



**A Sustainable Army ~
A Sustainable Fort Riley:
A Part of the Solution**

**Cynthia A. Murphy
Colonel, Aviation
Garrison Commander,
Fort Lewis, WA**



Sustainability is ...



A term describing a state of community growth and development where:

- present requirements are met**
- without compromising ability of future generations to meet their own needs**





Sustainability is ...



“The focus of the FORSCOM Installation Sustainability Program is to answer this question at each installation: How do we decrease the total regional environmental footprint...to ensure that our installations can continue to train and deploy combat-ready troops...and that our communities have a productive future?”

- Major General James E. Donald, U. S. Army Forces Command Deputy Chief of Staff for Personnel and Installation Management (2000)



What does Sustainability have to do with the US Army?



- **Force multiplier**
 - “tooth to tail”
 - reduce heat and noise signatures
- **Critical need for training at home**
- **Support for Soldiers and Families at home**
- **Life cycle considerations = Long term savings**
- **Maintain positive relationship with communities**
- **Military Purchasing power is a market force for change**





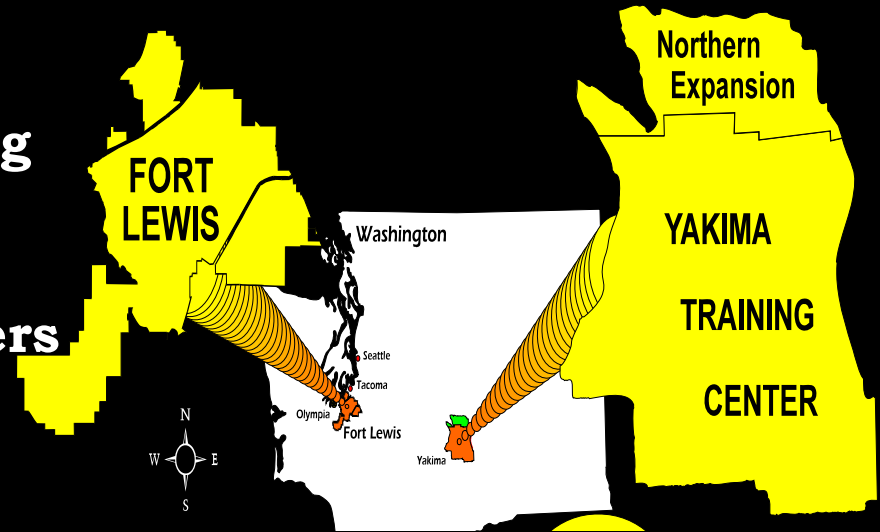
Installation Challenges



- **Provide realistic training that supports mission readiness without compromising the natural infrastructure**
- **Develop and maintain a sustainable built infrastructure; integrating life cycle costs into design**
- **Create sustainable communities that conserve resources and provide desired quality of life**
- **Build partnerships with neighboring communities to facilitate sustainable regional planning**

What does Sustainability have to do with Fort Lewis?

- **Facilities - 22 million square feet**
- **Industry – maintenance & training**
- **Major utilities**
- **Hospital (MAMC)**
- **Housing - family and single soldiers**
- **Goods and services**



Ft. Lewis - 86, 176 Acres
Yakima - 323,651 Acres

- **Because compliance just isn't good enough anymore!**
 - **The most pollution the law will allow**
- **“Sustainability is a leader's program.”**
 - **Difference between leadership and management**
 - **Both are needed**





Fort Lewis Sustainability Goals



- **AIR QUALITY**
 - Reduce installation source and non-tactical motor vehicle air emissions **85% by 2025**
- **ENERGY**
 - Reduce total energy consumption by **30% by 2015**
 - **Sustain all activities** on post using renewable energy sources and generate all electricity on post by **2025**
- **SUSTAINABLE COMMUNITY**
 - **Create sustainable neighborhoods** for a livable Fort Lewis community that enhances the Puget Sound Region
- **PRODUCTS AND MATERIALS**
 - Cycle all material use to achieve **ZERO new waste by 2025**
- **SUSTAINABLE TRAINING LANDS**
 - **Maintain the ability** of Fort Lewis to meet its **current and future military missions** without compromising the integrity of natural and cultural resources, both on the installation and regionally
 - **Recover all listed and candidate federal species** in South Puget Sound Region
- **WATER RESOURCES**
 - **Treat all wastewaters to Class A reclaim standards by 2025** to conserve water resources and improve Puget Sound water quality



Product & Material Management



- **Its not just about recycling anymore**
 - **Lifecycle management**
- **Green procurement as important as diversion**
 - **Makes zero net waste possible**
- **Instead of disposal – what beneficial reuse does this “waste product” have?**
 - **Disposal cost savings**
 - **New product purchase cost avoidance**
- **Make landfills a thing of the past**



Achieve Zero Net Waste



Material Reuse ~ Processing and Composting

Aggregates

- Generates estimated annual cost savings of \$340,000

Organic waste

- Generates estimated annual cost savings of \$416,000



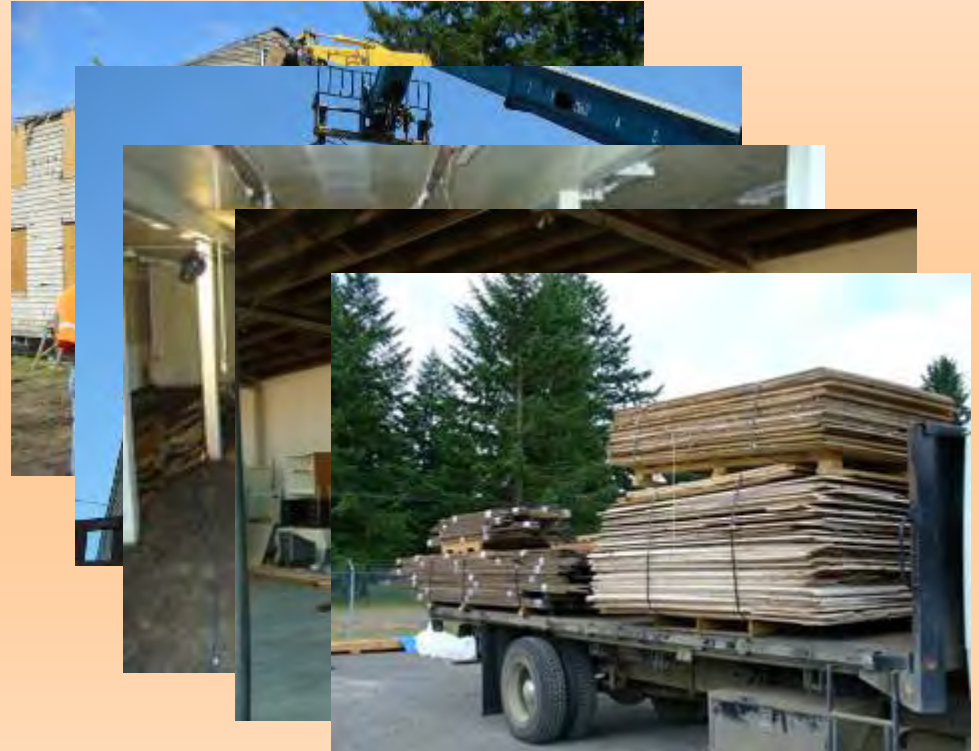


Achieve Zero Net Waste



Or Deconstruction?

Destruction?



- **Stimulate contracts to move beyond 50%**
- **100% recovery of non-hazardous material is possible**



Air Quality



Air emissions are primarily impacted by vehicle density

- **Reduce SOV use**
- **Transition to alternate fuels**



Air Quality



- **Alternate Fuels**
 - 47% of GSA vehicle fleet alternate fuel capable
 - Three alternate fuel dispensers - E85, B20 and CNG
 - MCA project initiated to build a consolidated alternate fuel station
- **23 Neighborhood Electric Vehicles (NEV)**
 - And more to come from the Army
- **Rideshare program**
- **Increase availability of mass transit**
 - Pursuing legal issues surrounding “home to work” shuttle service



E85 fuel station opens in 2005
27 January 2009



Energy



- **Renewable Energy (1/4)**
 - **Transition from fossil fuels**
 - **Army pursuit of installation potential**
- **Energy Conservation (3/4)**
 - **Utility partnerships**
 - **Utility Energy Services Contract (UESC) for federal agencies**



ZERO Fossil Fuels



- $\frac{3}{4}$ conservation, $\frac{1}{4}$ renewable

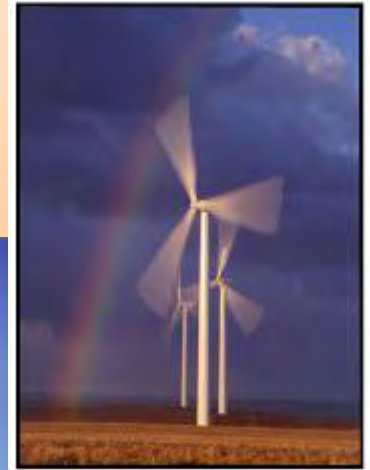




Energy



- **Utility Energy Service Contract (UESC)**
 - \$18M investment for \$39M in Improvements
 - 556K MBTU/yr savings
 - \$4.3M/yr cost savings
- **~21 %of electricity from Green (renewable) sources (FY07-FY10)**
- **Renewable energy**
 - Biomass, solar and wind
- **Innovative energy systems**
 - Solar wall
 - Energy from decomposition of waste
 - Hydrogen demonstration project





Sustainable Training Lands



- **Growth from surrounding communities result in immense challenges to maintaining relevant training**
 - **Compatibility of neighborhoods, business and military training**
 - **Loss of habitat from extensive regional development**
- **Potential to increase constraints on training**
 - **Noise complaints**
 - **Environmental regulations (endangered species)**
- **New combat systems coming on line with new requirements**



Sustainable Training Lands



- **Army Compatible Use Buffer Program**
 - Partnership with non-govt agencies to procure and manage acreage to provide additional habitat for species of concern
 - Provides a buffer between training activities and surrounding neighborhoods
- **Habitat preservation = training land preservation**
 - Control of invasive species
 - Management of maneuver damage
- **Re-populate species of concern to other areas in the region**



New Construction ~ Minimal Impact on the Environment



Heat Recovery from Dryer Vents



Covered Bike Racks and Recycling Station



Native Landscaping – drought tolerant



Recyclable Carpet Tile

- **Direct Digital Controls- remote control for energy savings**
- **Finished concrete flooring**
- **Compact fluorescent lights**
- **Zero VOC paints and adhesives**
- **20% of materials manufactured locally**



Energy Star Horizontal Axis Washers



Underground Water Cistern



Plastic Lumber Picnic Tables



Permeable wash pad



More than just the Buildings:

Building a Sustainable Community



Sustainable Master Planning Goal: Create sustainable neighborhoods for a livable Fort Lewis community that enhances the Puget Sound Region



Building

Current Real Property Master Plan Revision based on principles of sustainable community design

American Institute of Architects
10 Principles for Sustainable Communities

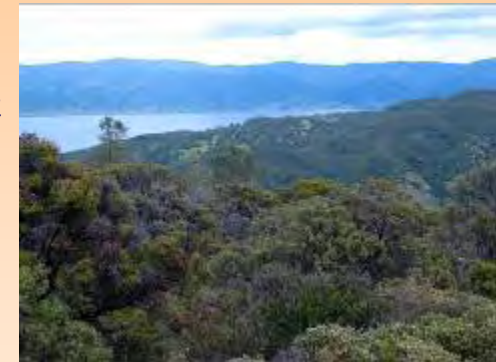
1. Design on a Human Scale
2. Provide Choices
3. Encourage Mixed-Use Development
4. Preserve Urban Centers
5. Vary Transportation Options
6. Build Vibrant Public Spaces
7. Create a Neighborhood Identity
8. Protect Environmental Resources
9. Conserve Landscapes
10. Design [Excellence] Matters



Neighborhood



Installation



Region



Planning Vision:

In support of the mission, **Soldiers and Families**, we will create a sustainable community of walkable neighborhoods with identifiable town centers connected by great streets.

Design Principles



Regional Character

Architecturally compatible buildings help create a unique and unified environment. Regional and local resources should be studied in evaluating existing themes. Materials that are native to the region should be used. Colors and textures should also be reflective of the region.



Mixed-Use Buildings

Single use facilities contribute to inefficient land use (sprawl) because they force construction of small, single story facilities. Compatible functions should be collocated in mixed use facilities. Mixed use facilities are economically and environmentally sustainable, use land more efficiently, and support vertical construction and compact development.



Car Parks

Seas of asphalt are major eyesores on Ft Lewis. They are unpleasant to view, uncomfortable to walk through and create significant storm water run-off. Make these places more like a garden. Between every parking aisle, create a planted aisle full of trees, grass and shrubs. Allow drainage from the paved area to pass through the curbs and into the landscaped areas.



Town Square

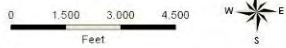
Create a place where people can gather for a sense of community.

Fort Lewis Planning Vision:

In support of the mission, Soldiers, and Families we will create a sustainable community of walkable neighborhoods with identifiable town centers connected by great streets.

Goals and Design Objectives:

- | | |
|--|---|
| <ul style="list-style-type: none"> Enhance Mission Capabilities Compact Development Rangeland Preservation Close-in Training Efficient Transportation Affordable Development | <ul style="list-style-type: none"> Sustainable Communities Narrow Buildings Walkable Neighborhoods Car Parks Public Transit Bike-able Street Grid Linear Parks Planting Strip Multi-story Mixed-use Low Impact Development |
| <ul style="list-style-type: none"> Great streets Street trees Multiway boulevard Bulb outs Parkways Shop Fronts Sidewalk Buildings Street Cafes Focal Points Connected Sidewalks Bike Paths On-street Parking Large Park Blocks | <ul style="list-style-type: none"> Walkable Neighborhoods Mixed-use Connected Sidewalks Hidden Parking Shop Fronts Views Planting Strips Car Parks Linear Parks Street Grid Visible Entries Aligned Entries 5 Minute Walks Neighborhood Parks |
| <ul style="list-style-type: none"> Identifiable Town Centers Mixed-Use Town Square Multi-Story Buildings Focal Point Regional Character Clear Edges | |



prepared by the urban collaborative, llc
www.urbancollaborative.com



Fort Lewis 2017

Planning Vision and Design Principles



Fort Lewis Master Plan:

32 Design Principles



Compact Development
Efficient Transportation
Affordable Development
Visible Entries / Optimal Unit Layout
Close-In Training
Rangeland Preservation
LEED facilities
Linear Parks
Hidden Parking
Mixed-Use
Multi-Story Buildings
Public Transit
Bike-Able / Bike Paths
Sidewalk Buildings
Connected Sidewalks

Aligned Entries
Shop Fronts
Great Views
Main Street
Clear Edges
Town Square
Regional Character / Design Excellence
Focal Points
Multi-Way Boulevard
On-Street Parking
Street Cafes
Bulb-Outs
Street Trees
Parkways
Street Grid



Fort Lewis Master Plan: Applying the Design Principles



2008 Score (.25,.50,.75,.9,1)	DESIGN PRINCIPLE	INTENT	Planning Design Goal					TBL			CRITERIA
			1. Mission Capabilities	2. Sustainable Community	3. Walkable Neighborhoods	4. Town Centers	5. Great Streets	Mission	Community	Environment	
0.25	Compact Development	Ensures critical resources (example: land, money and time) are not used unnecessarily for facilities and infrastructure. They can then be applied to mission enhancing pursuits.	0.25	0.25	0.25			0.25	0.25	0.25	Residential components have an average density of seven or more dwelling units per acre of buildable land AND Non-residential components have a density of 0.50 FAR or greater per acre of buildable land available for non-residential uses.
1	Rangeland Preservation	Mission critical activity; no encroachment acceptable	1					0.5		0.5	Neighborhood has not expanded beyond 2008 cantonment area boundaries. (Similar to urban growth boundary.)
0.5	Mixed-Use	Economically and environmentally sustainable, use land more efficiently, and support vertical construction and compact development. Jobs and housing proximity.	0.5	0.5	0.5			0.5	0.5	0.5	Score full point if all facilities on main street and around Town Square are multiple-story, mixed use AND 75% of residents are within 10 minute walk of 10 diverse uses (per list.)
0	LEED facilities	US Green Building Council's Leadership in Energy and Environmental Design green building rating system	0	0				0	0	0	Base score on percentage of buildings meeting LEED "certified" criteria (NC, EB, ND)
0.25	Public Transit	Enable sustainable communities by reducing traffic, decreasing emissions, and providing opportunities to easily and efficiently commute within the installation and also connect to the surrounding community.		0.25				0.25	0.25	0.25	The neighborhood has transit service of 20 or more easily accessible transit rides per weekday. Bus stops should be within 1/4 mile walk distance of at least 50% of the dwellings/businesses.
0.25	Connected Sidewalks	Provides pleasant, safe walkways with clear destination points.		0.25	0.25		0.25	0.25	0.25	0.25	Base score on percentage of sidewalks meeting intent.
0.5	Five-Minute Walk	Workplaces, schools, homes, and shopping located in mixed-use neighborhoods within a five to ten minute radius support a pedestrian-focused environment. Ensure walking routes are not across parking lots, along disconnected sidewalks, or unprotected from the sun / rain.	0.5	0.5	0.5	0.5					Determine the five to ten minute walk radius and ensure schools, workplaces, shopping and other conveniences are located within this arc. To be attractive to pedestrians the walk must be shaded by street trees, along connected sidewalks, past buildings with entries on the street.
0.5	Street Trees	Provide shelter from the elements, clean the air, reduce noise, provide street definition, buffer pedestrians, reduce vehicle speeds and create an attractive environment. In addition, create cost savings by reducing storm drainage infrastructure and impacts.		0.5	0.5		0.5	0.5	0.5	0.5	Score full point when all streets meet the Regulating Plan requirements.
13.75	TOTAL POINTS	TOTAL POINTS (T)	5	8	8.5	4	7	2.75	2.25	2	
		<i>Computation for Snapshot chart:</i>									
		<i>Possible Points (P)</i>	10	23	23	10	21				
Ver. 3.2		<i>Number of "NA" per column (NA)</i>									
22Oct08		<i>Percentage for chart: T/(P-NA)</i>	0.5	0.3478	0.3696	0.4	0.33				

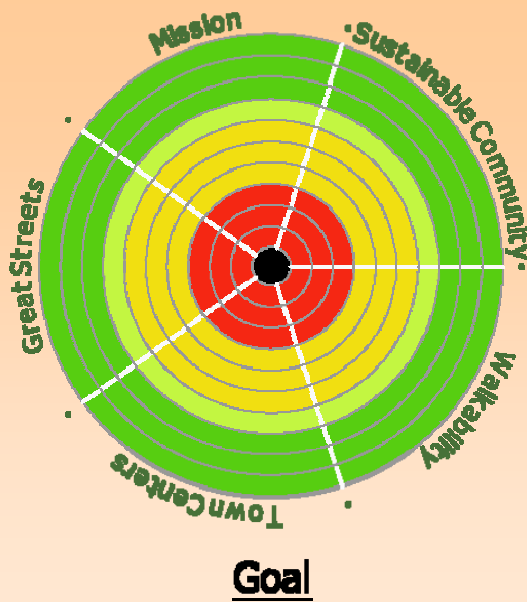


MEASURING SUSTAINABILITY

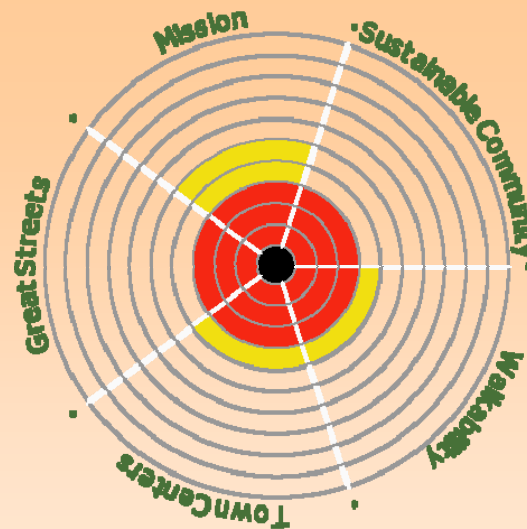
Neighborhood Snapshot



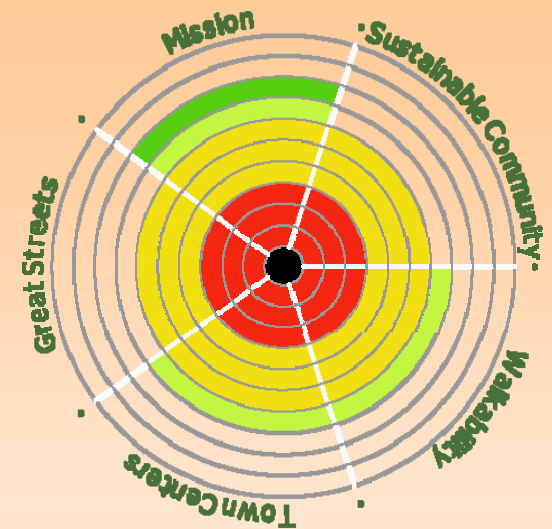
- Uses the 37 Master Plan Design Principles
 - Ensures consistent implementation of sustainable principles
 - Tie in to planning goals
 - Enhance Mission
 - Sustainable Community
 - Walkable Neighborhoods
 - Identifiable Town Centers
 - Great Streets
 - Includes LEED-NC and LEED-ND



Goal



Historic Downtown
2008



Historic Downtown
2017



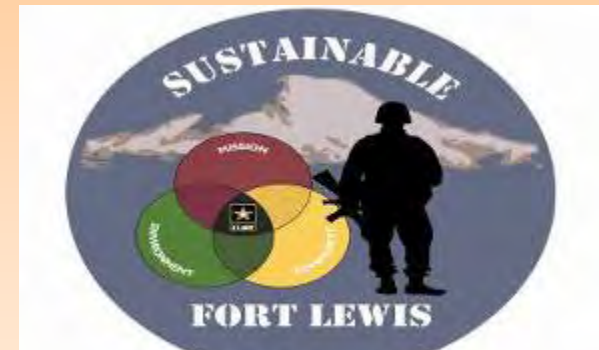
Foster a Sustainable Culture:

Becoming “Part of the Solution”



New Community Campaign

- **Education (video)**
- **Web site**
- **Pledging/Commitment**
- **Branding/signs**
- **Prompts (Logo)**



PART OF THE SOLUTION

Ft Lewis Sustainability - Windows Internet Explorer

https://sustainablefortlewis.army.mil/Default.asp

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Ft Lewis Sustainability

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Local intranet 100%

<https://sustainablefortlewis.army.mil/>

What does Sustainability have to do with Fort Riley?

“An Ounce of Prevention...”

