Section 2

The Benefits of Green Streets

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SOPHIE SAUVÉ

SOUTH BURLINGTON, VERMONT: This rain garden adjacent to a parking lot helps keep the library from flooding.

Green streets provide multiple environmental, social, and economic benefits to communities, businesses, families, and individuals. Approaching the implementation of a Green Street from a landscape perspective means that stormwater management is part of a dynamic and complex system full of opportunities to meet environmental goals, enhance mobility, and build community and place.

2.1 MEETING ENVIRONMENTAL GOALS

Incorporating natural systems into Green Streets improves ecosystem health and supports current State and local priorities and policies for stormwater management. Green Streets boost a variety of environmental benefits that can assist communities as they strive to protect air and water quality, increase species habitat, mitigate and adapt to a changing climate, and build community resilience.

Improving Water Quality

In a natural, undeveloped landscape, rain and snowmelt trickles into the ground to moisten the soil and recharge groundwater that feeds lakes, rivers, and streams. In an urban environment, compacted soil and impervious surfaces reroute precipitation over streets and into underground pipes. This collected stormwater runoff is laden with sediment and pollutants and channeled straight into nearby rivers and lakes. To make matters worse, some municipalities (6% of towns and 66% of cities) in Vermont direct stormwater into sewer systems that also pipe sanitary sewage. When these combined systems reach capacity, both sewerage and stormwater flow directly into waterbodies, pollutants and all.

Green Streets improve the quality of stormwater runoff by:

- utilizing engineered combinations of vegetation and soil media to remove pollutants and reduce sediment in stormwater before discharge to natural waterways, and
- reducing the velocity of stormwater via a decentralized set of practices to slow the rate of flow into a conventional storm sewer system and/or into the aquatic environment.

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Green Street design reduces the quantity of water destined for sewer systems by:

- minimizing impervious surface area in urban areas, increasing infiltration;
- intercepting rainfall with the addition of tree canopies and other layers of vegetation.
- minimizing impact on existing vegetation and natural hydrologic conditions, and:
- using permeable treatments where feasible.

Improving Air Quality

Densely developed areas concentrate traffic, creating air quality problems and public health concerns, particularly in valleys where air pollutant dispersion is restricted. Green Streets incorporate vegetation in the form of trees, shrubs, and perennials into the streetscape to sequester carbon and improve air quality by removing airborne particulate matter.

Reducing Urban Heat Islands

Impervious surfaces in downtowns and village centers contribute to the 'heat island' effect where ambient air temperatures remain higher in urbanized areas than in surrounding rural areas. This is due to a difference in the evaporative cooling influence of vegetation coverage versus impervious surfaces. Green Streets reduce the urban heat island effect by replacing paved surfaces with carefully selected vegetation that provides shade, absorbs solar radiation, and increases evaporative cooling.

Creating Wildlife Habitat and Species Diversity

Streets and parking lots devoid of vegetation degrade both wildlife habitat and the human experience in nature. Wildlife that live in or near developed areas require habitat structure, connectivity, or stepping stones of vegetation to maintain population health. Green Streets create habitat in downtowns, villages, and neighborhoods, and provide stepping stones of vegetation that maintain regional biodiversity at all scales.

KEVIN ROBERT PERRY

▲ *Green Streets captures runoff and pollutants and treats it prior to entering a nearby creek, stream, river, or lake. (Montpelier, VT)*

RICHARD AMORE

▲ *On dry days, Green Streets provide shade and cooling of surfaces helping reduce the urban heat island effect. (Burlington, VT)*

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BURLINGTON, VERMONT: Historic Church Street is vibrant with pedestrians.

2.2 ENHANCING MOBILITY

Green Streets consider the network, security, and ease with which multimodal users of all ages and ability can move through our downtowns, village centers, and neighborhoods to access goods and services.

Human Health

Spacing, alignment, and character of urban streets can support active transportation by designing options for all tiers of users including the very young, the elderly, and the disabled. Accessibility, transportation options and streets with greenery entice people to get out and enjoy outdoor spaces, and to linger longer. Incorporating street-side amenities such as benches, appropriate lighting, and attractive vegetation shifts the purpose of streets from merely corridors to vibrant destinations. Ultimately, this increased time in outdoor spaces contributes to improved human health and longevity. Studies on nature's influence on human health indicate lower stress levels, greater reported levels of happiness, and longer lives, ultimately leading to lower healthcare costs.

Safety

Green Streets that are also multimodal and structurally complex reinforce lower vehicle speeds, increasing safety for all users. Buffers separating pedestrians and cyclists from vehicles reduce incidents of collisions. Protected bike lanes increase the number and types of cyclists willing to use the streets. Additionally, more people on the street means that more eyes are on the space, adding security through communal surveillance.

2.3 BUILDING COMMUNITY AND MAKING PLACES

Green Streets support statewide planning goals and policies that maintain the historic settlement pattern of Vermont, one of compact cities, towns, and villages separated by rural land. Moreover, well-designed streets create places people are more inclined to visit – fulfilling the cultural value of Vermont's downtown spaces as community focal points. They can help facilitate community interactions, reinforce

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the history and culture of a place, support economic development, and encourage public investment that will serve multiple benefits. Combined with a backdrop of green infrastructure and trees, streets can thrive, surrounding businesses can prosper, and stormwater can be efficiently managed.

Community Connections and Engagement

While streets are primarily used for getting from one place to another, they are also created as spaces for people to gather, rest, and talk. Deliberate gestures that contribute to placemaking allow for spontaneity to occur, especially on highly walkable main streets. Unplanned encounters and socializing take place when well-designed sidewalk space is wide enough for people to stop and meet and includes amenities, such as benches, at street intersections and mid-block locations. By creating places where people will linger, several environmental design principles are activated, in turn increasing a commitment to place through investment in street beautification and fostering environmental stewardship through visible connections to the natural environment.

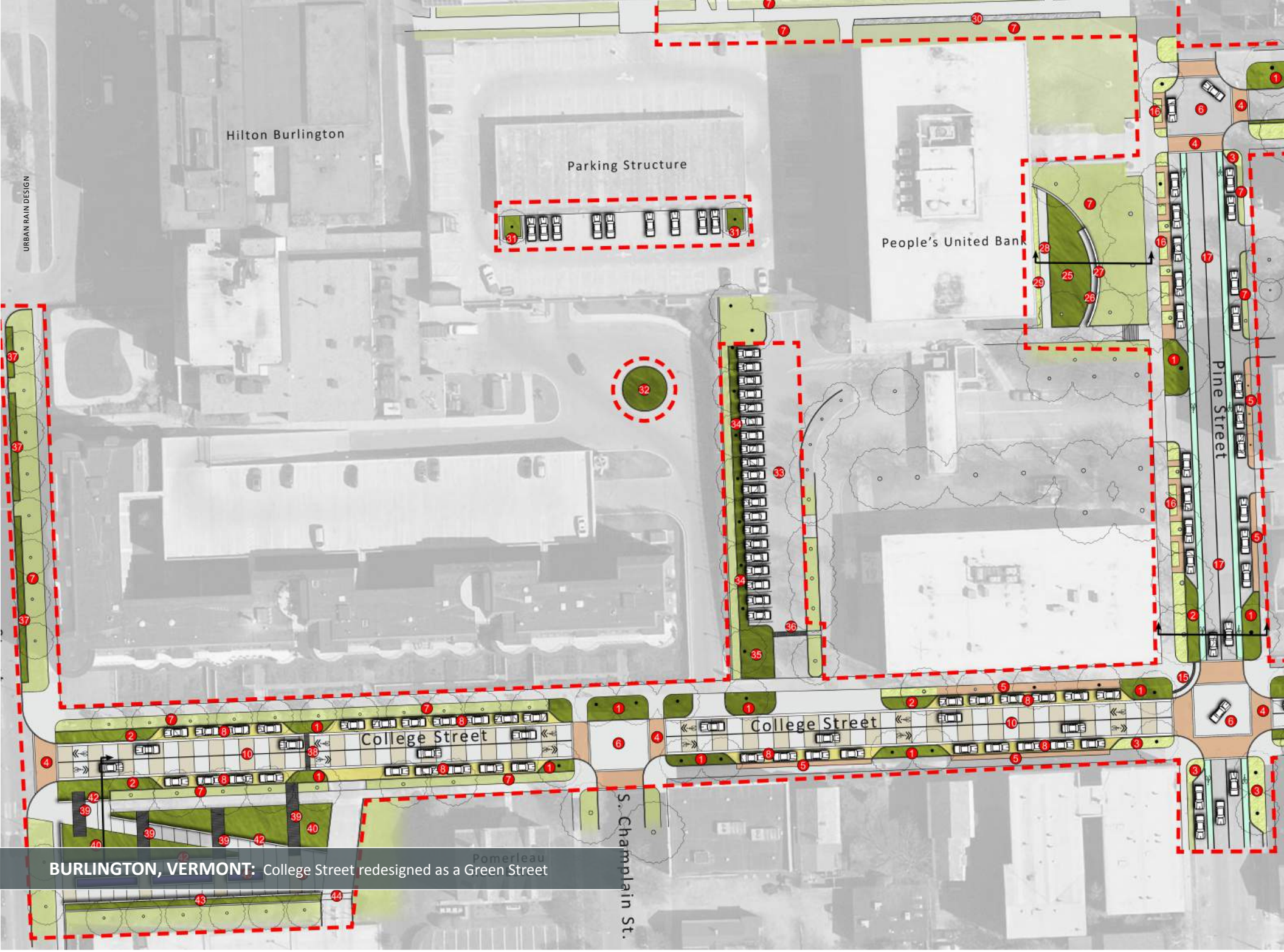
Financial Savings

More frequent and intense rainfall events are stressing existing conventional stormwater systems to the point of requiring costly expansions or repair. Green Streets designs can effectively reduce the quantity of stormwater and slow its flow, dropping demand or even the need for capital investments in gray stormwater infrastructure. Further, green stormwater designs are associated with higher pollutant removal capacities than conventional infrastructure and at a lower cost.

Economic Vitality

Green Streets signal investment in a community that cares about its streets and in turn, both its residents and visitors. Public investment in Green Streets and related amenities spurs private investment by developers and increases public-private partnerships benefiting downtowns and village centers. Walkability and bikeability often correlate with economic vitality, as street-level businesses benefit from more pedestrian and bike traffic. These factors contribute to rising property values, improving tax revenues, and encouraging further public and private investments.

MONTPELIER, VERMONT: A parklet along State Street.



BURLINGTON, VERMONT: College Street redesigned as a Green Street