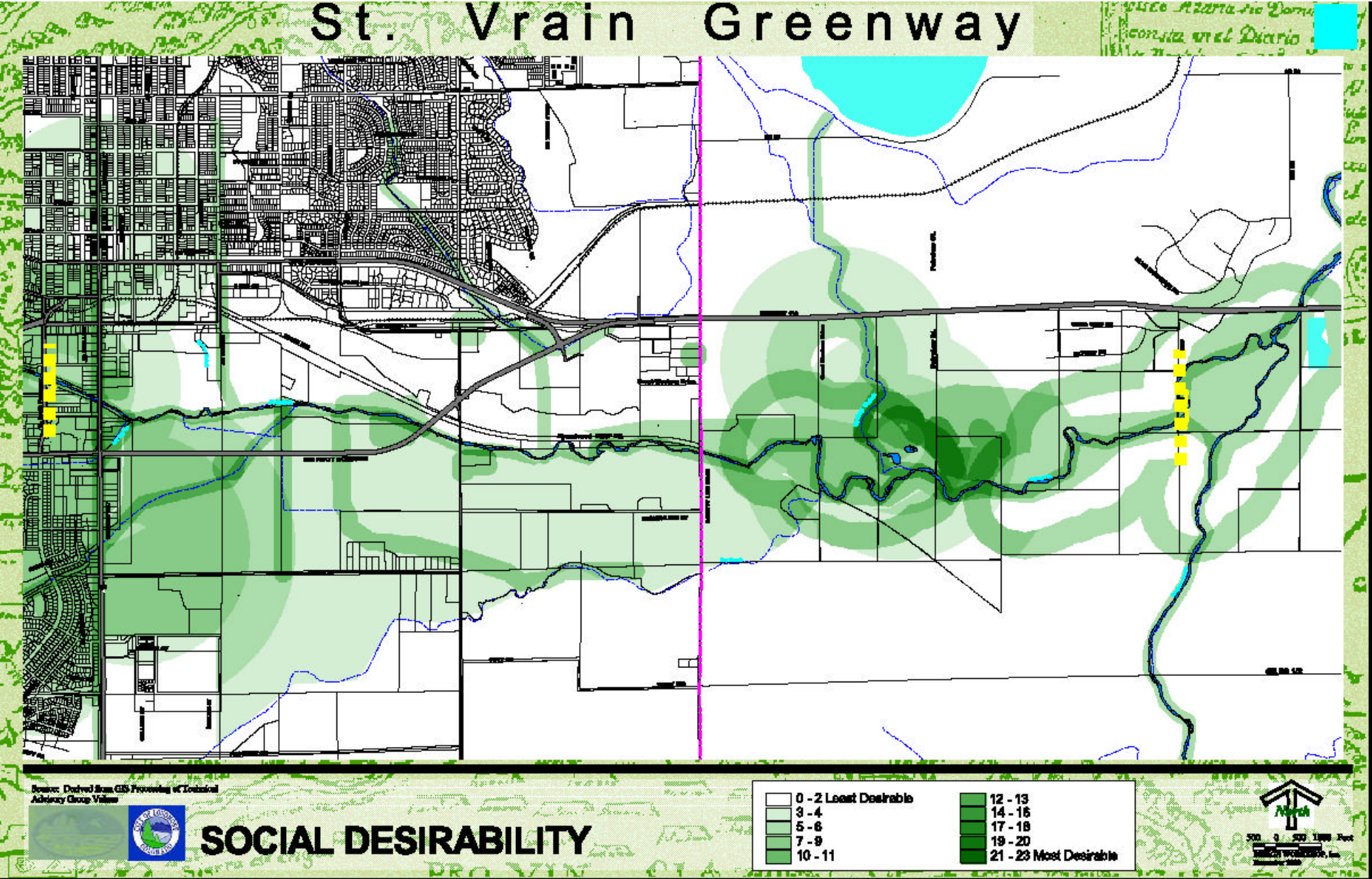
Economic Feasibility Criteria:  
Slopes, Hazard Areas, Depth to Bedrock, Private Ownership, Ditch Infrastructure, Residential Buffers, Access and Environmental Permitting

*Darkest red areas represent the highest construction costs*



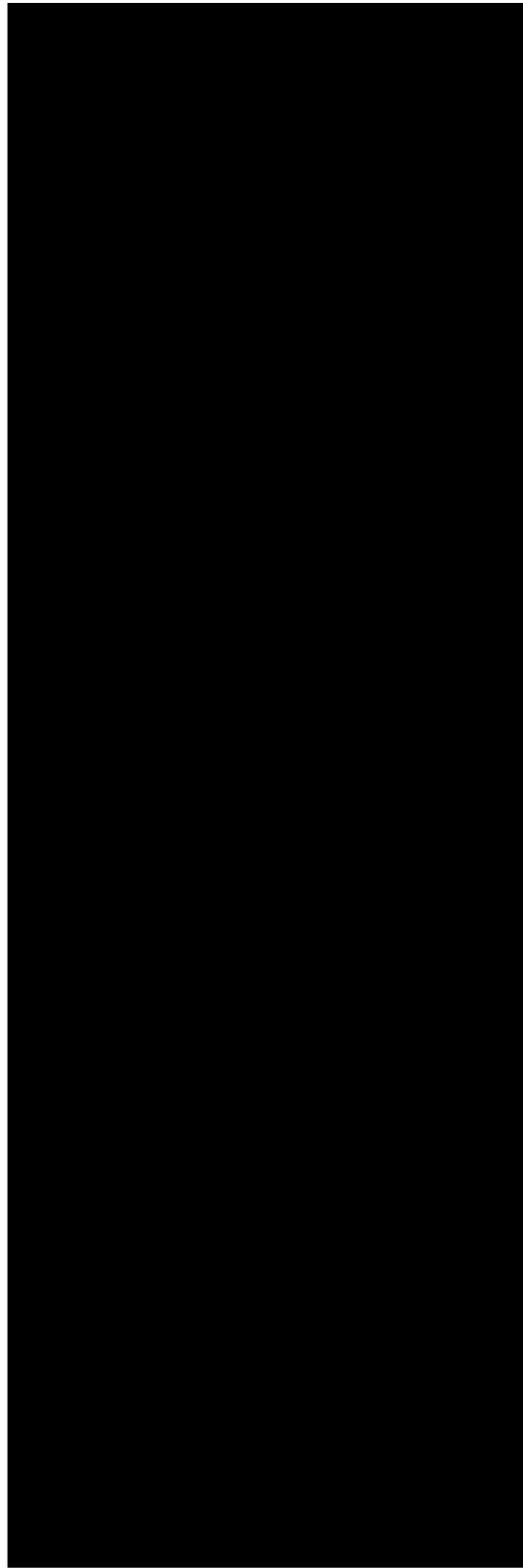
ANALYSIS

Social Desirability Map



Social Desirability Criteria:  
 Land Use Compatibility, Wildlife Proximity,  
 Historic Elements, Major Destinations,  
 Educational Opportunities, Desire Lines,  
 and Landscape Diversity

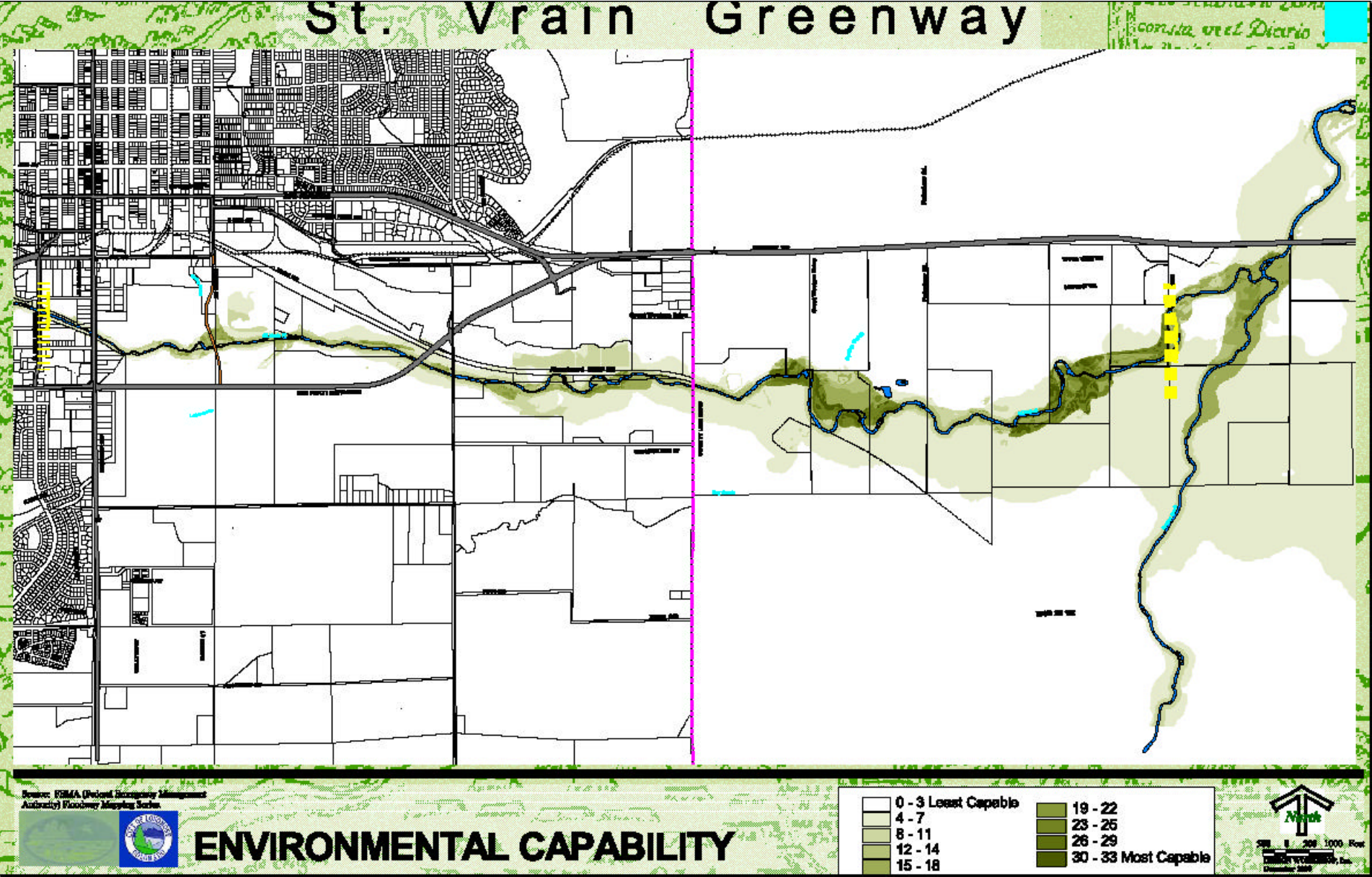
*Darkest green areas represent greatest desirability.*





ANALYSIS

Environmental Capability Map



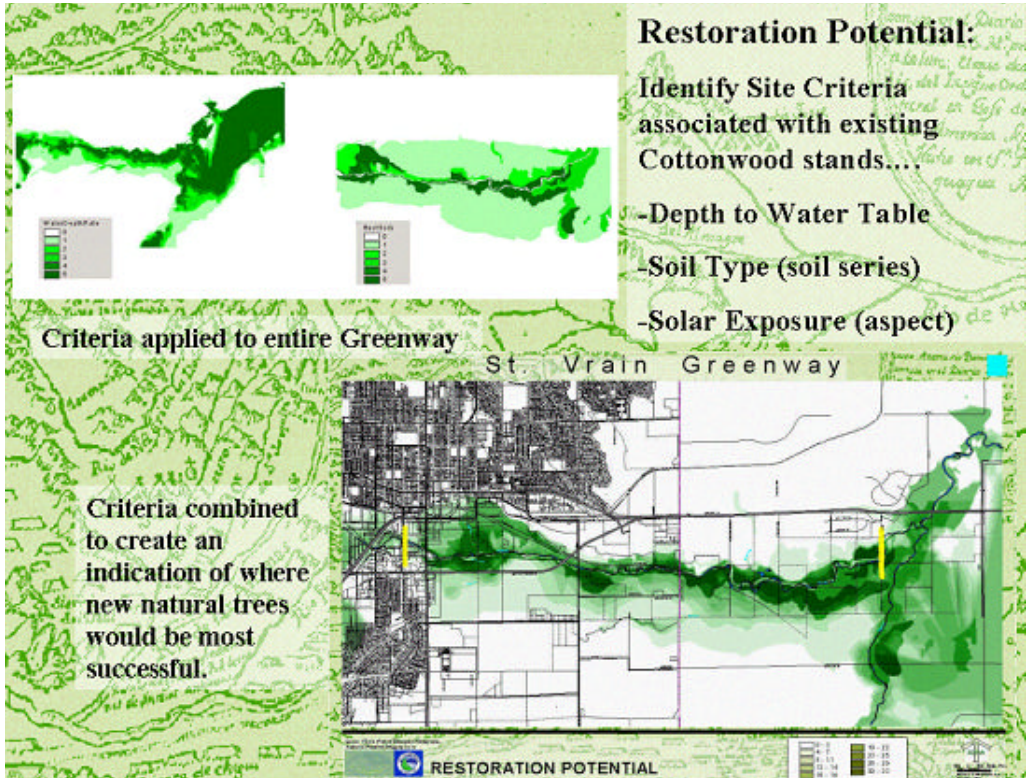
Environmental Capability Criteria:  
Restoration Potential, Wetlands, Riparian Areas,  
Threatened Species Habitat, Mature Tree Stands,  
Critical Habitat Areas, Refuge/Corridor Concept

*Darkest green areas represent greater environmental value*

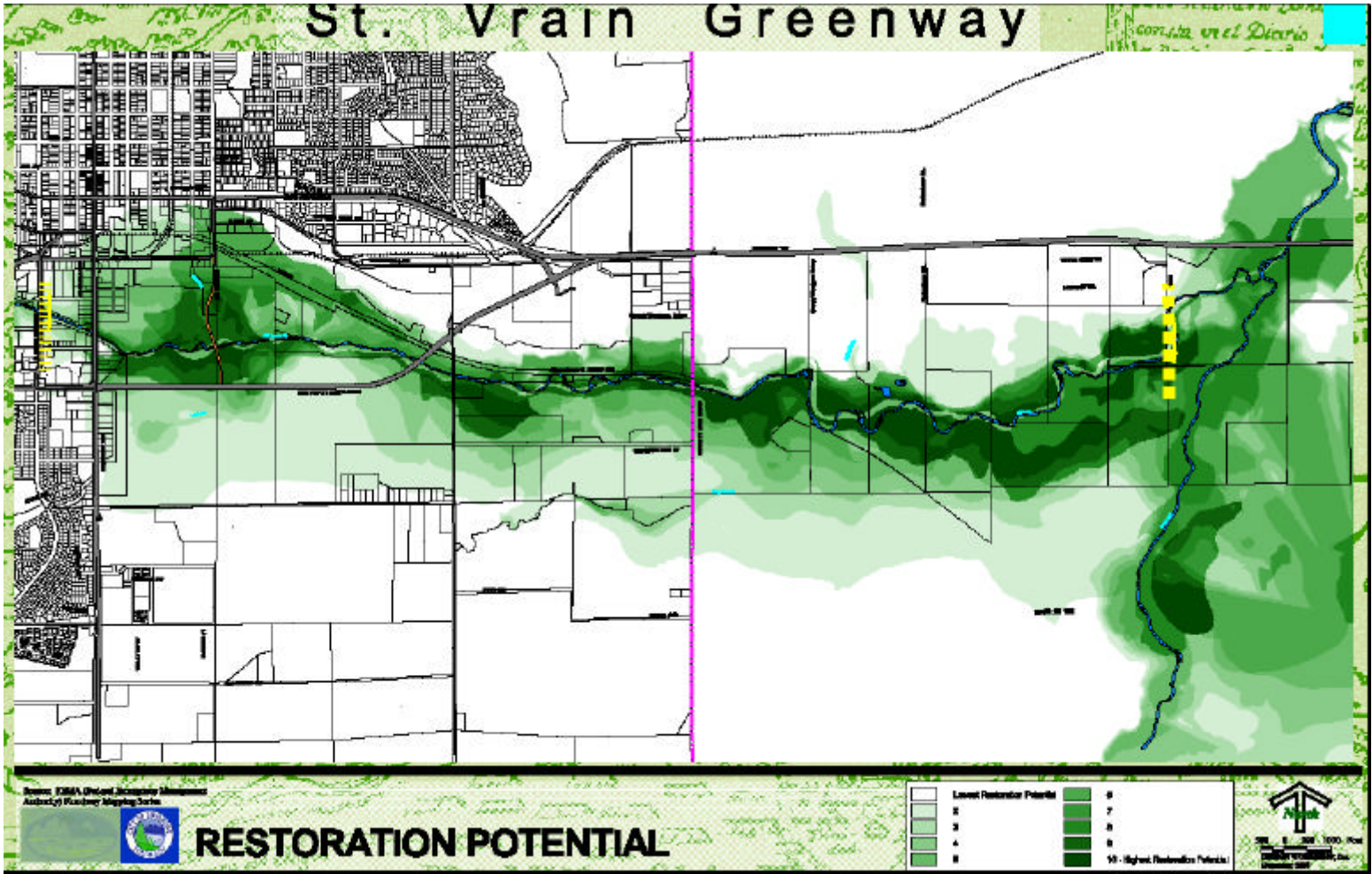


## ANALYSIS

Maps associated with Environmental Capability



**Restoration Potential Map:** as a means of identifying the restoration potential, one of the criteria under environmental capability, we conducted an analysis of existing riparian stands. The site characteristics associated with established stands of riparian vegetation were examined to determine the soils, depth to water table and solar exposure. The predominant characteristics were then applied to the entire Corridor.



Darkest green areas have the highest restoration potential

This series of analysis mapping influenced the placement of trails and recreational elements both during the design phase and as part of the refinement of a draft plan. The coincidence between elements such as the Greenway Through Trails (seen in greens and reds overlaid on the aerial) and the Environmental Capability map depicts where the trail is well sited with regard to environmental concerns. The dark green areas are ideal trail alignment and the red areas reflect significant conflicts. Bridges will be ultimately used to avoid wetland, riparian and floodway conflicts identified in red.

Coincidence between proposed Greenway design elements and this series of analysis allowed the design team to refine alignments and element locations to minimize conflicts and maximize opportunities. This same series of analysis mapping will be used as part of a long-term management and implementation strategy for development of the St. Vrain Greenway.





# Implementation Tool Box

Implementation for the St. Vrain Master Plan involves numerous scales and many potential participants. Since the ultimate vision will not be realized without participation from private landowners and both Weld and Boulder County, this chapter provides 'Tools' for implementation that would be useful to all participants at both planning and design scales.

The section is organized as follows:

### The Phasing Plan

Planning phases and construction cost information.

### Implementation Policy

To achieve the established goals and objectives of the St. Vrain Greenway Master Plan, the following six policies and associated strategies were adopted in the 1993 Master Plan. This Master Plan Update recognizes these strategies as being relevant and will be employed in this portion. Minor changes to the original text have been provided.

### Plan Adoption and Approval

The long-term success of the St. Vrain Greenway Master Plan will require adoption and recognition by the City of Longmont. Both Weld and Boulder Counties should also be encouraged to formally support the Plan through an inter-governmental or other working agreement.

### Mechanisms to form Working Agreements

- IGA
- Memorandum of Understanding
- Joint Management Agreements

### Other Tools

### The Phasing Plan

The development of the East Corridor Greenway is a significant undertaking, and will need to be constructed within a series of phases. The following diagram defines the limits of each of the first five phases, while a sixth phase is organized around a series of small projects not included within the initial five phases.

#### Phase One:

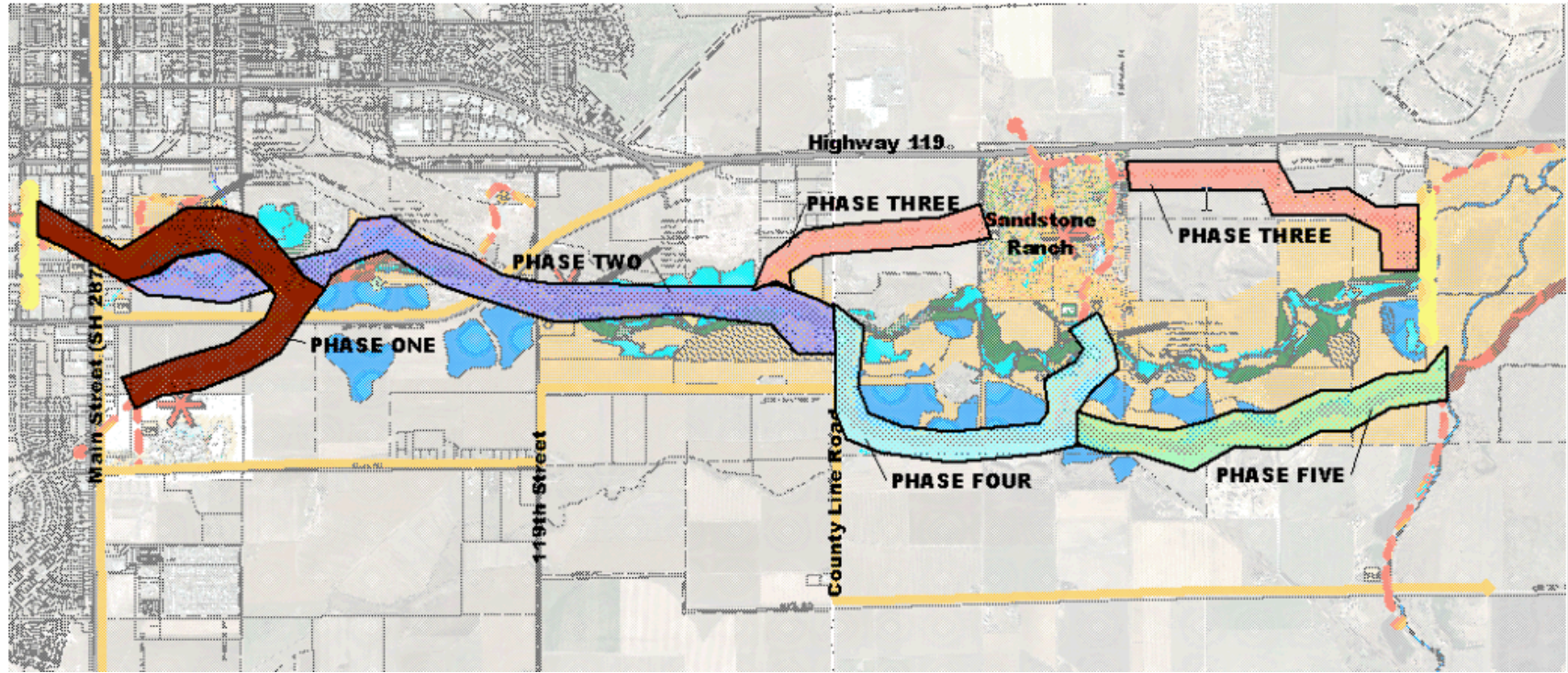
The first phase of works connects the existing built Greenway under Main Street and to the confluence of Left Hand Creek. The trail consists of a ten-foot wide concrete trail with adjacent jogging path. At Left Hand Creek the trail breaks away from the St. Vrain River and connects to the new Longmont Recreation Center and Museum Complex at Quail Campus. It involves the construction of a trailhead, restrooms and picnic shelter in Dickens Park, north of the St. Vrain adjacent to Martin Street. Ramps will connect both east and west sides of Main Street to the Greenway Corridor and an underpass will be established on the north side of the River at Main. Three bridges will be constructed - one over the St. Vrain near Martin Street, another to link the RTD Park N' Ride, and a third to cross Left Hand Creek.

#### Phase Two:

The second phase of work continues the Greenway Through Trail from Left Hand Creek to County Line Road (WCR1). The trail consists of a ten-foot-wide concrete trail with adjacent jogging path, through this entire phase of work. A trailhead will be established at 119th Street and has tentatively been called 'Willow Cove'. Another trailhead is planned for at County Line Road and is referred to as 'Mill Meadow' on the Concept Plan. Bridges are recommended for this phase, one west of 119th Street and one just before County Line Road. A White Water Park that creates kayaking challenges is proposed for just below the confluence of the St. Vrain River and Left Hand Creek.

#### Phase Three:

The third phase includes the Commuter Trail that links the Greenway Corridor to Sandstone Ranch District Park on the north side of the River. This trail consists of Standard Greenway Trails and Road Offset Trails along built and proposed streets. This route continues east from the east side of Sandstone to the eastern limits of this study area. The trail construction estimates do not include improvements within Sandstone Ranch District Park, as they are included within the master plan for that particular park.





**Phase Four:**

The fourth phase is dedicated to linking the continuous Greenway trail from County Line Road, south of the River to Sandstone Ranch District Park. The trail loops to the south to create a buffer zone between the trail and the River, then intersects with a spur trail leading to a bridge immediately south of the Ranch at Sandstone. The phase includes the Rural Through Trail, which is an 8' wide concrete trail with adjacent jogging path, the underpass at County Line Road, and the bridge at Sandstone Ranch.

**Phase Five:**

The fifth phase of work extends the Greenway Through Trail to the eastern limits of the study area from the intersection with the Sandstone Ranch spur. The trail type is the Preserve Through Trail and consists of an eight-foot-wide crusher fine trail, with a detached equestrian trail.

**Phase Six:**

The sixth phase collects the costs of specific projects along the Corridor not included in other phases. Some of these projects may have there urgency elevated based upon new priorities as construction of this East Corridor progresses. The projects include: 1) Sugar Mill Trail, 2) Dickens Park (parts not included in phase one), and 3) Willow Cove and Mill Meadow, and Confluence Overlook.

A Matrix that estimates the cost of each phase follows:

Phase One:	\$ 1,962,720.00
Phase Two	\$ 2,203,587.00
Phase Three	\$ 1,161,246.00
Phase Four	\$ 946,462.00
Phase Five	\$ 594,919.00
Phase Six	\$ 8,709,109.00

All Phases \$ 15,578,043.00

*A detailed cost estimate is included as part of Appendix B.*

**Implementation Policy**

To achieve the established goals and objectives of the St. Vrain Greenway Master Plan, the following six policies and associated strategies were adopted in the 1993 Master Plan. This Master Plan Update recognizes these strategies as being relevant and will be employed in this portion. Minor changes to the original text have been provided.

**Policy-1**

Dedicate the St. Vrain Corridor as a Greenway. Include the Greenway in the City's parks system as permanent open space.

**Strategies**

- Acquire property along the Corridor to include the proposed Greenway boundary where possible. This boundary is identified on the Reach Corridor Plans in this Master Plan Document.
- Construct the Greenway as funds are available to provide recreation activities and improve the recognition of the St. Vrain River as a treasured community resource.
- Exclude the Greenway from Boulder County's aggregate resource plans where possible. Work with the adjacent property owners and aggregate producers to amend the aggregate resource elements of the Boulder County Comprehensive Plan. Prepare amendments that will include both policy statements and map exhibits to clearly designate a protected Greenway Corridor. Where aggregate mining is scheduled to occur, work with aggregate producers and landowners to achieve temporary by-pass routes and reclamation plans consistent with this Master Plan and its goals.
- Promote community wide support for the Greenway by developing interpretive and educational information and encouraging public use of the recreation facilities.

**Policy-2**

Develop community-wide support for the greenway by developing interpretive and educational information and encouraging public use of the recreation facilities.

**Strategies**

- Provide a continuous trail system that develops linkages with in the City.
- Develop and budget for maintenance, enforcement, operations, and management programs that protect and enhance the unique qualities of the river corridor.
- Develop wildlife and habitat management programs such as monitoring and controlling the beaver and goose populations. Work with the Colorado Division of Wildlife to develop an ongoing revegetation program.

- Conduct site specific investigation for potential hazardous materials.
- Maintain the existing fish habitat and develop new habitat for non-game and game fisheries. Work with the Colorado Division of Wildlife to protect and enhance the existing native fish population, and to develop a stocked, put and take game fishery.
- Research and analyze options to increase the stream flows in the river.

**Policy-3**

Promote compatible redevelopment of adjacent land that protects the natural river corridor and promotes greenway use.

**Strategies**

- Implement land use regulations along the corridor that protect the existing vegetation, habitat, view and ricer character.
- Require redevelopment to provide access to the greenway trails system in addition to the access at the street crossings.
- Promote development that takes advantage of the greenway such as residential neighborhoods that face the corridor and commercial development with river front plazas.

**Policy-4**

Develop the greenway as a unique civic feature for the City.

**Strategies**

- Increase the recognition of the river corridor with standard greenway details for all street crossings; such as railings, signs, and landscape improvements.
- Use high quality materials for greenway detailing.
- Promote special events in the greenway that highlight the unique natural resource.
- Include public art in the development of the greenway.

**Policy-5**

Pursue funding sources for greenway development in addition to lottery funds.

**Strategies**

- Combine greenway improvements with other city, county, and private projects in and along the river to maximize greenway improvements that will have a mutual benefit to the greenway, such as utility and bridge construction.
- Submit funding requests to Great Outdoors Colorado, Rails-to-Trails Program, State Trails program, and ISTEA grants (Intermodal Surface Transportation Efficiency Act of 1991) for alternatives transportation systems.
- Pursue volunteer assistance for the continued maintenance and revegetation of the greenway. Follow the criteria established for donations.



## **Policy-6**

Develop criteria for managing donations to maintain a unified, high-quality Greenway character.

### *Strategies*

- Establish a single location and format for the recognition of all benefactors.
- Utilize the Parks, Recreation and Golf Gift Catalogue for specific needs such as site furniture, shelters, or equipment that are compatible with the operation and maintenance of the Greenway.
- Develop volunteer labor programs that can be supported by a City staff with minimal supervision.

## **Plan Adoption and Approval**

Much of the context of the St. Vrain Greenway Master Plan, East Corridor Update, is surrounded by county properties. To maximize the execution of this Plan, both Boulder County and Weld County should recognize this Master Plan and participate in the implementation of the Plan. The Plan was developed, in part, to be compatible with other plans for the St. Vrain River Corridor, thus recognition of this Plan should occur easily. Staff from both Boulder County and Weld County were involved in the development and review of the Plan during development, thus know the history of significant public involvement used to create the Plan.

### **Boulder County**

Boulder County has been involved with planning for the St. Vrain River Corridor for many years. Their Comprehensive Plan, Trails Plan and Open Space Plan all recognize this Corridor. Traditional steps toward plan recognition by Boulder County involves the following:

- 1) Include staff in review of Plan during development. (This was accomplished with the 'referral submittal' during the month of April 2001.)
- 2) Meet with Boulder County Parks and Open Space Staff after approved by Longmont City Council, with recommendations that Boulder County Open Space Advisory Committee accept the Plan and forward it to the Boulder County Planning Commissioners.
- 3) Presentation to the Boulder County Commissioners with recommendations for adoption.

The following standard questions may need to be addressed:

- a. What County Zoning Districts are involved?
- b. What implementation measures are Longmont likely to pursue?
- c. What is the Plan's timeline for implementation?
- d. Are there scheduled check-in points or are there amendment procedures?
- e. Is the Plan consistent with or complementary to any County Comprehensive Plans within the Planning Area?

- f. Is the Plan consistent with the Boulder County / Longmont Comprehensive Development Plan Intergovernmental Agreement and/or the Boulder County / Longmont Transferable Development Rights Agreement?

### **Weld County**

Weld County completed a Master Plan (2000), called the 'St.Vrain Valley Open Lands and Trails Plan' that was used as part of this planning effort. A similar process to that with Boulder County is required to gain recognition by Weld County. Weld County staff was involved during the development of this Plan, and they were included in the distribution of referral plans. A meeting should be scheduled with Weld County Planning Department to introduce the final Plan, discuss the compatibility with the St. Vrain Valley Open Lands and Trails Plan, and define additional steps needed to gain adoption. A presentation to the Weld County Commissioners with recommendation for adoption is anticipated.

## **Mechanisms to form Working Agreements**

The boundaries of important resource lands almost never coincide with the political boundaries of cities, counties, or towns. Effective protection of the resources will therefore often require significant cooperation between more than one jurisdiction. The most effective way to formalize that cooperation is through the use of intergovernmental agreements (IGAs). Although they are often time-consuming to negotiate, execute, and manage, IGAs are often well worth the effort because they result in a shared value system and a shared control system. The discussion that goes into the creation of those systems helps emphasize the importance of resource issues, and the resulting IGAs are often more resistant to change than the policy of a single government. Because they often address an entire county, valley, or transportation corridor, IGAs are usually considered to be a landscape scale protection tool.

Under Colorado statutes, "local governments are authorized and encouraged to cooperate or contract with other units of government for the purposes of planning or regulating the development of land including, but not limited to, the joint exercise of planning, zoning, subdivision, building and related regulations." Where local governments negotiate plans for regionally coordinated development patterns and then agree to adopt plans and implementation measures, those plans can become "mutually binding and enforceable" among the parties. The binding nature of these plans is in contrast to the advisory nature of most plans in Colorado, partly because they are grounded in principles of contract law between governments as opposed to the legislative policy of a single government.

IGAs have several advantages as resource protection tools. They are negotiated voluntarily, so that local governments do not feel coerced into participating. Because they are freely negotiated and are only adopted when consensus has been reached, they may be easier to enforce than county or regional plans adopted without strong consensus. IGAs can specifically address a wide variety of growth management issues and can generally strengthen the working relationships between local governments. One disadvantage of IGAs is that they sometimes do not have effective enforcement mechanisms. Local governments are often reluctant to agree to the inclusion of specific enforcement tools that could be used against them, and are also reluctant to use the courts to try to enforce the contract against another signatory government.

### **MEMORANDUM OF UNDERSTANDING-**

Two or more parties can form a working relationship among themselves via a Memorandum of Understanding to describe the conditions that each entity will function.

JOINT MANAGEMENT AGREEMENTS - where each party to the agreement continues to manage the property under their jurisdiction, yet agree to a common set of management practices to unify overall long range management of the region. These can be agreements between public and private entities as well as between governmental jurisdictions.

## **Other Tools**

Appendix C includes a detailed list of Federal, State and Local Tools for Acquisition, Protection and Implementation. This appendix also lists numerous funding sources and programs available through state and federal programs.



