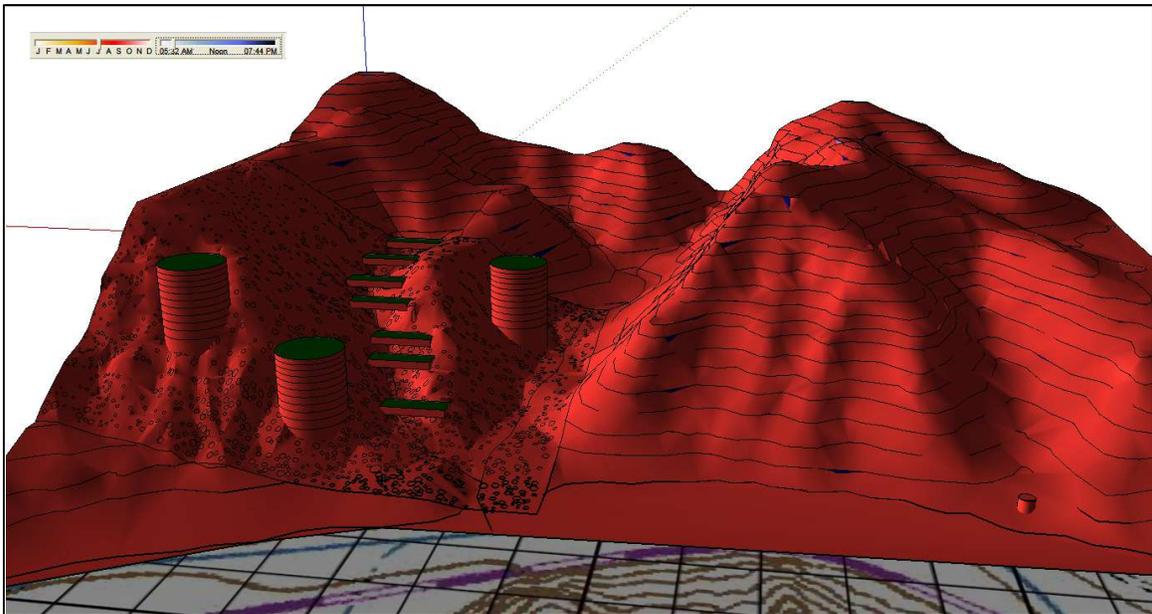


# Red Cove, Utah

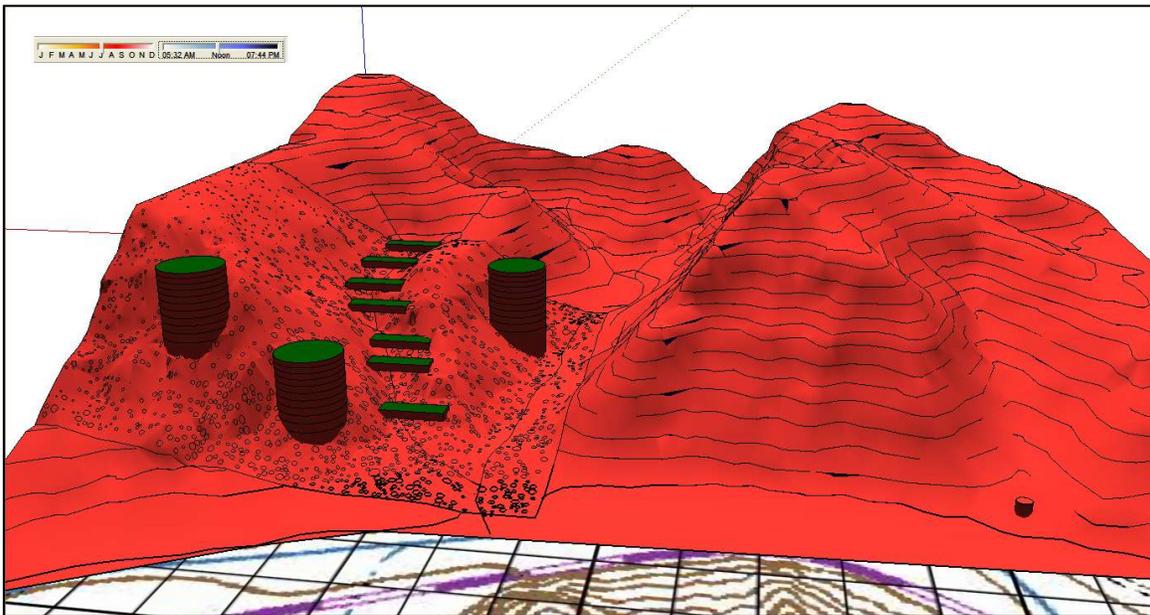
## A W3D Real Estate Investment Opportunity



Red Cove Sunlight at 8:00 AM in July

<b>Walden 3-D, Incorporated</b>	
P.O. Box 382, Barker, TX 77413-0382	
<a href="http://www.walden3d.com">http://www.walden3d.com</a>	

## Red Cove Investment Description



Red Cove Sunlight at noon in July

**Copyright © 2006 Walden 3-D, Inc.**  
All Rights Reserved

P.O. Box 382, Barker, TX 77413-0382  
<http://www.walden3d.com>  
office 281.578.3966 facsimile 281.578.2141

H. Roice Nelson, Jr., Principal  
cell: 713.542.2207 e-mail [nelson@walden3d.com](mailto:nelson@walden3d.com)

## 1. Executive Summary

Red Cove is a research project, with a significant potential upside for the investor, both financially and in terms of proprietary technologies, which technologies become available on a no cost license basis for the investor's in-house projects. This project begins implementation of The Urban Machine, a process whereby cities are reconstructed based on applied information technologies. The Red Cove site was selected as the site for the first implementation of 35 years of planning and thinking based on: (1) population growth in Southern Utah; (2) the geological and natural beauty of the views; (3) five generations of involvement and connection with the community by two of the principals, Raymond S. Gardner - Architect and H. Roice Nelson, Jr. – geophysicist; and (4) easy walking access to Cedar City, Southern Utah University, The Utah Shakespeare Festival, and associated amenities. Retirees, software engineers, and artists are the key anticipated purchasers of living units within the Red Cove development.

This document summarizes the philosophy Walden 3-D, Inc. and associates have developed over the years. Red Cove is a focal point, a place to start moving these ideas to practical reality. The investor might only be interested in on aspect of the W3D Design Process (page 18), for instance using virtual reality to design and pre-sell custom homes. That's fine. However, it is important to prototype the entire process, recognizing this approach has many new untested components, and thus is a research project. So we are seeking an investor interested in a research project with significant upside and with some proprietary technologies which they can exploit now.

The investor will have 100% ownership of the property, and a no cost perpetual license to use any Intellectual Property (IP) which Walden 3-D has, or which results from the project. They will be able to use this IP in their in-house community development projects. The investor can shut down the project at the completion of any of the first four phases, and sell off their assets. Walden 3-D, Inc. retains: (1) control of the development planning once a project phase is approved and funded by the investor; (2) ownership of any intellectual property which results from data collection, planning, and design of the project; and (3) the right to have 25% ownership transferred to Walden 3-D, Inc. as a back-in position, once the investor realizes a 200% cash return on the investment they have made to that stage of project development.

The first phase, Design Initiation, starts with the purchase of a 40 acre piece of property (\$200,000-\$240,000), for which Walden 3-D has a handshake agreement on. In addition, preliminary design options will be explored, along with subcontracting of an air photo study, generation of 2 foot contours, a geologic study, soil tests, an endangered wildlife and vegetation study, and a market survey. The budget for this work is \$160,000 to \$200,000 - depending on the final purchase price of the property. The \$400,000 of this first phase is equivalent to spending \$10,000/acre. Properties in the area, not nearly so nice, have sold for \$16,000/acre. The 40 acres at Red Cove has a wildlife preserve on the northeast between the property and Coal Creek, Coal Creek on the southeast, City owned property on the west, BLM (Bureau of Land Management) property on the south, and is cut off by the mountain on the east side of the property from private land on the east (see [http://www.walden3d.com/Red\\_Cove](http://www.walden3d.com/Red_Cove)). Red Cove is also only a couple of miles from the offices of The Gardner Partnership Architects, who will manage data collection, planning, design, approvals, and on-site construction. Details of this firm can be found at <http://www.gp-architects.com>.

## Red Cove Investment Description

The second phase, Design Focus, starts with an intensive collection of data. This data will be indexed, and organized into databases, which will allow pattern finding and we anticipate will lead to the automated identification of invariant polynomials, which control site specific design. Some data will be tied to the site, and much of it will be generic sociological data, data which can be used to generalize how designs meet human needs of access, interconnection, privacy, and quality of life. These data, and more importantly, these processes, will be transferable to other development projects. This is the beginning of a formal new community Best Practice library, a key component of The Urban Machine. During this phase, the project will be introduced to the community, and these early meetings will determine the amount of work required to promote the concept. Cedar City is progressive, and we do not anticipate a public backlash against the project. However, we want to be prepared to focus the design, identify community objections, and do detailed planning of how Red Cove will integrate into the greater community. This integration includes physical connections like water, sewage, waste management, mail, and transportation, in addition, to social connections like age demographics, income disparity, and amenity priorities. The \$250,000 budget for this phase will produce results and processes which can be applied anyplace in the world by the developer/investor.

The third phase, Computer-Enabled Design, will be result in a virtual reality rendition of the final infrastructure design. In addition, it will allow future residents to design their habitats, and once they are satisfied with the design, will result in a sales contract, and an income stream for the investor. Note that this work will take advantage of Walden 3-D's creation of the North American Reality Center Special Interest Group (<http://www.walden3d.com/rcsig>). Specifically, students and professors at Iowa State's VRAC (Virtual Reality Application Center) and Columbia University of New York City will be brought in to provide a foundation for this work. This work will be housed in the Integrated Engineering and Technology Department at Southern Utah University as agreed with Dr. Desmond Penny. This will create a home for the virtual reality system, without the cost of a sales office building, and will create a linkage between the community and the project. The virtual reality models will allow conceptual testing of the viability of using something like the Segway, the two wheel electronic bike you stand on, as a central transportation motif. The budget for the Computer-Enabled Design phase is \$200,000.

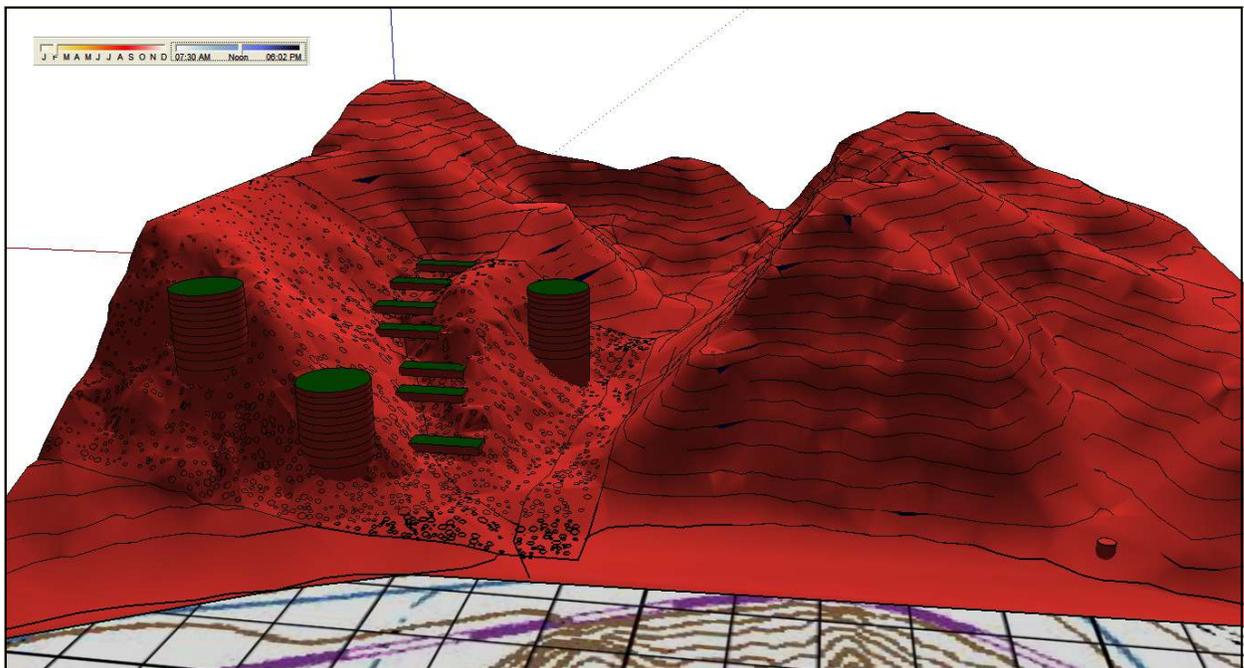
The fourth phase, Construction, is not tied down very well yet. This is why the first three information technology phases are so important. First pass plans recommend between 50 and 300 habitats, the equivalent of a house, on the property. This is based on somewhere between 100,000 and 300,000 square feet of build out space, with between 336 and 4,000 square feet per unit. Using automated offsite manufacturing techniques and a kit-of-parts approach, the cost to build these habitats is estimated to be between \$82,000 and \$174,000 each. Given these costs the goal is to sell the units for between \$111,000 and \$235,000 for a 35% profit. This works out to between \$3 million and \$13 million profit, with project sell out anticipated to occur within 5 years. The total construction loan would be between \$8 million and \$48 million. An exciting difference in this approach is that there would be contracts on any house, and purchaser qualification, prior to any construction taking place, which means much of the construction loan can be covered by sales.

The fifth phase, Long-Term Commitment, occurs after the investor has cashed out. It is tied to long-term maintenance and operation of the community.

## Red Cove Investment Description

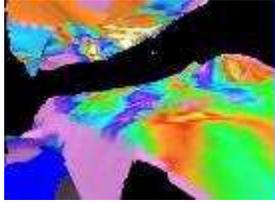
Red Cove culminates 35+ years of thinking about ways to demonstrate a change in the way cities are built. The conversations started in 1970 when Roice lived in London, visited one of the large London Council Housing Projects, and wrote to Ray, who was studying architecture at the University of Utah, about how the cattle on the Nelson Farm in Cedar Valley had better living conditions than these people. Ray wrote back, introducing Roice to the work of Paolo Soleri.

After a couple of decades of talking about and reading about new cities, Walden 3-D, Inc. was formed in 1990 as the R&D and consulting mechanism for an oil and gas exploration geophysicist, H. Roice Nelson, Jr. ([http://www.walden3d.com/resumes/HRN\\_Resume.pdf](http://www.walden3d.com/resumes/HRN_Resume.pdf)). The idea was that Walden 3-D would become the general contractor for the new city. These plans were never put in place because of the financial failure of HyperMedia Corporation, and the impact on Roice's finances. Walden 3-D, Inc. has started several companies and developed several technologies to support implementation of the new city concepts being explored (the general contractor - <http://www.walden3d.com>); including HyperMedia Corporation (to manage information technologies – <http://www.walden3d.com/hmc96>); Advanced Structures, Incorporated (to design/build the envelope – <http://www.asidesign.com>); the Knowledge Backbone<sup>SM</sup> (a formal process of Best Practice documentation to index city information – [http://www.walden3d.com/hmc96/knowledge\\_backbone/p01.html](http://www.walden3d.com/hmc96/knowledge_backbone/p01.html)); the Infinite Grid<sup>SM</sup> (for spatial information management (<http://www.walden3d.com/ig>); and various virtual reality visualization technologies (for visualizing and modeling the geological foundations, biological systems, meteorological impact, built form options, marketing the project, etc. – <http://www.walden3d.com/wvs> and <http://www.walden3d.com/rcsig>). Red Cove is a practical implementation of these concepts.

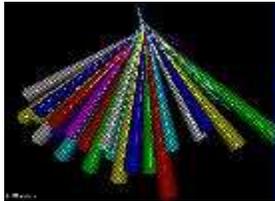


Red Cove sunlight at noon in February, highlighting three towers and natural bridge housing.

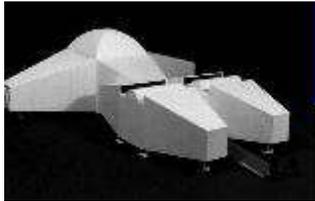
The following are visualization examples from Walden Visualization Systems, Inc., which was merged with Energy Innovations to become Continuum Resources International Corporation, and which company was dissolved in 2002 by the investor:



**Sequence Stratigraphy comes alive in a Virtual Visualization environment**



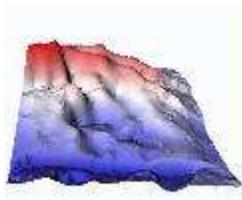
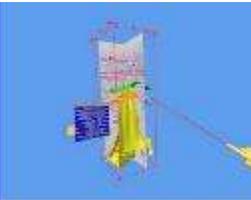
**WVS is developing software which provides drillers realistic views of platforms and targets**



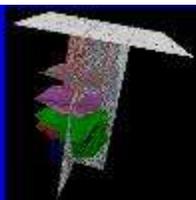
**Need a facility for your Visualization Center?**

**ASI, a WVS partner, has the solution.**

**Ever dreamed of holding data in your hand?**

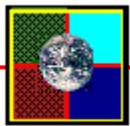


**Virtual environments provide natural methods of enhancing communications**



<p><b>"Virtual Reality in Geosciences"</b> A Virtual Seminar presented at a conference organized by Østfold Research Foundation (STØ) <b>15:45-16:45 Tuesday 25 June 1996 Halden, Norway</b></p>	<p><b>Virtual Seminars<sup>SM</sup> Corporation</b> Publishing Custom On-Line Presentations ELDO 0696G006 Copyright © 1996</p>	
--	--	---

[http://www.walden3d.com/w3d/virtual\\_seminars/VR\\_Geosciences\\_25Jun96/index.html](http://www.walden3d.com/w3d/virtual_seminars/VR_Geosciences_25Jun96/index.html)

 <p><b>Welcome to Earth Sciences &amp; The Institute of Tectonics</b> University of California, Santa Cruz <b>UCSC</b></p>	<p>Copyright © 1996 <b>Walden 3-D, Inc.</b> Designing Responsive Environments Geotechnical Consulting</p>	
---	---	---

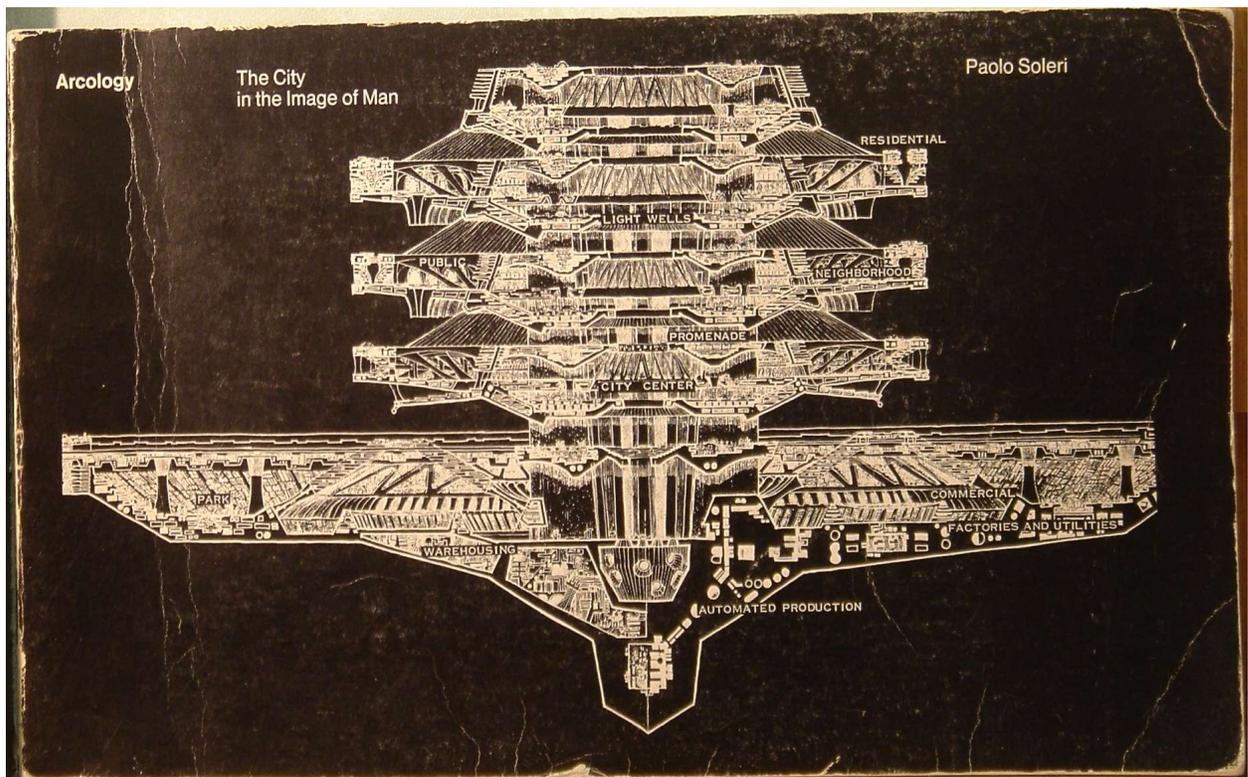
[http://www.walden3d.com/w3d/virtual\\_seminars/UCSC\\_08May96/index.html](http://www.walden3d.com/w3d/virtual_seminars/UCSC_08May96/index.html)

**Contents**

1. Executive Summary .....	03
2. Contents .....	07
3. The W3D Approach: .....	08
a. The Vision .....	11
b. The Moment .....	12
c. The Mandate .....	14
d. The Mission .....	15
e. The Charter .....	16
f. The Concept, as written down in 1990 .....	17
g. Basic Tenets .....	18
h. The Results .....	19
i. The W3D Design Process .....	20
j. A New Homeowner Scenario .....	22
k. The Design Process Philosophy .....	23
i. Phase I. Design Initiation .....	24
ii. Phase II. Design Focus .....	25
iii. Phase III. Computer Enabled Design .....	26
iv. Phase IV. Construction .....	27
v. Phase V. Long-Term Commitment .....	28
l. Interdependency .....	29
4. Red Cove Regional Context .....	30
5. Red Cove Project Details .....	35
6. Red Cove Investment Plan and Time-Line .....	46
7. Investor Communications .....	47
8. Other W3D Opportunities .....	48
7.1. Barker, Texas .....	48
7.1.1. Phase 1, Maudeen Mark’s 24 acre ranch .....	48
7.1.2. Phase 2, Barker Reservoir .....	49
7.2. Jack road Cooperative .....	50
7.3. Shirts Canyon, Utah .....	51
7.4. Colorado River Loop, Texas .....	52
7.5. Johnson 40 acres, Simonton, Texas .....	52
Appendix I. Articles: “Beyond Sprawl: Human Habitat Planning for the New Century” In <i>The Futurist</i> , January-February & March-April 2006 .....	53
• Beyond Sprawl, Rethinking Humanities Habitats .....	54
• New Villages for a New Era .....	55
• A New Garden of Eden .....	58
• Of Neighborhoods, Networks, and Nodes .....	59
• Designing for Democracy .....	61
• The Santa-Fe-ing of Civilization .....	62
• Building Creative Communities – The Role of Art and Culture .....	63
Appendix II. Appraisal Report, 40 Acres, Cedar Canyon/Coal Creek, Cedar City, Utah Bradford C. Schmutz, Certified General Appraiser, 01 Dec 2004 .....	68

## 2. The W3D Approach:

Walden 3-D, Inc.'s design and development approach starts with The W3D Vision Statement, a summary of The Moment we find ourselves in, and specifying The Mandate which logically follows. The Mission and The Charter go into more of the details behind the development process. The Concept and The Tenets are idealistic goals for running the development approach. The Results lists some of the anticipated designs to come out at the end of the process. The W3D Design Process and A New Homeowner Scenario personalize the W3D development approach. And The Design Process Philosophy ties together the steps a village will take to enhance new urbanism ideals with energy and agricultural self-sufficiency, economic and recycled sustainability, and the stewardship of a scrupulous democracy based on trust, honesty, and integrity.

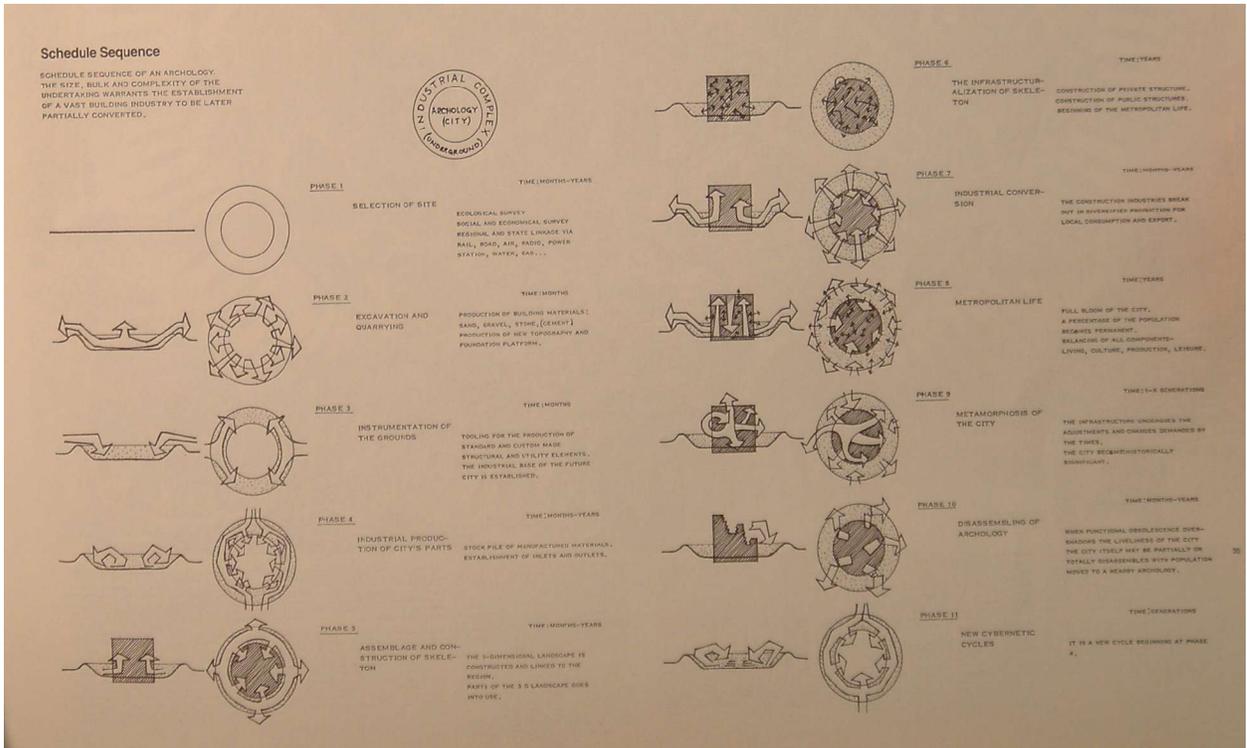


The inspiration for Walden 3-D's urban planning efforts came from a book: **Arcology: The City in the Image of Man**, Paolo Soleri, The MIT Press, Cambridge, Massachusetts and London, England 1969

# Red Cove Investment Description

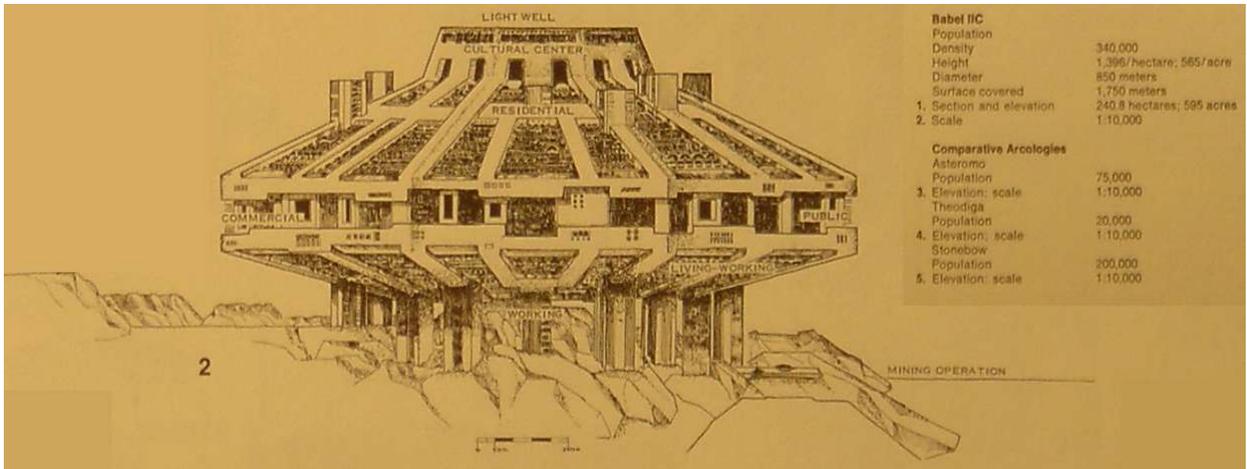


The basic idea of an Arcology is to build more densely on 5% of the land, leaving the other 95% of the land in a natural condition.

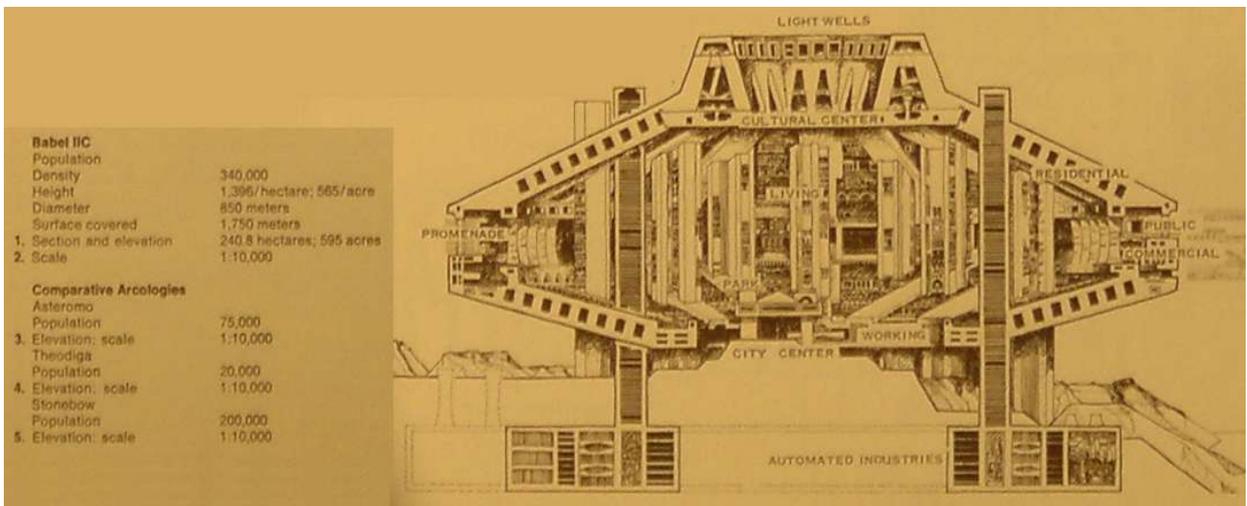


The schedule sequence summarizes the steps involved in building a densely populated Arcology.

## Red Cove Investment Description



An example design for a mining community from “**Arcology: The City in the Image of Man**”



Cross-Cut through the mining community from “**Arcology: The City in the Image of Man**”



This Arcology is visually like the mountains at the Kolob Overlook of Zion National Park.

**2.a. The W3D Vision Statement:**

Designing Responsive Environments

Tune the design so that  
the built form system  
will perform optimally within  
the natural system

Eliminate all conflict between the two basic systems

Design with nature and not from nature

Live with nature and not on nature

**The Objective**

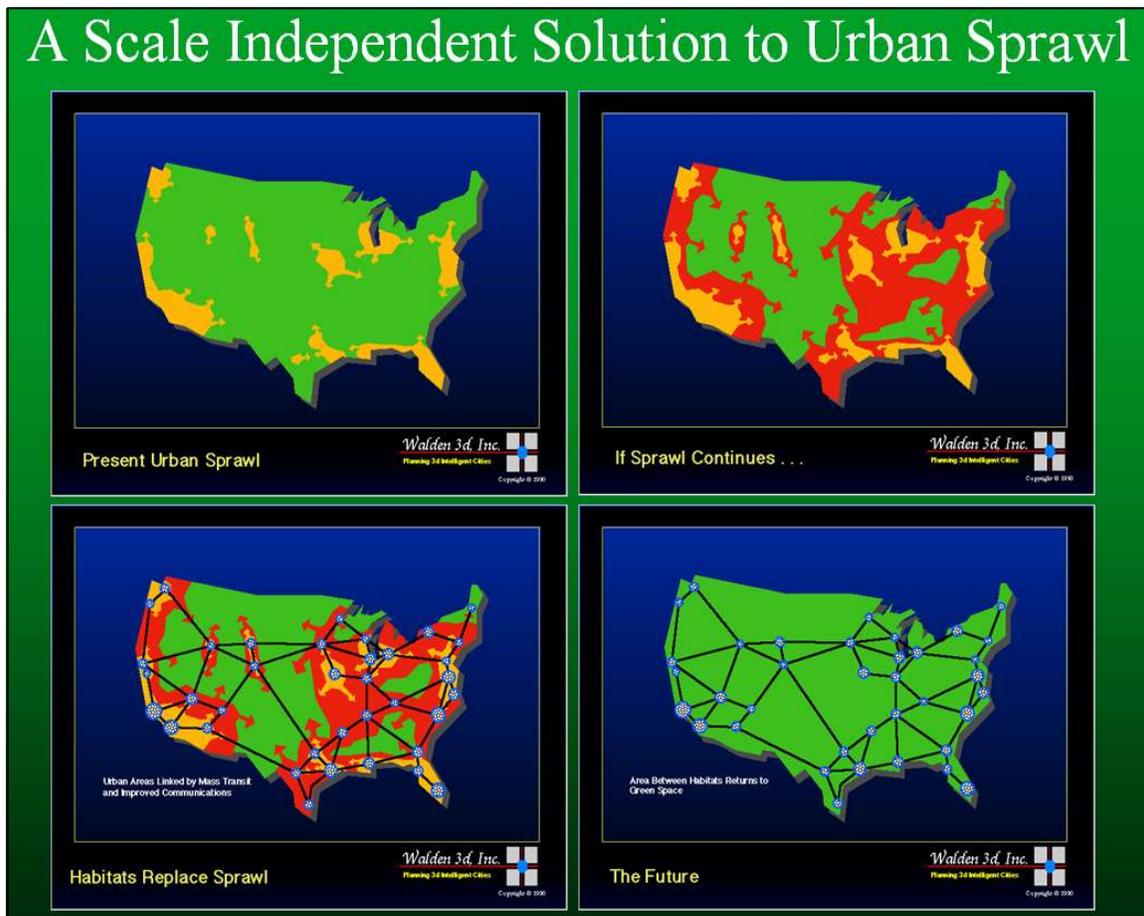
Walden 3d, Inc.  
Planning 3d Intelligent Cities

Copyright © 1991

**2.b. The Moment:**

Since September 11<sup>th</sup>, 1999 humanity has reached a unique decision point regarding human habitation of planet Earth. A significant change of attitude follows: (1) safety concerns – terrorists and crime; (2) environmental catastrophes – the Far East tsunami and the twin 2005 hurricanes in the Gulf of Mexico; in addition to (3) worries about ongoing access to energy – oil prices and foreign dependence; (4) problems resulting from automobile emissions – global warming and cost of fuel; and it started:

- Forty years ago when astronauts photographed a fragile finite earth above a barren moon. With a single frame, global awareness was born. Forty years of data now drive this awareness toward accountability.
- Today totalitarian dictatorships are crumbling worldwide under the tide of personal freedom. Informed individuals now demand responsible participation in the decision making processes affecting their community and their world.





**THE PROBLEM**  
**Increasing population and urban sprawl resulting in:**

- Land consumption
- Reduction of green space
- Resource consumption
- Pollution
- Isolation
- Dependence on the automobile
- Waste of time
- Waste of human energy and spirit
- Sub-standard shelter and violence

Traditional building and planning options are not effectively nor efficiently meeting the needs of a large and growing population. The 2D city with traditional ground level access is reaching its maximum size as shown by ever more congested arteries. New solutions need to be explored.

**The Problem**

*Walden 3d, Inc.*  
Planning 3d Intelligent Cities



Copyright © 1990



**THE SOLUTION**  
**Optimize Space Usage - a process which will result in a cost effective and ecologically sound alternative to the present urban/suburban built environment by:**

- Reducing distances thereby increasing time
- Reducing material and energy consumption
- Minimizing the amount of land used for building
- Maximizing open space for forests, agriculture, and recreation
- Reducing the impact of the automobile as a major design factor
- Increasing access to information
- Increasing intellectual activity
- Increasing social well being

**Increasing the density of our urban areas by designing around people instead of automobiles will create a new kind of human habitat.**

**The Solution**

*Walden 3d, Inc.*  
Planning 3d Intelligent Cities



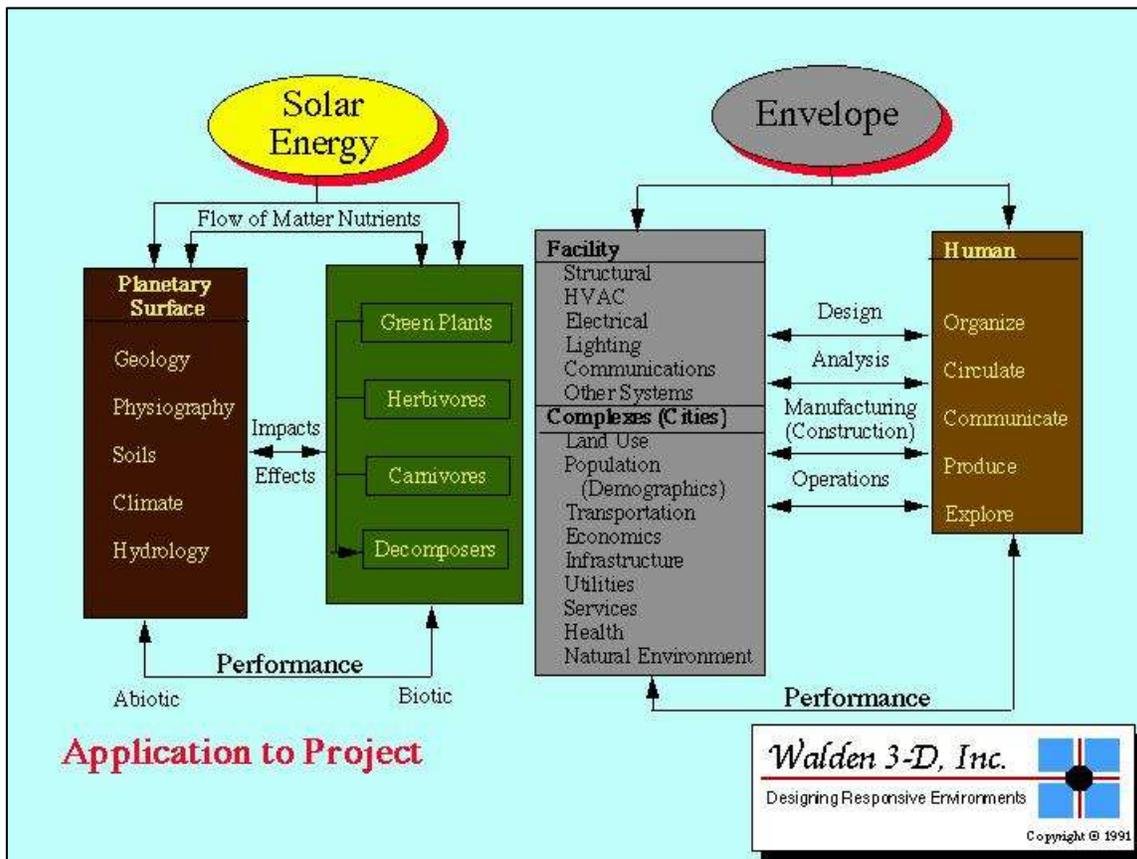
Copyright © 1990

**2.c. The Mandate:**

Through global interactive data bases, the lessons of history, geography, ecology, and economics can now define opportunities, delineate risks, monitor change, and empower individuals to make responsible decisions. The unchallengeable power of information can give all humanity interdependent citizenship on planet Earth.

The Design of Response Environments is now the responsibility of those who seek to change the face of our endangered garden planet. Creation of the tools required for an integrated design of responsive environments is the mandate of Walden 3-D, Inc.

For no longer is any man an island,  
Nor is any community really alone.



**2.d. The Mission:**

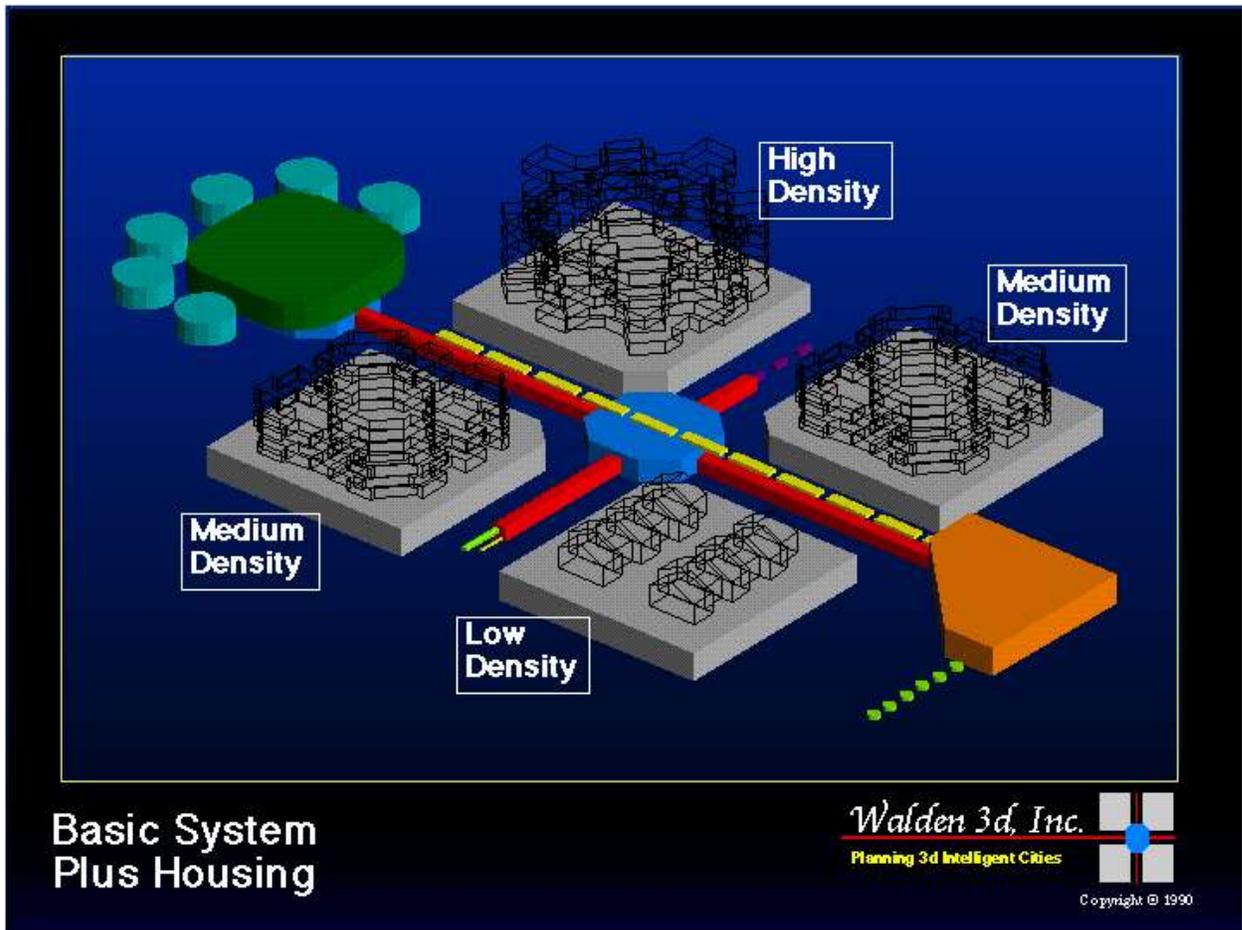
Walden 3-D devises and provides information, technology-based products, and services for rural and urban planning.

**Designing . . .** Analyze raw data, simulating interactive solutions, and overseeing implementation, maintenance, and long-term adaptation of the design process and the structures being created.

**Responsive . . .** Be sensitive to the interaction of nature and humanity with the built form, and be responsible for optimizing the interactive performance of both natural systems and best practices.

**Environments . . .** Integrate the aggregate total of:

- (1) climate, natural terrain, and subterrain;
- (2) regional resources in flora, fauna, rivers, soils, and geology;
- (3) networks for management of information, energy resources, and waste products; and
- (4) built structures and infrastructure within local, regional, and global contexts.



**2.e. The Charter:**

**Walden 3-D is a network of minds, computers, and interactive hypermedia data bases, all of which are being indexed spatial, temporally, by process, and by data type.** This multi-dimensional global network integrates information; simulating, demonstrating, and documenting potential outcomes and the real-time dynamics of the human decision-making process. The resulting design process combines proven socially accepted urban-planning strategies with information management technologies of the present and the future. Results document how humans, quoting Buckminster Fuller, “can live within the earth’s available cosmic-energy savings account.”

**The planned end-product is the development of cost-effective and ecologically sound three-dimensional cities, where the third dimension can be spatial or in can exist in information space.**

These prototype 21<sup>st</sup>-Century communities will provide the highest and best land use, juxtaposing a large building mass with nature to benefit both, while maximizing utilization of finite resources. The complexes will use state-of-the-art concepts in energy conservation, waste treatment, and recycling. Living units will “plug” into an intelligent network providing residents with environmental control and encouraging information-based decision-making.

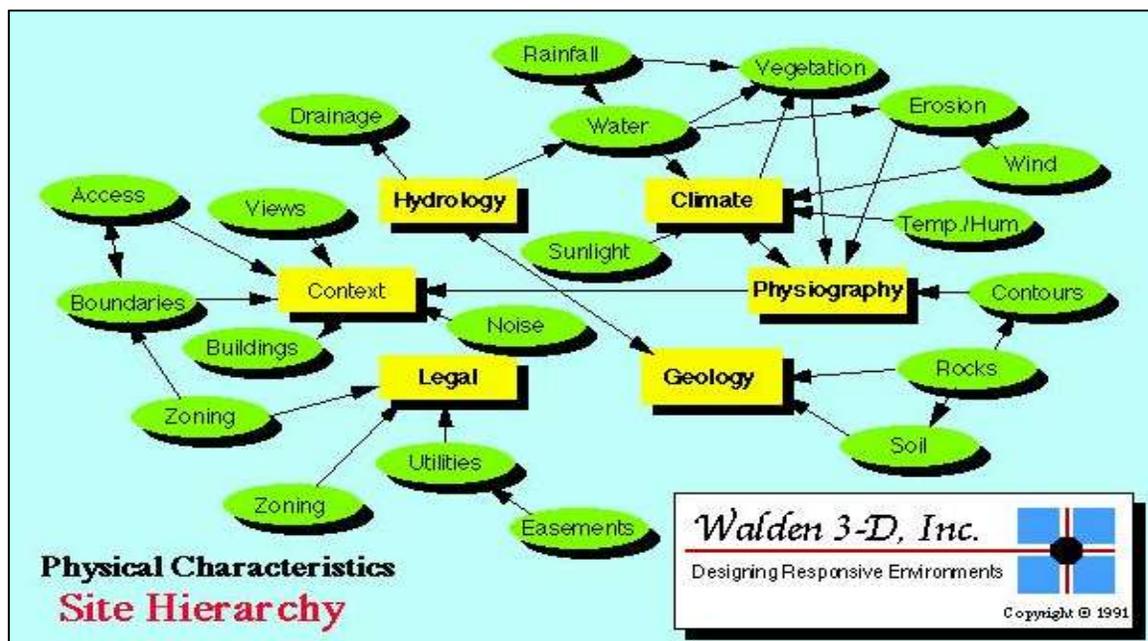


Science Center Design and Model by The Gardner Partnership Architects.

**2.f. The Concept** (as written down in 1990):

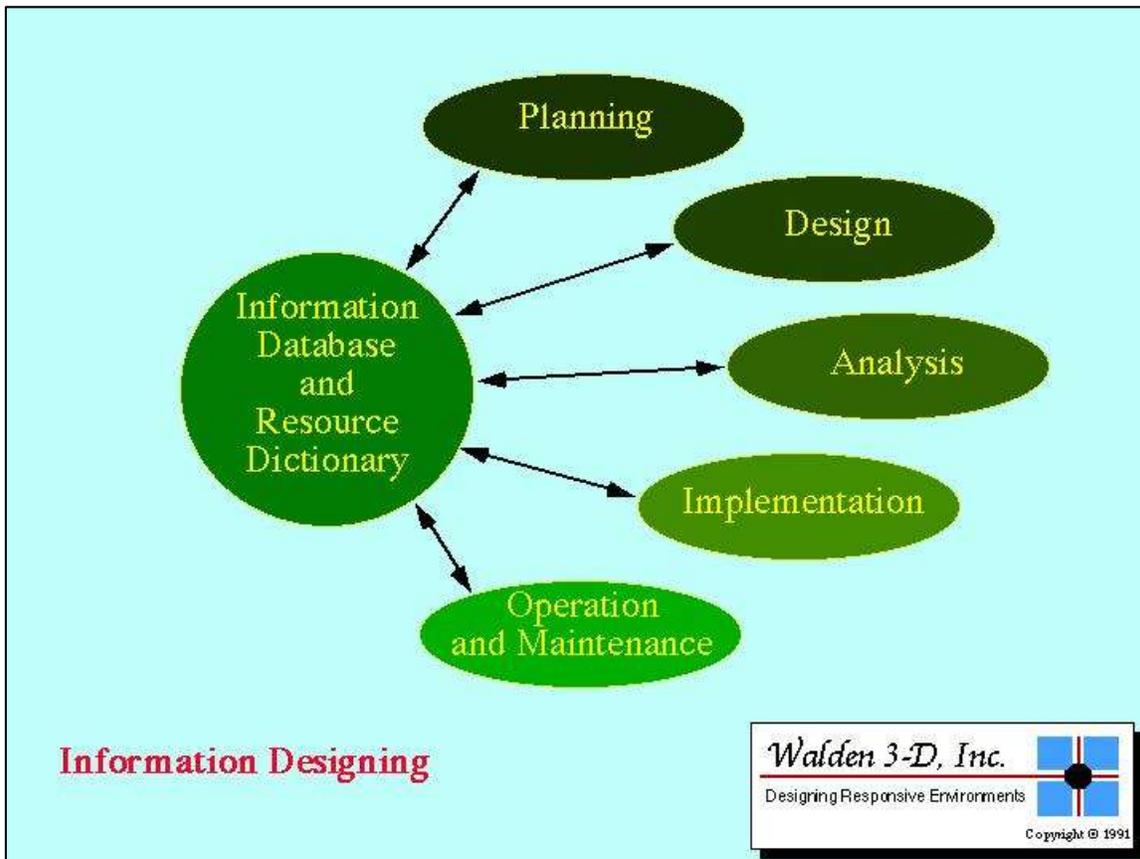
“This was to be the first of a series of new communities alternatively described as:

- a man-made topology derived from natural boundaries by using all available information about housing;
- a village built from components fabricated automatically from the finalized design;
- a multi-generational project simulated through time and iteratively modified by prospective inhabitants;
- a village built within a multi-level three-dimensional skeletal framework organizing the pattern and anchorage for private, commercial, and public institutions;
- a community minimizing distances and therefore allowing citizens to maximize time employment;
- a city with large and small subspaces at the urban and facility scale;
- an urban environment optimizing energy and material consumption;
- a village based on ecological architecture, growing like a flower rather than a weed, taking fluids and minerals from the earth and returning wastes for recycling;
- a metropolis designed around people instead of automobiles;
- a city making its own weather and cityscape;
- a suburb with inlets, places, and outlets for people, freight, waste, mail, electronic information, and products;
- a town providing massive flow of people and things within, towards, and outside city boundaries;
- a village surrounded by uncluttered and open landscape owned by the community or the public and 20 times the acreage the city framework is built on; and
- an energy efficient, experimental city; and
- a research project in rural and urban design under the banner of Walden 3-D.”



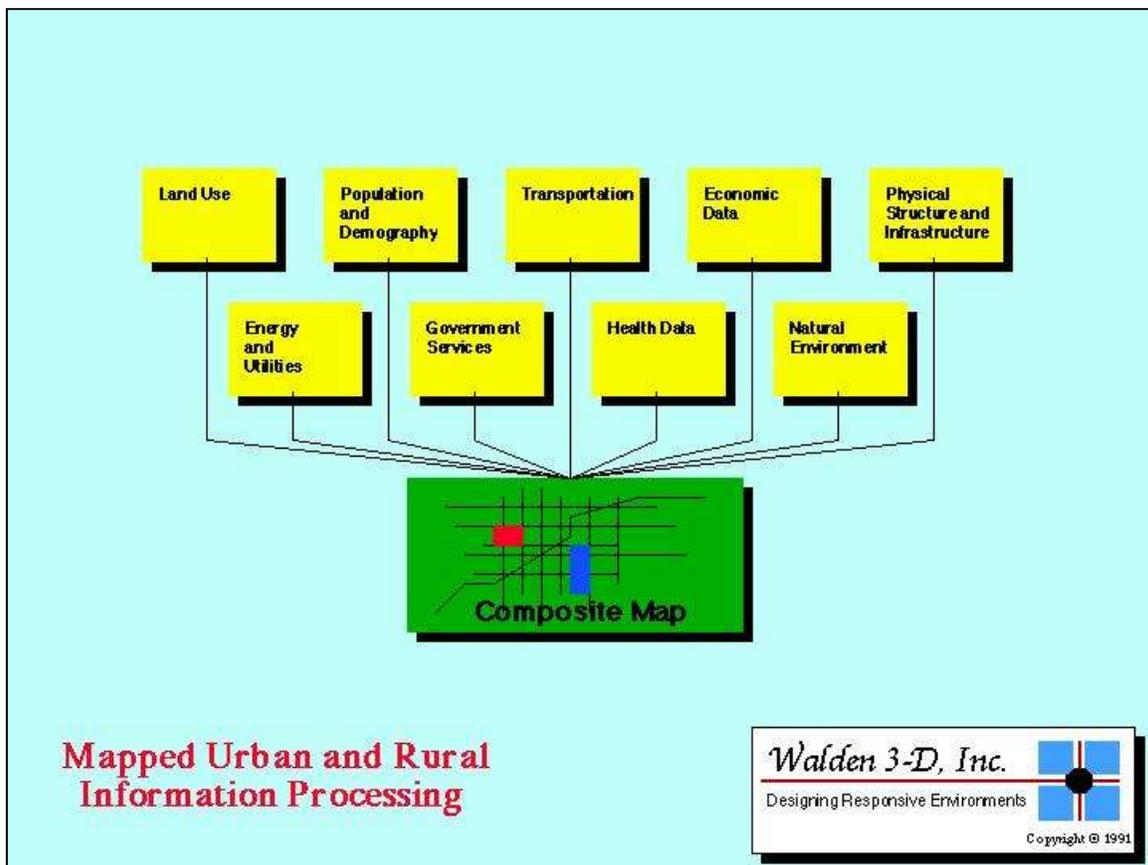
**2.g. Basic Tenets:**

- Encourage and work on projects which make a difference.
- Develop a visionary organization based on proven principles of:
  - Trust,
  - Honesty, and
  - Integrity.
- Optimize choices by using information-based decision-making.
- Improve the human condition through better design.
- Keep detailed and open financial records, with:
  - Password controlled on-line access for Investors and Principals;
  - Models of community and environmental costs for Residents; and
  - Reinvestment of all profits to expand the project to other sites.



**2.h. The Results:**

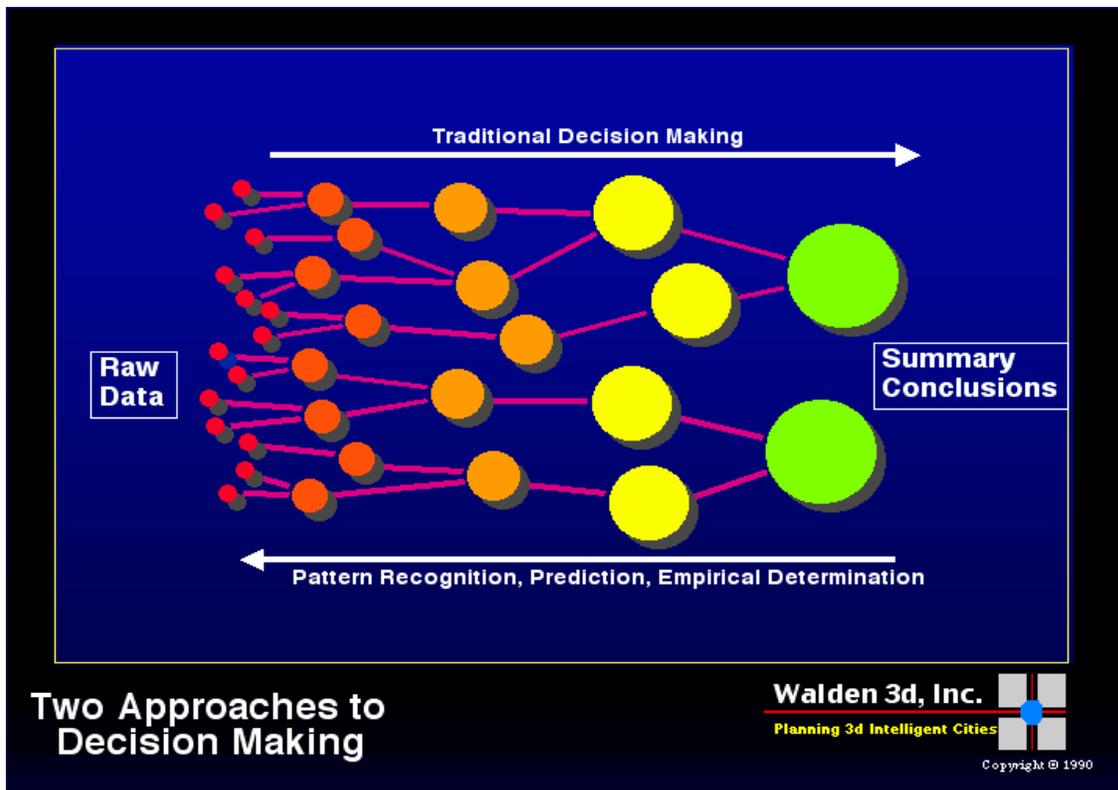
- Design of global information data bases, drawing on historical, economic, and environmental factors to maximize design options and minimize associated risks.
- Design of personally accessible data bases to maximize human involvement in community decision-making and to minimize individual disenfranchisement.
- Design of decision-making strategies based on continuous monitoring of variables and trends – thus maximizing effects of project adjustments and minimizing risks associated with unpredictable change.
- Design of human habitats juxtaposed with natural features to maximize quality habitable space and minimize urban sprawl.
- Design of energy efficient environments to maximize finite resources and minimize the global effects of energy consumption.
- Design of materials-management programs to maximize recycling and minimize creation of landfill waste.
- Design of physical infrastructures to minimize distance and maximize time.
- Design of social infrastructures to maximize human growth potential and minimize apathy and stagnation.
- Design of an on-going data feedback system to maximize individual awareness, access to information, and quality of life.



**2.i. The Walden 3-D Design Process:**

1. **Identify Need:** Potential customer reviews a design problem with a W3D Principal.
2. **Data Collection:** Data are collected as maps and database tables.
3. **Pattern Analysis:** Data are processed to produce patterns, and patterns of patterns, which are used to determine the invariant polynomials of each data set.
4. **Parameter Determination:** Parameters necessary to build a computer version of the built form are determined automatically from the invariant polynomials and/or from experience.
5. **E-R (Entity-Relationship) Modeling:** The patterns and parameters are used to assist building an enterprise plan and the related entity-relationship models.
6. **Visualization:** The built form is simulated in 3-D using scientific workstations and performance is optimized.
7. **Construction Drawings:** If required, construction drawings are produced automatically from the visualization.
8. **Automatic Assembly:** When appropriate, the visualization drives robotic generation of subassemblies.
9. **Built Form:** The design is completely implemented. Operation and maintenance schedules are established and monitored by any interested Resident via the village network.

**This process is an information bridge between systems of information and delivery of product, and is the community building equivalent of Henry Ford’s assembly line.**



## Information Management

Made possible by computer technology, will revolutionize the design and construction process

- Develop a continuous design sequence from the regional scale to the "nuts & bolts" of construction using computers
- Allow environmental, social, economic and cultural data to drive design
- Use information to design facilities that span the scale continuum from regional to site to individual building components
- Use urban mapping to detect patterns in the existing urban environment to assist in site selection
- Use the hidden patterns in databases to assist in decision making
- Automate and standardize construction documents
- Optimize space and material utilization by computer modeling
- Implement a design language to allow 3D communication between designer and computer
- Establish a set of rules which will govern the planning and design of 3D intelligent cities

Process

Walden 3d, Inc.  
Planning 3d Intelligent Cities



Copyright © 1990

### THE "URBAN MACHINE"

The key to realization of a new urban form is an information based process to manage the unprecedented complexity of design and construction. This process must be able to manipulate data from a regional scale to the very "nuts & bolts" of construction, analyze political decisions and function as an expert system. The "Urban Machine" is such a process being developed by a principal of The Intelligent Habitat Project. Using a three dimensional language, it is able to analyze data of all types from Landsat images to social patterns and integrate the information into designs for the built environment.

Implementation

Walden 3d, Inc.  
Planning 3d Intelligent Cities



Copyright © 1990

**2.j. A New Homeowner Scenario:**

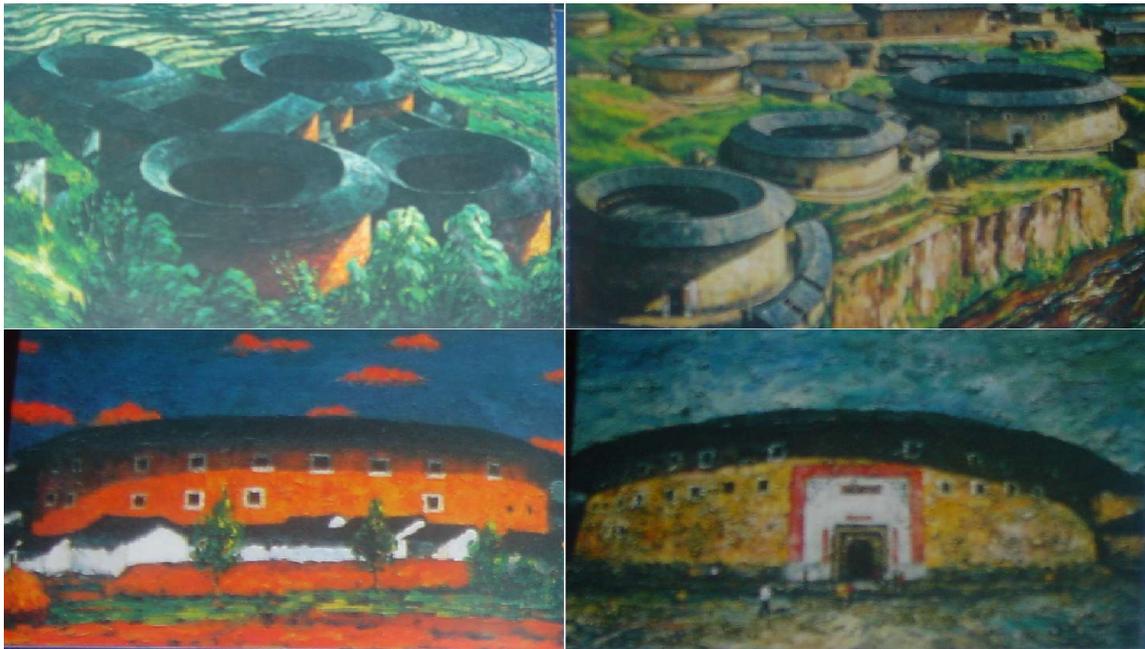
A young couple wants to purchase their first habitat. They visit the W3D sales office, and review available sites. If they are interested, they fill out a form, which specifies their physical characteristics, interests, favorite shapes and colors, and other information which are the basis of design and can be cross-referenced with available databases.

The computer identifies an optimal match with available sites, and provides a virtual tour of each site of interest. The couple reviews the sites, adjusts parameters, and the visualization is updated in real-time. Once the site is selected, the exteriors and interiors defined, virtual views of each room and from the various windows in the habitat have been experienced, and everything is acceptable, a contract is signed.

Upon signing of the contract, the visualization is electronically passed to a manufacturing facility where walls are extruded or built with wiring and utility connections embedded. Foundations are laid during the manufacturing process. Habitat components are transported to the site, and built or installed as a kit-of-parts. The habitat is completed in much less time and for much less money than building a traditional house.

Every few years - as children come into the family, or leave for college, or to start their own families, or as parents need to be brought into the home and cared for - the process is repeated. Only this time walls are moved, or the family moves into a larger or a smaller unit. The habit becomes a village, or like socially like a tribe, where everyone is looking out for everyone else.

Information technologies minimize maintenance and remodeling, optimize energy usage and waste disposal, automatically deliver mail and groceries and supplies, automatically remove snow from walkways, and generally minimize distance to maximize time.



**Ancient 200 Person Mushroom House Communities in Southern China.**

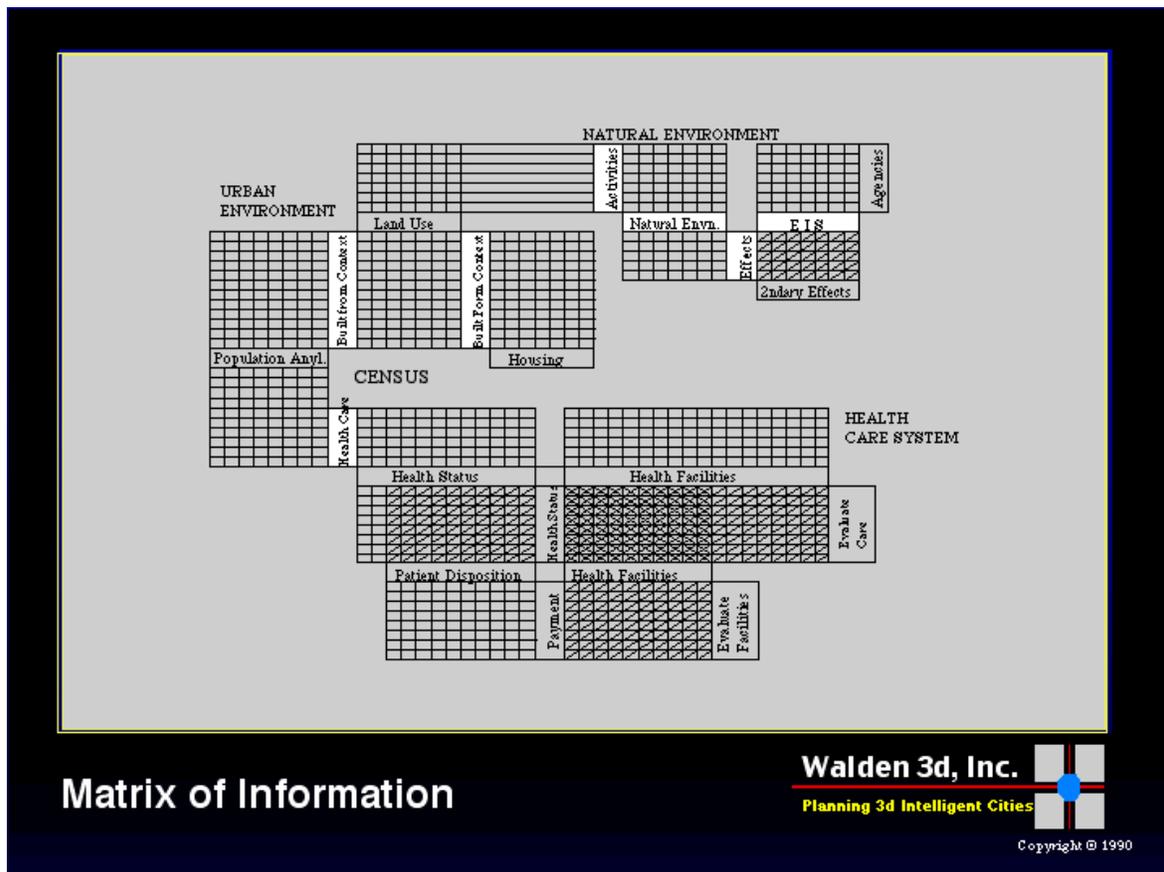
**2.k. The Design Process Philosophy:**

The Walden 3-D design process requires an interactive, creative, and dynamic partnership between the client and the design team. To insure this partnership, there five distinct sequential design phases – each beginning with client discussion and each ending with a specific client-sensitive product.

The product of one phase coupled with client feedback and evaluation, sets the initial conditions for the next phase. The completion of each phase becomes a decision point, a time where the client can redefine their commitment to the design process.

The client funds each phase separately, and retains its product as a stand-alone item. The product report for each phase provides justification for funds committed to subsequent phases.

It should be noted that in this dynamic design process, three phases are completed before construction begins. This iterative front-end analysis reduces risks associated with new construction to an absolute minimum.



**Phase I: Design Initiation**

I.1. Discussion with Client:

- I.1.a. Identifying broad goals and needs.
- I.1.b. Determining broad project scope.

I.2. W3D Operations:

- I.2.a. Determination of relevant local and global frameworks with potential linkages.
- I.2.b. Application of social/cultural constructs to assess human potential.
- I.2.c. Application of trend dynamics to assess direction of change.

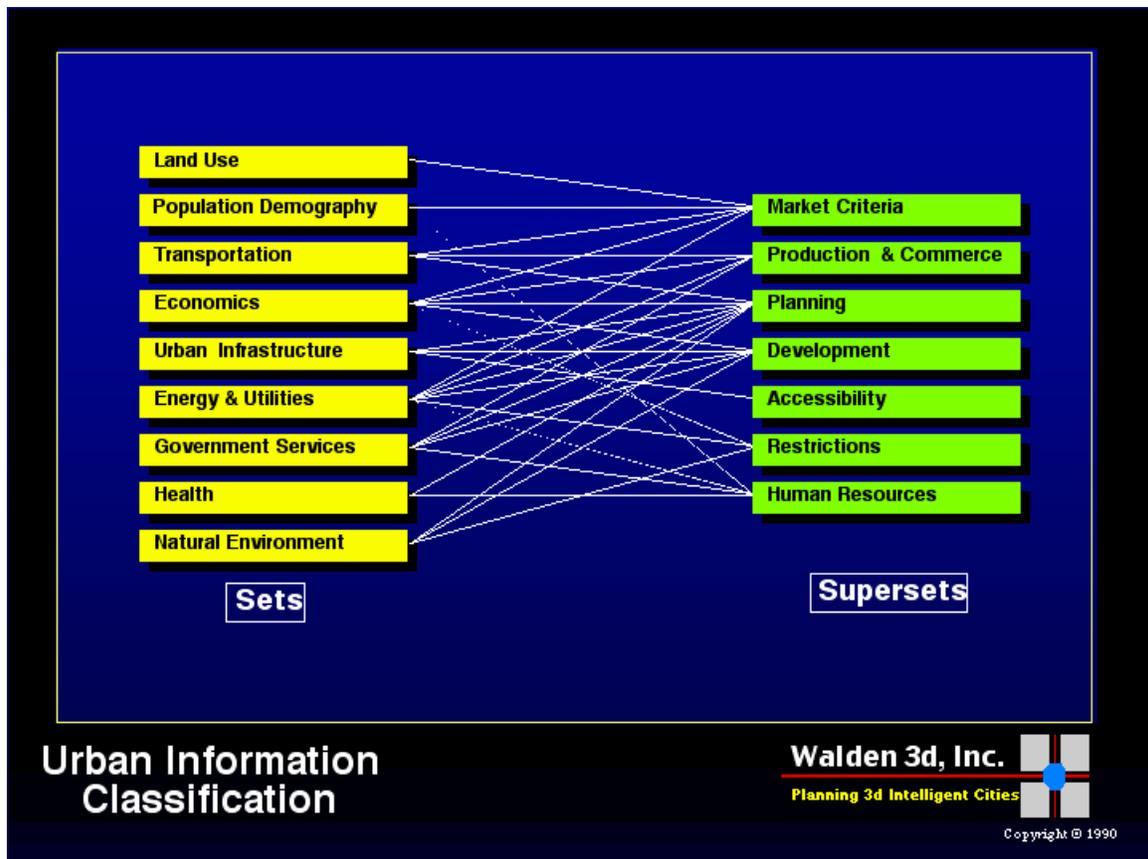
I.3. Product: The Opportunity Matrix:

- I.3.a. Identifies options/solutions.
- I.3.b. Answers the question: "What can be done?"

**The cost of Phase I** is a function of  
(Land Cost + Population Base \* Decision Coefficients \* Interaction Coefficient).

**Decision Coefficient:** reflects the number of clients which must be addressed ranging from a single client to a decision-making group, as for example a city council.

**Interaction Coefficient:** reflects the number of environmental considerations, ranging from an isolated rural town to an urban town adjacent to a major population center.



**Phase II: Design Focus**

II.a. Discussion with Client:

II.1.a. Define range of options.

II.1.b. Focus research through identification of relevant networks.

II.2. W3D Operations

II.2.a. Data Collection

II.2.a.i. Geological and geophysical data collection, processing, and interpretation study.

II.2.a.ii. Agricultural, biological diversity, climate, and pollution studies.

II.2.a.iii. Social / Culture studies:

II.2.a.iii.a. Individual / Organization development.

II.2.a.iii.b. World interdependency training.

II.2.a.iv. Architectural, landscaping, and planning studies.

II.2.a.v. Rural and urban planning.

II.2.b. Building of interrelated data bases.

II.2.c. Pattern analysis of data bases.

II.2.d. Integration of system parameters.

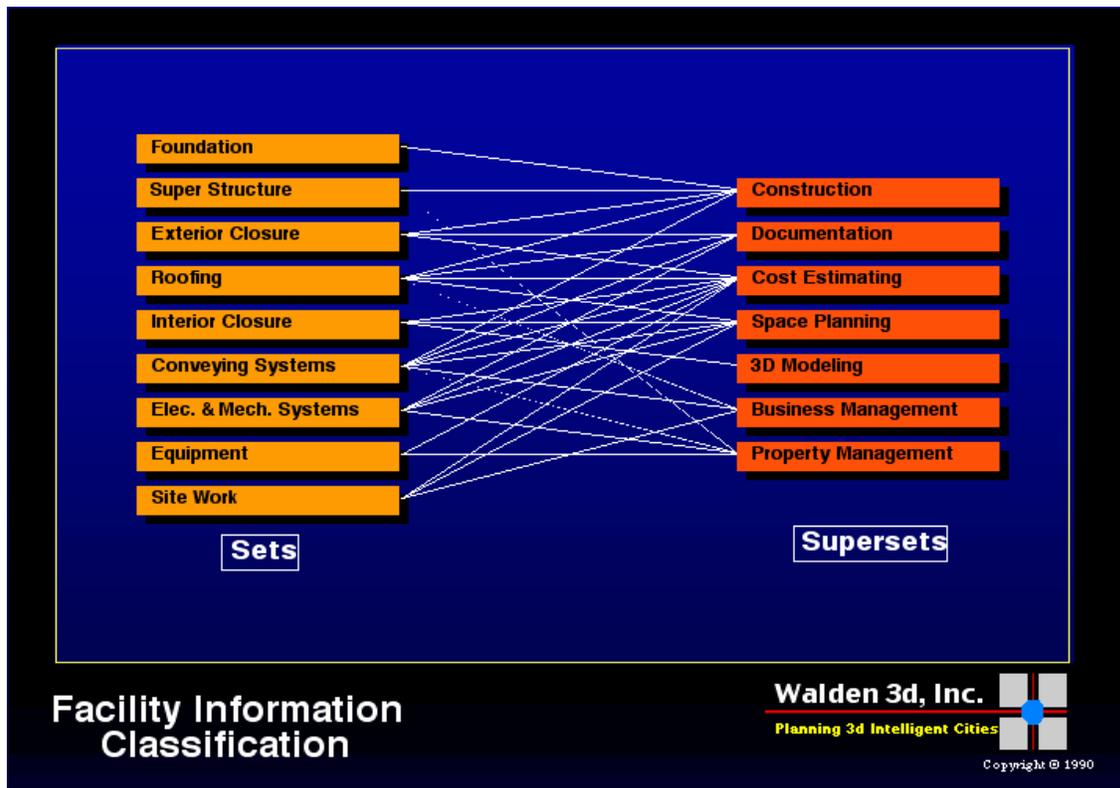
II.3. Product: The Feasibility Matrix:

II.3.a. Hierarchy of options.

II.3.b. Ranking by potential for success and associated risk factors.

**Cost of Phase II** is a function of

(data collection costs + data base construction cost + data analysis costs).



### Phase III: Computer-Enabled Design

#### III.1. Discussion with client:

- III.1.a. Define product scope.
- III.1.b. Determine range of costs.
- III.1.c. Identify funding options (including development of fund raising proposals and presentations available to subscribers on-line).
- III.1.d. Evaluate options based on initial goals of Phase I.

#### III.2. W3D Operations:

##### III.2.a. E-R Modeling:

- III.2.a.i. IDEF modeling using PDES and STEP.
- III.2.a.ii. Automatic generation of data base tables.
- III.2.a.iii. Entity-Relationship Model control of 3-D graphics.

##### III.2.b. Environmental interaction analysis.

##### III.2.c. Human utilization analysis.

##### III.2.d. Resource optimization and waste management analysis.

#### III.3. Product: The Visualization Model

##### III.3.a. 3-D computer rendering.

##### III.3.b. Master Plan for integrating into existing or projected systems.

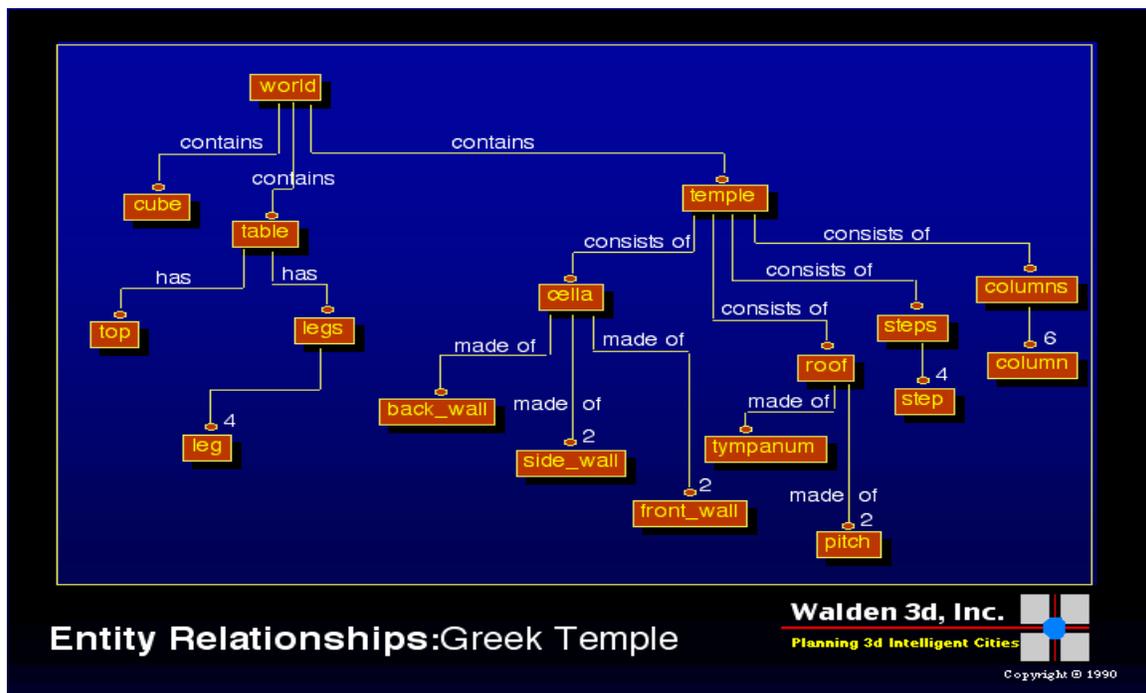
##### III.3.c. Hypermedia presentation of options / interfaces and cross-correlation with social / natural systems.

**Cost of Phase III** is a function of

(E-R modeling + factor analysis + computer design time + hypermedia design time).

**Cost of Proposals and Presentations** is a function of

(number of clients + sophistication of presentation).



**Phase IV: Construction**

IV.1. Discussion with Client:

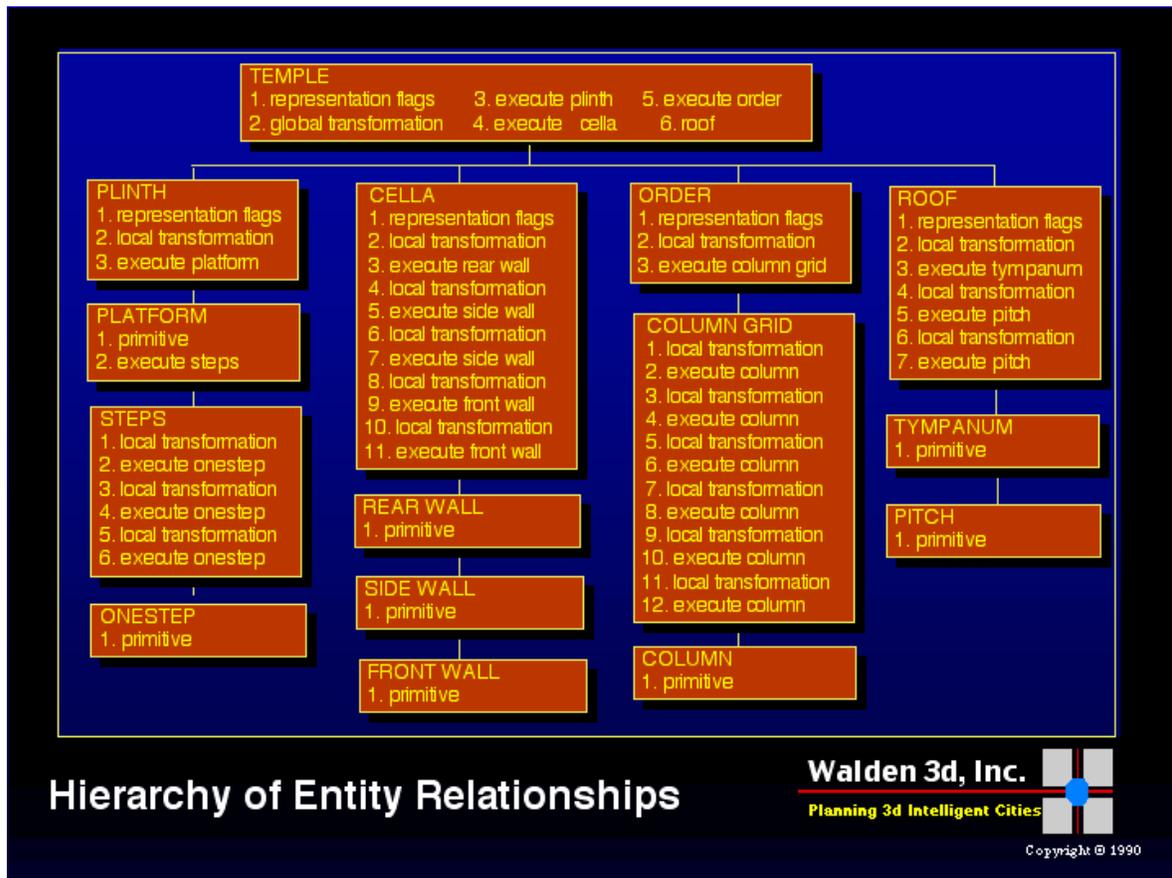
- IV.1.a. Modifying design.
- IV.1.b. Evaluating associated costs.
- IV.1.c. Evaluating models in terms of:
  - IV.1.c.i. The initial goals of Phase I, and
  - IV.1.c.ii. The Feasibility Matrix of Phase II.

IV.2. W3D Operations:

- IV.2.a. Construction drawings.
- IV.2.b. Environmental and social impact assessments.
- IV.2.c. RFP's (Requests For Proposals) for construction.
- IV.2.d. Consulting with client on selection of contractors and subcontractors.
- IV.2.e. Definition of the role of W3D Associates as construction and/or project manager.

IV.3. The Built Form.

**Cost of Phase IV** is a function of (standard architectural and construction management fees and materials).



**Phase V: Long-Term Commitment**

V.1. Discussion with client:

- V.1.a. Identifying changing needs.
- V.1.b. Modifying the Master Plan.
- V.1.c. Evaluating the Built Form in context of initial goals of Phase I, Feasibility Matrix of Phase II, and Visualization Model of Phase III.

V.2. W3D Operations:

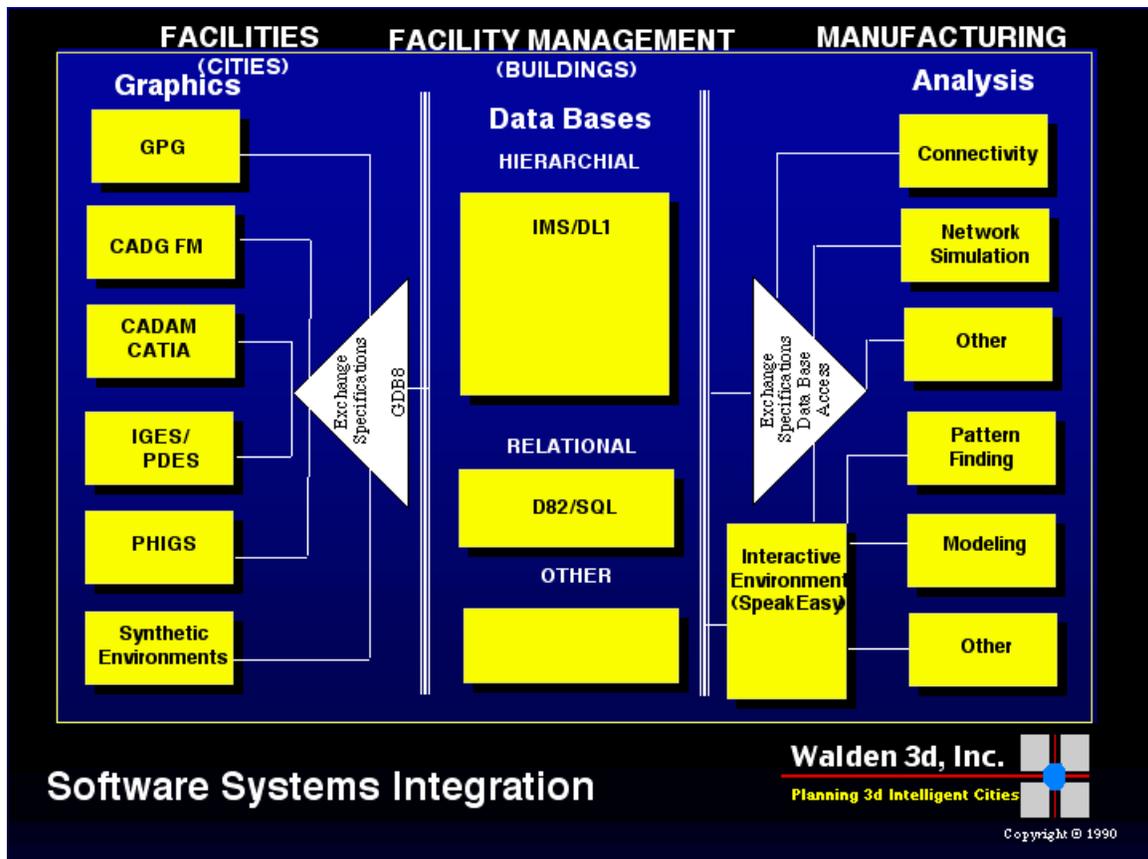
- V.2.1. Establishment of Operations and Maintenance Systems.
- V.2.2. Establishment of Information and Management Update Systems.
- V.2.3. Establishment of Social Support Systems.
- V.2.4. Interdependency Analysis of Built Form as it functions within the Natural and Social Systems.

V.3. Product: Successful Operational Entity.

- V.3.1. Sensitive to changing environmental needs.
- V.3.2. Able to adapt to a dynamic social system.

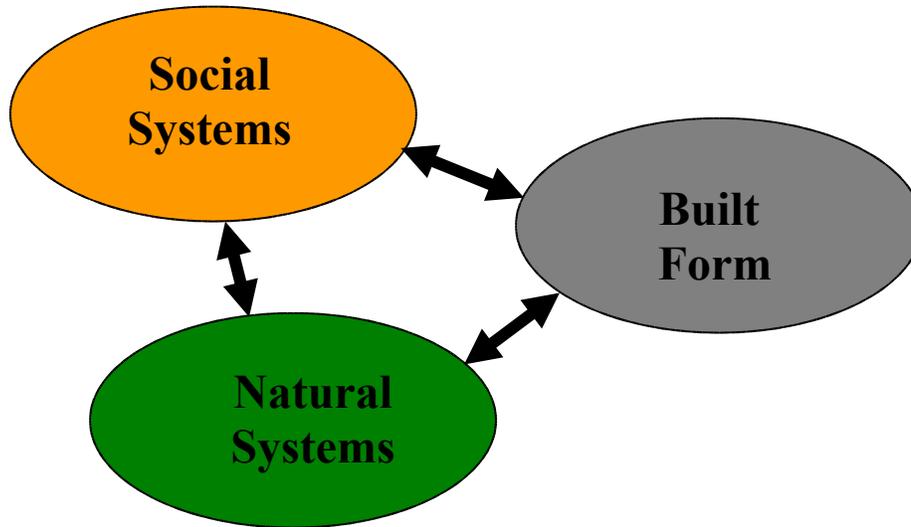
**Cost of Phase V** is a function of (services rendered on an annual retainer basis).

**The design process empowers a community to channel the forces of change instead of becoming their victim.**



**2.L. Interdependency:**

Walden 3-D focuses on the bi-directional response between social systems and built form, the effect of built form on natural systems (including how natural systems impact the design and operation of built form), and how nature and social systems affect each other. Environmental impact considerations extend to the evolving interrelationships among these three systems. Data base monitoring allows adjustments as dictated by changes in social and natural systems.



**A new, efficient and optimum use of space, time, matter and energy will not only improve the human condition but will positively effect the uneasy interaction between mankind and this shrinking planet earth.**

A New Urban Design Process

1989

*Walden 3d, Inc.*  
Planning 3d Intelligent Cities



Copyright © 1990

### 3. Red Cove Regional Context

A twenty minute walk from Southern Utah University and the Utah Shakespearian Festival, which is about 3 times as far east of downtown Cedar City as SUU is west, on a beautiful paved walking trail, and takes you to Red Cove.



Cedar City, Utah and Red Cove

Cedar City the largest town in Iron County, Utah, had a population of 20,527 people, 6,486 households, and 4,682 families in 2000. With 20.1 square miles in the city, this is equivalent to 1,021.8 people per square mile. There are 7,109 housing units, at an average density of 353.9 units per square mile. The population was estimated to be 22,274 in 2004. The nearest town to Cedar City is Enoch, 10 miles to the north, which had a population of 3,467 people in 2000, includes 958 households, 858 families, and a population density of 1,047.1 per square mile. There are 1,029 housing units at an average density of 310.8 per square mile. The housing density in the "open" farmland of Cedar Valley are almost the same as the city, and the population density is greater.

Iron County covers 3,302 square miles and in 2000 had a population of 33,779 people, 10,627 households, and 8,076 families. Of the 10,627 households, 41% have children under the age of 18, 64.2% are married couples, 8.5% are female households with no husband present, and 5.9% have someone living alone who is 65 years of age or older. The average household size is 3.11, and the average family size is 3.45. With 3,302 square miles in the county, this is equivalent to 10 people per square mile. With 13,618 housing units, this averages to 4 houses per square mile. The population for Iron County was estimated to be 36,285 in 2004. The median income for a household in the county is \$33,114, and the median income for a family is \$37,171. Besides Cedar City and Enoch, the other towns in the county are Brian Head, Kanarrville, Paragonah, Parowan, and Summit. This information is from "[http://en.wikipedia.org/wiki/Iron\\_County,\\_Utah](http://en.wikipedia.org/wiki/Iron_County,_Utah)".



**Utah SHAKESPEAREAN FESTIVAL**

Camelot was performed in 2005.

**Iron County, Utah**

County seat	Parowan, Utah
Largest city	Cedar City, Utah
Population (2000)	33,779
Area	8,552 km <sup>2</sup> (3,302 mi <sup>2</sup> )
Year founded	1852
Named for	iron mines

Cedar City Main Street, Utah Shakespearean Festival Advertisement, and Iron County Map.

Address <http://money.cnn.com/best/bplive/topten/commute.html>

**BEST PLACES TO LIVE 2005** [See the winners](#)

**FASTEST COMMUTE**

State	City	Minutes
1. UT	Cedar City	10
2. FL	Marco Island	11
3. IL	Bloomington	13
4. IL	Champaign	13
5. CA	Chico	13
6. UT	Provo	13
7. MN	Rochester	13
8. MI	Saint Joseph	13
9. VT	South Burlington	13
10. TX	Abilene	14

Average minutes getting to work.  
Source: OnBoard  
Based only on data for more than 1,300 cities in the Best Places database. Included are cities with population of more than 14,000 with above-average income, population growth and real estate appreciation during the past five years.

**Cedar City Has Record Growth in 2005**

Cedar City experienced many changes in 2005, and many of those changes can be attributed to the enormous amount of growth that took place during the last year. Overall growth increased by 8%. There was also a large creation of new jobs. 1,000 new jobs were created between November 2004– November 2005. 753 new homes were permitted, and business license permits increased 28% in the last 18 months. Cedar City is very excited about all of the growth and opportunities that are coming to our City and are looking forward to another great year in 2006!

[http://www.cedarcity.org/business\\_info/economic\\_profile.html](http://www.cedarcity.org/business_info/economic_profile.html)

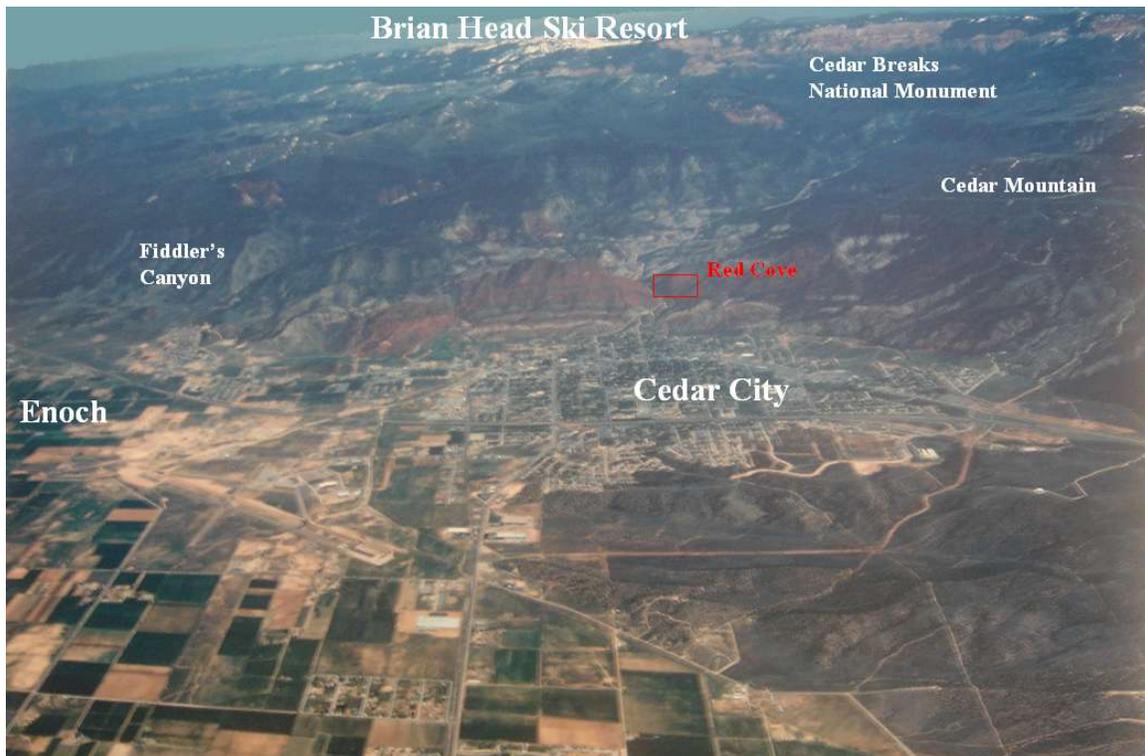
**Cedar City Promotional Material.**

Cedar City has many outdoor activities to offer residents and visitors. These include brief drives to the Kolob Overlook of Zion National Park, Cedar Breaks National Monument, Zion National Park, Snows Canyon State Park, Cascade Falls, Bryce Canyon National Park, North Rim of the Grand Canyon National Park, The Great Basin National Park. There are a dozen world class golf courses within an hour of Red Cove. Brian Head, one of Utah’s finest ski resorts is 45 minutes up Cedar or Parowan Canyon.

## Red Cove Investment Description

Trout fishing in the summer or the winter is at Kolob Reservoir, Deer Creek Reservoir, Enterprise Reservoir, Newcastle Reservoir, Minersville Reservoir, Beaver Mountain Reservoirs, Paragonah Reservoir, Yankee Meadow Reservoir, Panquich Reservoir, Duck Creek Reservoir, Mirror Lake, Navajo Reservoir, Lake Powell, Lake Meade, as well as the numerous mountain streams that feed these various reservoirs. There is water skiing, horseback riding, bicycling and mountain biking, 4-wheelers, rock collecting, etc.

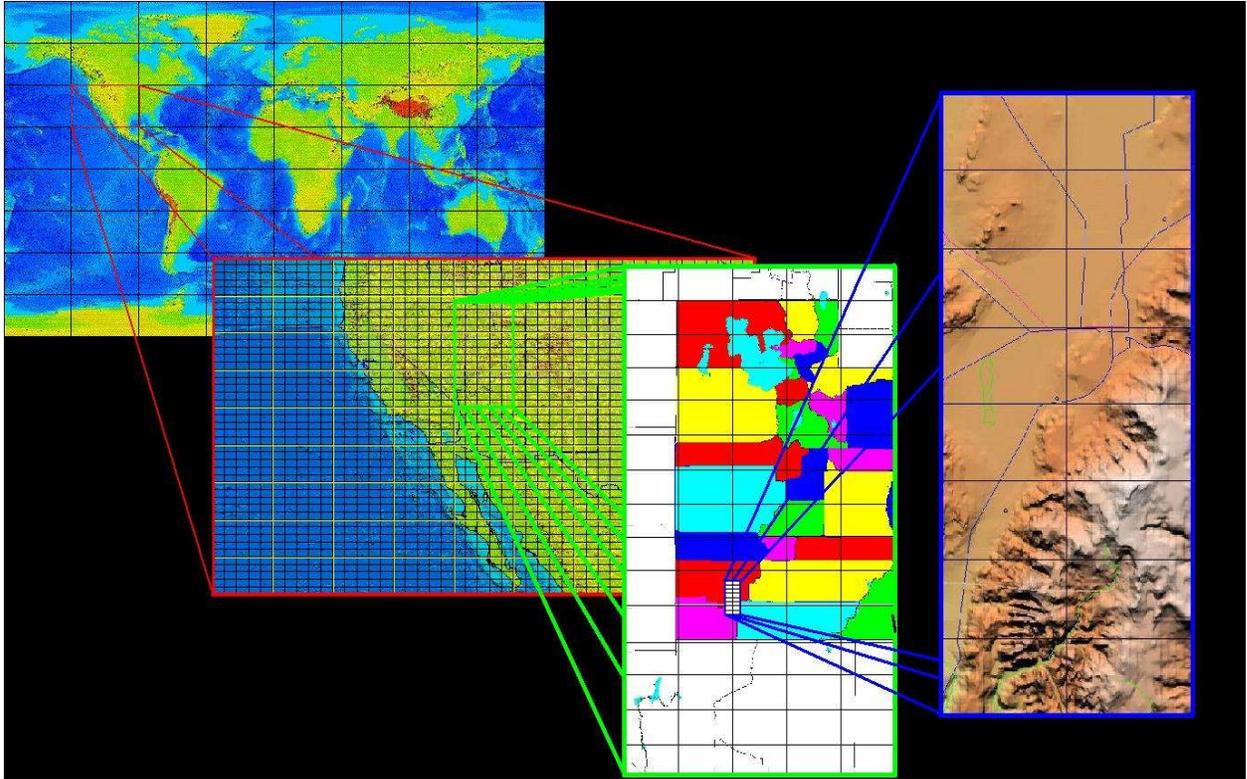
One of the oldest and largest men's choirs in America is in Cedar City, in addition to an active orchestra, community theater, and the Tony Award winning Utah Shakespeare Festival (Best Regional Theater).



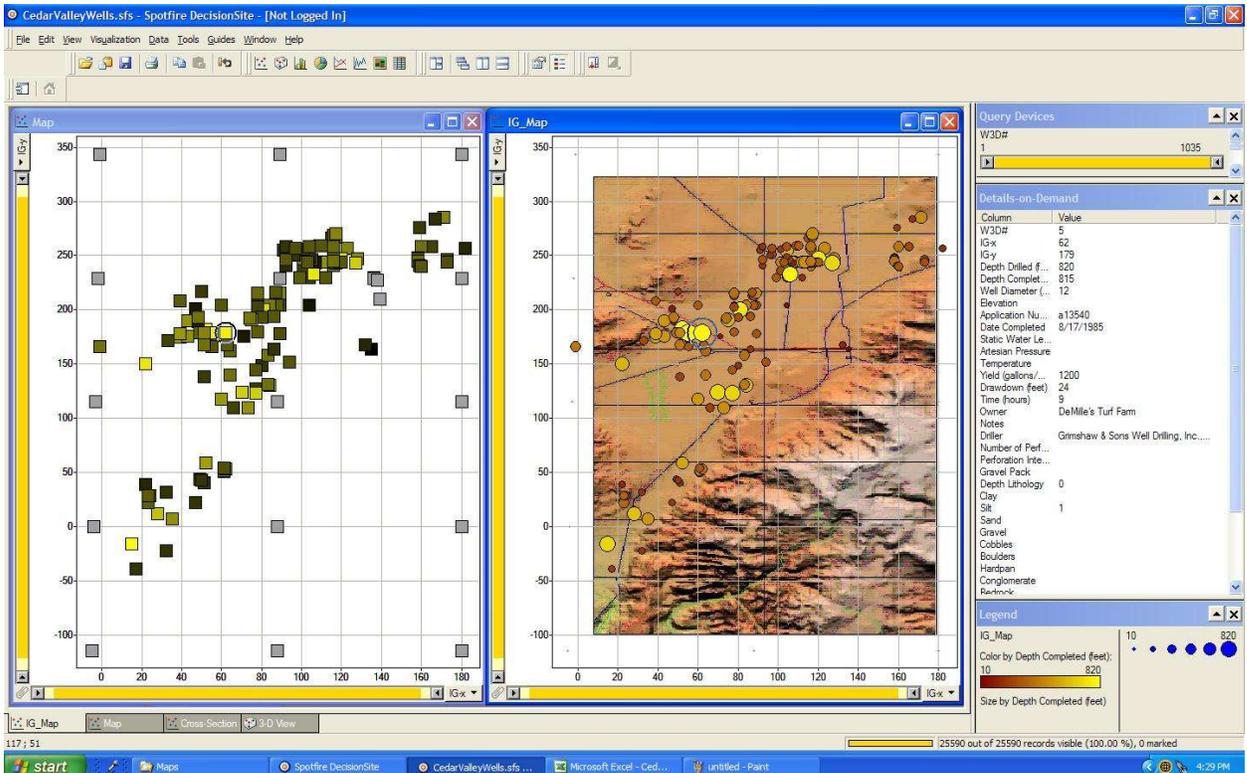
Air Photo of Cedar City and Surrounding Area.

There are also issues, most of which revolve around population growth in a desert region. Water, power, farmland vs. development, wind, dust, thunderstorms, and the possibility of earthquakes are all factors. In addition to physical issues, there are social issues. The population is dominated by members of The Church of Jesus Christ of Latter-Day Saints, which is generally positive, the exception being for minorities who feel disenfranchised. Cedar City is a college town, with college town issues, and strengths. There are serious issues related to uncontrolled growth. Red Cove is being designed to demonstrate a sustainable way to increase the population density, while attracting information technology based businesses, and a showing a classy way to retire in style, with exceptional amenities.

# Red Cove Investment Description

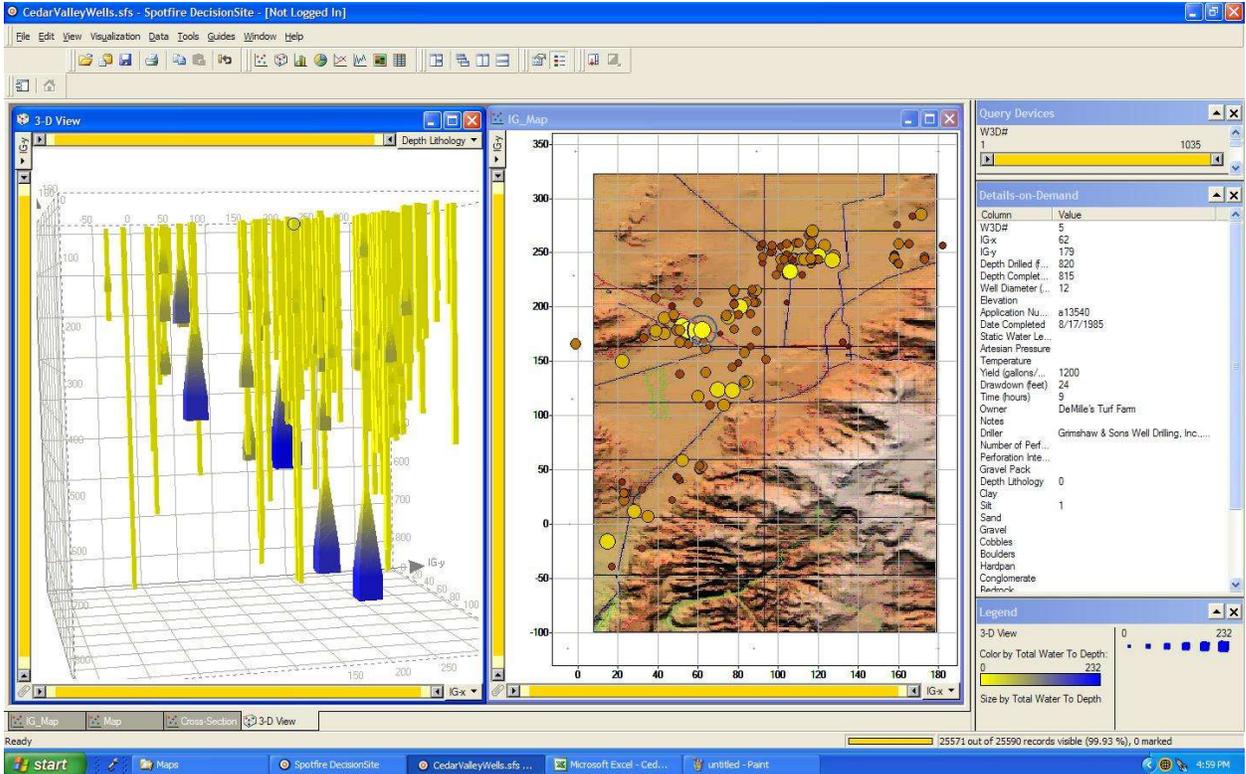


The Infinite Grid<sup>SM</sup> shown here zooms in on Cedar Valley, for indexing a well water study.

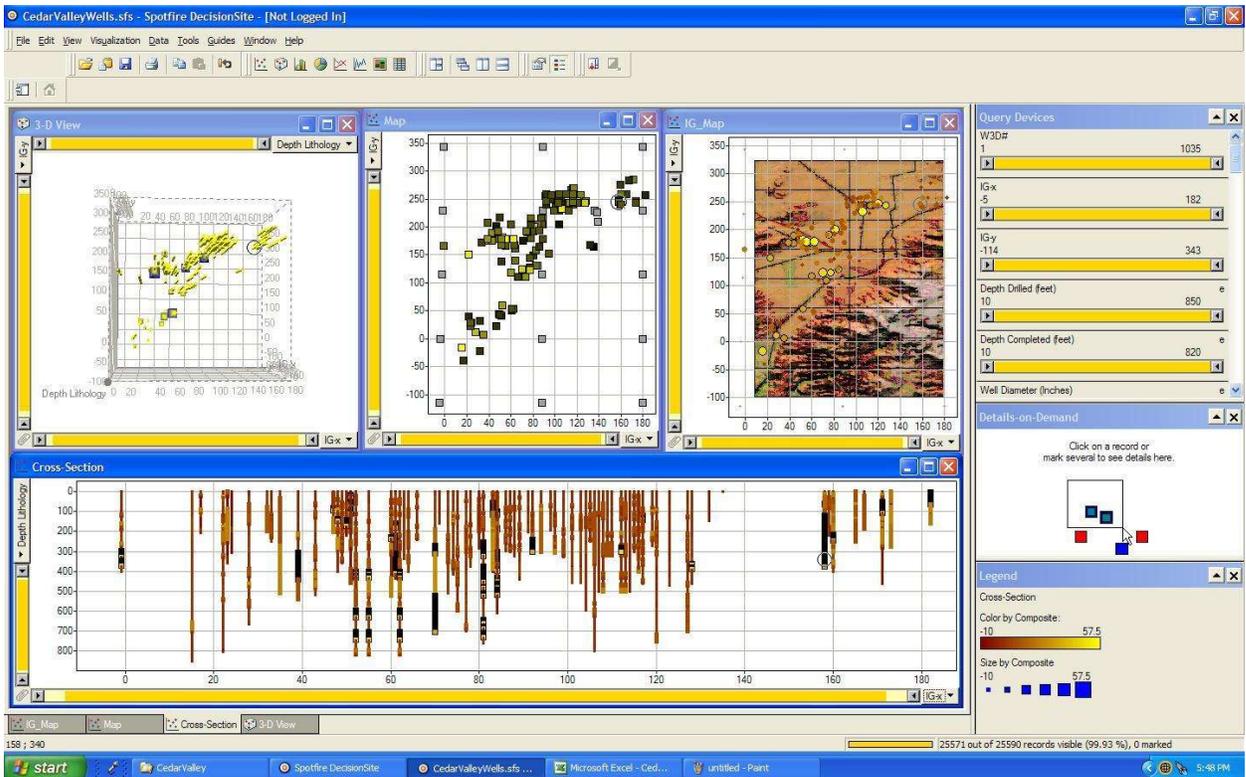


The water wells in Cedar Valley, Iron County, Utah

# Red Cove Investment Description



New window showing 3-D perspective of water wells sized by total water per depth.



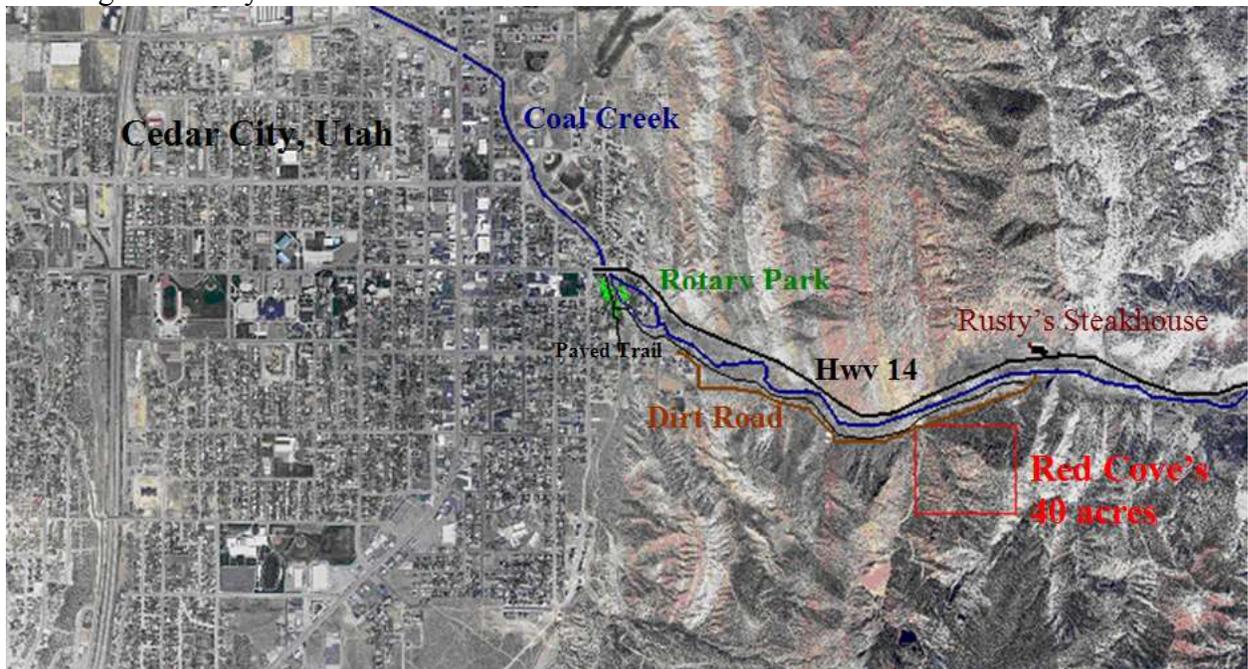
New window showing projection of water wells in Cedar Valley on a west-east cross section.

#### 4. Red Cove Project Details

The first step in progressing on Red Cove is to purchase the property. The owner agreed to a \$200,000 sales price of the 40 acres in July the fall of 2004. The property is described in detail in Appendix 2, "Appraisal Report 40 Acres Cedar Canyon / Coal Creek." The appraiser agreed \$200,000 is a reasonable price for purchasing this piece of property at the time of the appraisal.

##### Phase I. Design Initiation.

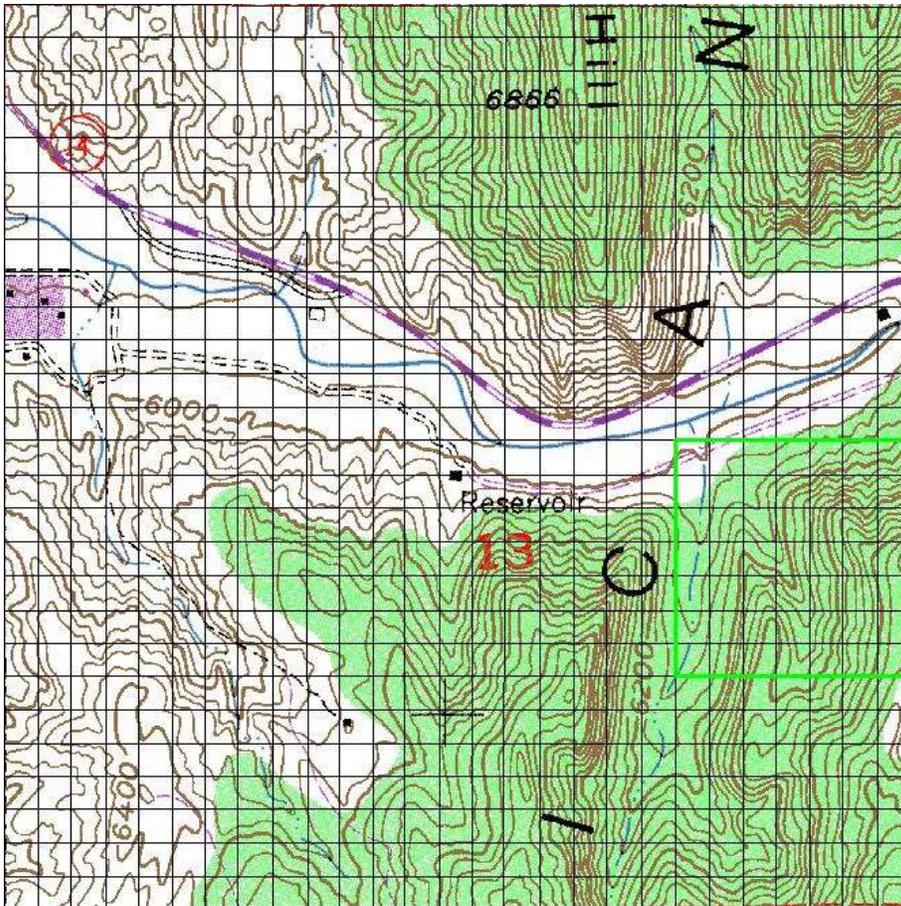
Until the property title is secured, no formal design processes have been started. However, a series of web pages, which will act as a communication framework with the design NetWork Team and the Investor once the project is funded and kicked off, has been set up at [http://www.walden3d.com/Red\\_Cove](http://www.walden3d.com/Red_Cove). There are high quality air photos, like the one below showing Cedar City and Red Cove:



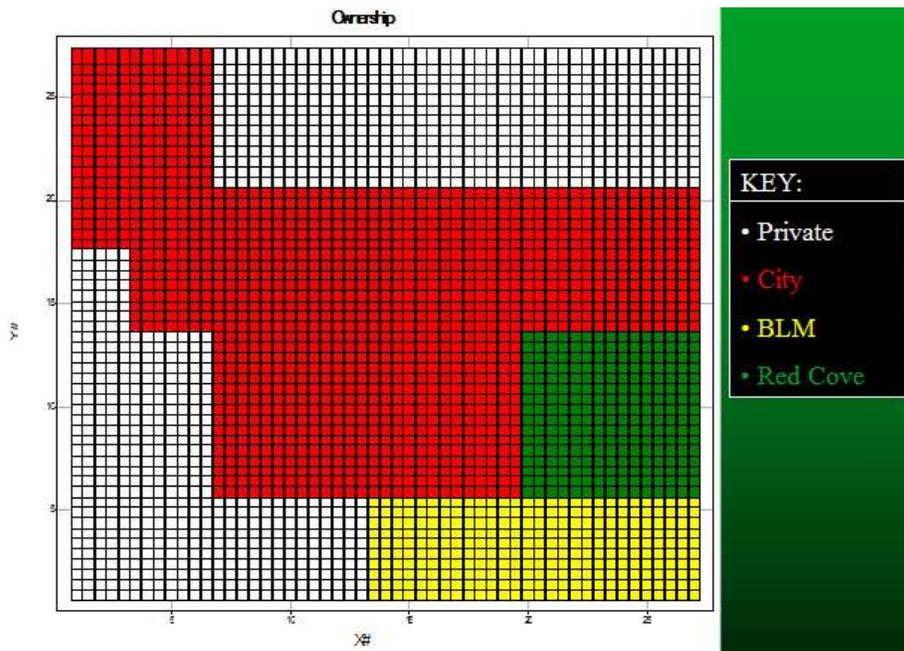
Air Photo of Cedar City and the mouth of Cedar Canyon, including Red Cove.

Once the property has been purchased there are several simultaneous steps which will be taken. The Gardner Partnership Architects (GPA) will be put under contract to act as project managers. The immediate types of data required will be specified and obtained. GPA is asking for \$200,000 to do the conceptual planning. This is reasonable, for the scale of project being undertaken. However, until county, city, fire, and other required approvals are obtained, the second half of this amount needs to be held back.

Red Cove Investment Description

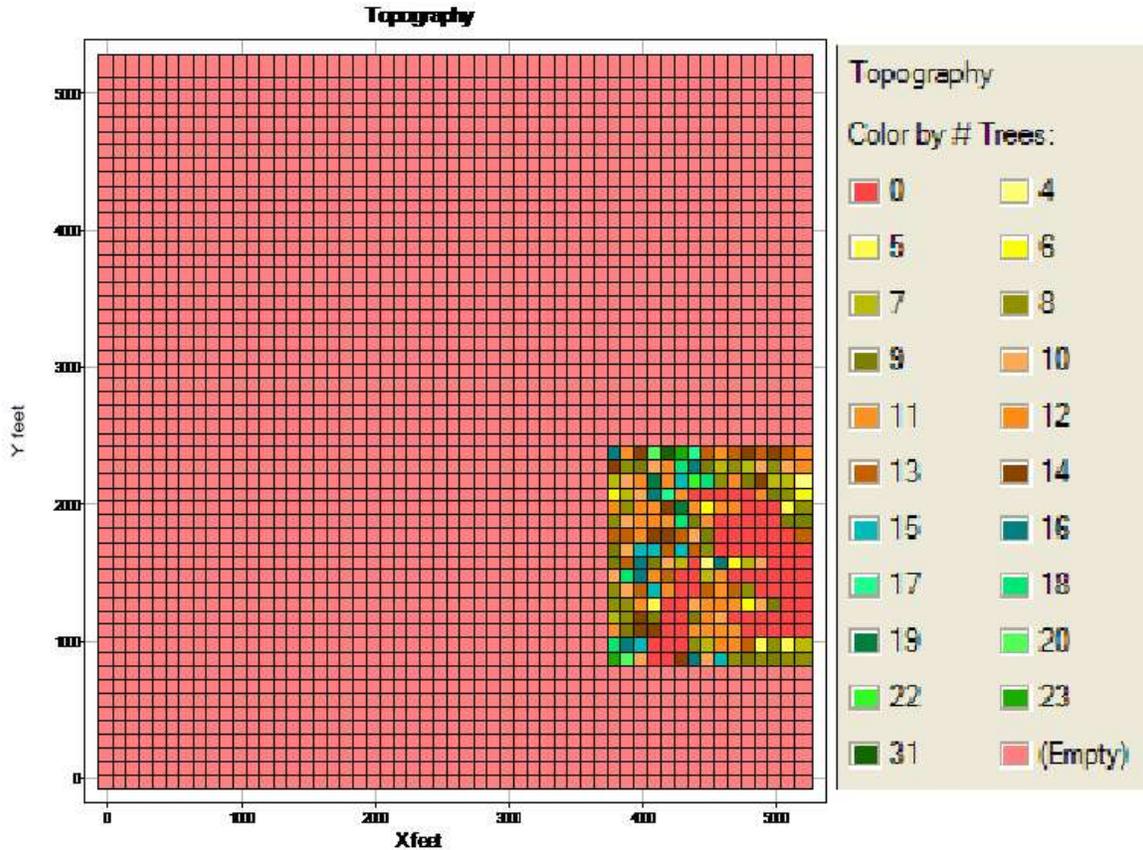


Location of Red Cove highlighted in green on a USGS Topographic Map.



Ownership of the property visible to those visiting Red Cove.

## Red Cove Investment Description



Initial count of the number of trees per 200 foot grid cell in Red Cove from air photograph.

One of the issues with this type of project is the potential reactions of members of the community to something that is different and something that changes Cedar Canyon. A committee of local residents needs to be recruited to be a Board of Advisers, and to help present the idea to the community. The key concern is environmentalists who have moved into the area and are all about stifling change. Locals often refer to them as watermelon people, green on the outside and red on the inside. However, they can still create issues for a project like the one being proposed. Ideally this committee can be recruited to function at no cost to Walden 3-D, Inc., other than incidental costs associated with a semi-regular lunch or dinner meeting. The long time City Manager has recently retired, and would be an ideal advocate as a part-time employee. In addition, both Ray and Roice have numerous contacts and friends who will be approached to help with this type of public relations, once the property purchase is finalized.

Initial data required in order to proceed with the design and estimated costs include:

- Soil Tests	\$20,000.
- Endangered Wildlife, and Vegetation	\$10,000.
- Geologic Study	\$ 5,000.
- Aerial Photo Study with 2 foot contours	\$ 5,000.
- Market Survey	\$10,000.
<hr/>	
TOTAL	\$50,000.

## Red Cove Investment Description

This means the cost of Phase I is:

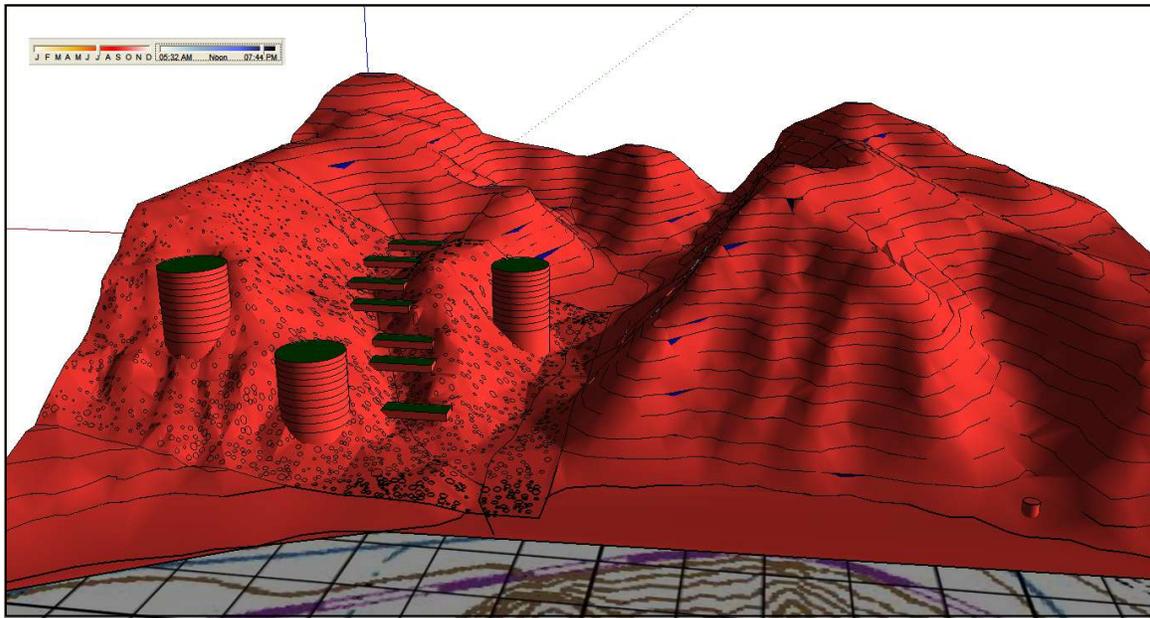
\$250,000. for land + \$100,000 for GPA + \$50,000 for initial required data = \$400,000. W3D expects a 5% commission for putting the opportunity together, this adds another \$20,000 for a total of \$420,000 for Phase I, unless the original \$200,000 purchase price can be obtained.



Looking south into Red Cove.



View from where the modeled Tower inside Red Cove reaches the top of the first hill, near the top bridge house in the first building option.



Red Cove Sunlight at 7:00 PM in July

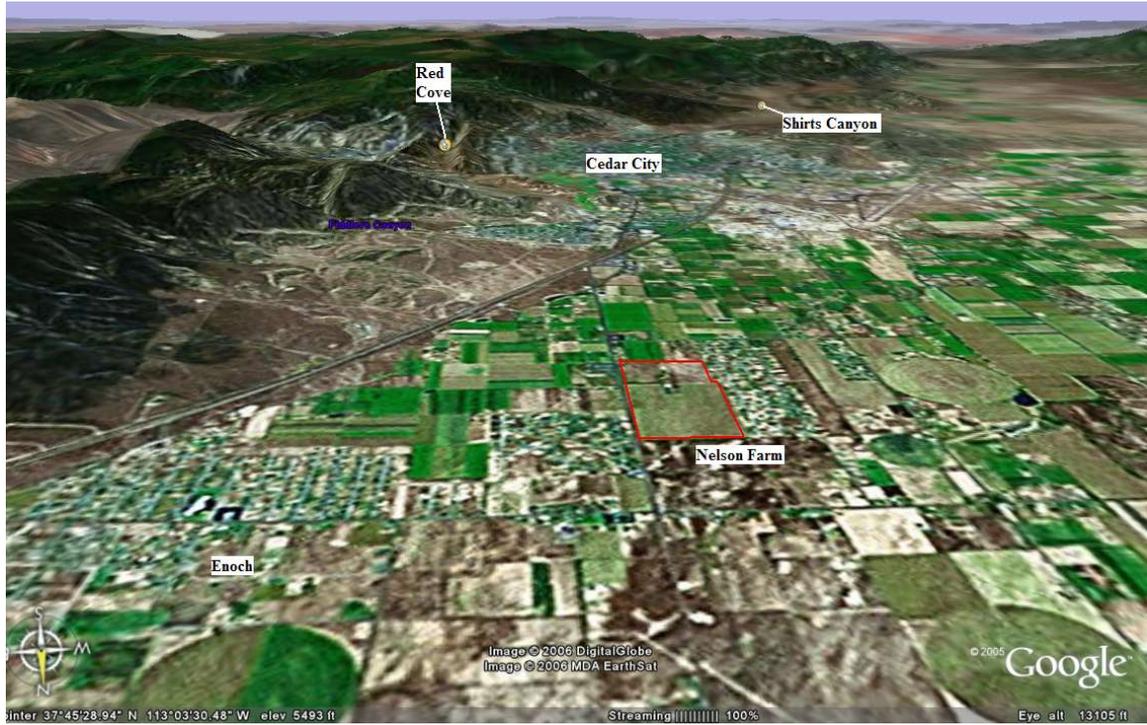
### Phase II. Design Focus.

Given the successful completion of Phase I, a good start for the data necessary to proceed with the project will have been obtained. Because this is the first W3D project, the desire is to be data intensive. Much of this data can be obtained from data in the public domain. However, detailed emissive and transmissive passive seismic surveys, aeromagnetic surveys, electrical surveys, gravity surveys, microseismic monitoring, and other geophysical data will have costs associated with collection, processing, and interpretation. The same applies to biological diversity, climate, and even pollution studies.

The initial reaction of the community, once the project is announced, will set the stage for determination of how much money will have to be spent promoting the project. There does not appear to be any archaeological sites on the property. However, the idea of putting in this density of housing outside of the current city limits will require many meetings and discussions.

A concepts which seems appropriate to include in Phase II, and which will have significant bearing if Walden 3-D is to do any other development projects in this area, is the introduction of the concept of Transfer Development Rights (TDRs). TDR's are a way for landowners to obtain compensation for permanent preservation of some natural environment, while providing compensation to the owner. This concept is being applied in many parts of the country, and is based on a Sending Area (area to preserve) and a Receiving Area (area to grow). Red Cove would be a Receiving Area, while someplace like the Nelson Farm in Cedar Valley could be a Sending Area. If a county adopts TDRs, then building can occur to a certain baseline density level, and then you need to purchase a TDR credit for further growth. TDRs can also be used to limit surface coverage, the height of buildings, the floor area ratio, water quality protection, protect surface and ground water, definition of preferred growth areas, etc. It seems logical to assist the community in establishing procedures to define and maintain the quality of life in the face of anticipated continued growth.

## Red Cove Investment Description



Google Earth is used to show the relationship of the Nelson Farm to Enoch, Cedar City, Red Cove, and Shirts Canyon.

The design, development, data collection, and building of the databases for Phase II will be the major cost. This will be an ongoing process within the community, and the initial start-up costs are estimated to be on the order of \$250,000. This cost will add considerable value to the property ownership, and will be the basis of turning a research project into a commercial opportunity.



Looking down Red Cove towards the Red Hill.

### Phase III. Computer-Enabled Design.

Phases I and II will create a series of community design options, designs which fit the natural environment, Cedar City's population, and provides confidence to the investor, justifying proceeding with the project. The European Union has proceeded with formal creation of PDES (Product Definition Exchange Specification), in ISO (International Standard) STEP (industry-type (e.g. AEC) and product-type (e.g. architecture) formats. Given PDU's (Product Definition Units) with these formal definitions, it becomes straight forward to create a virtual visualization of various combinations of PDU's.

Figure 7, below, from [http://www.caad.lth.se/research/pdf/Ekholm\\_W78\\_94.pdf](http://www.caad.lth.se/research/pdf/Ekholm_W78_94.pdf), summarizes the concept of PDU's, and Figure 10, below and from the same source, summarizes how E-R (Entity-Relationship) modeling relates the components in a way to allow representation in a virtual reality environment.

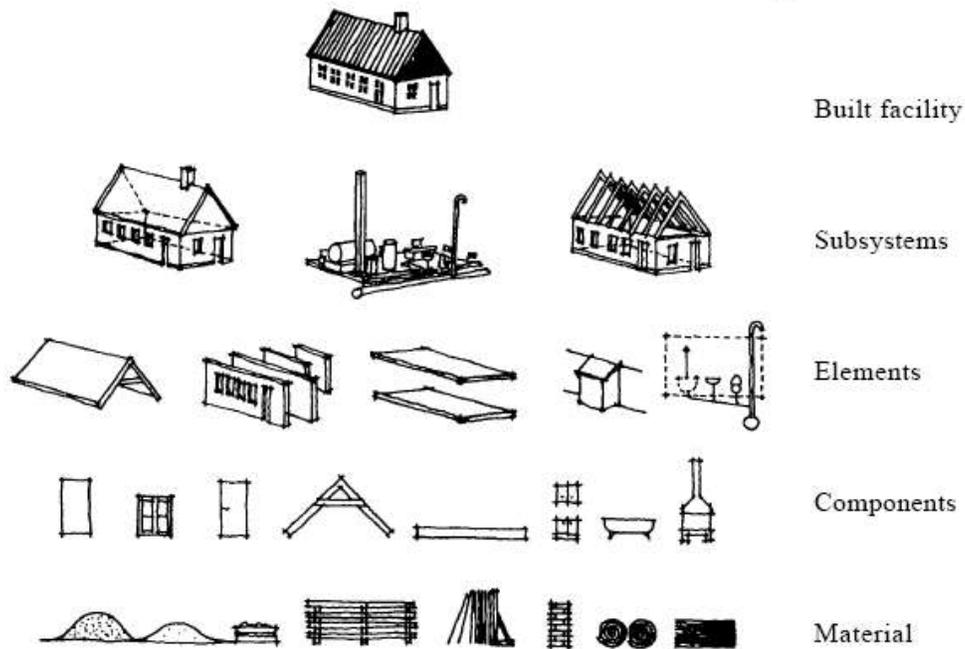


Figure 7. Level structure of built facilities. Things belonging to the levels: built facility, the principal subsystems, building elements, building components and building material.

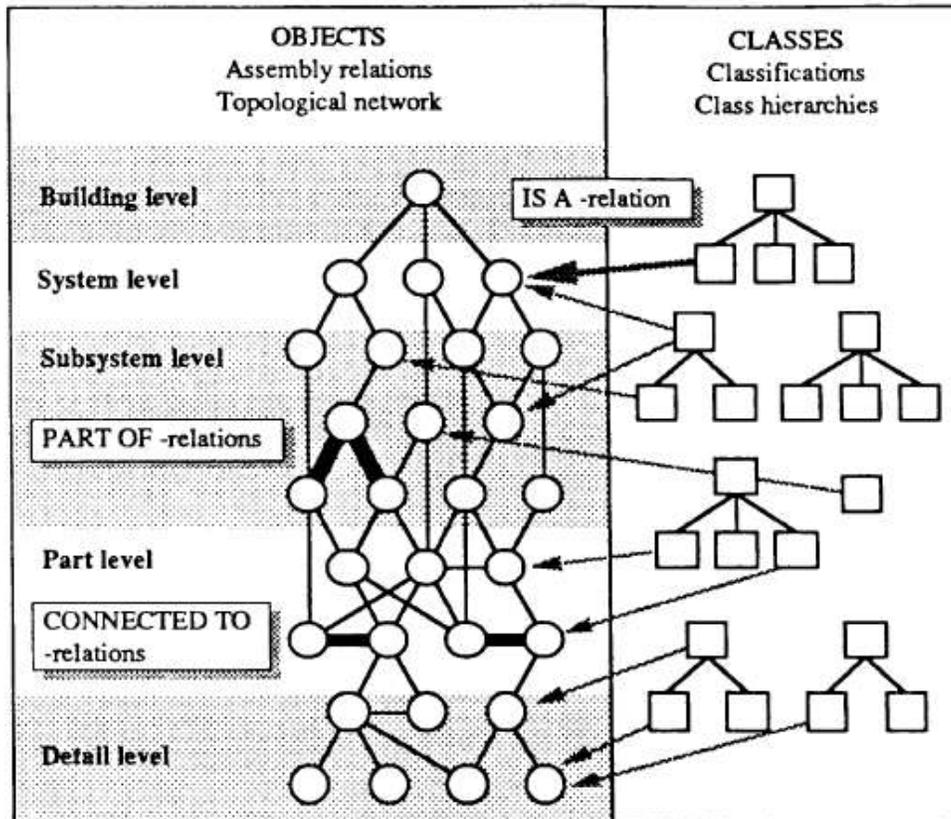


Figure 10. The RATAS "abstraction hierarchy"

## Red Cove Investment Description

Six years ago the computer to do virtual reality visualization modeling of a community would have cost millions of dollars. However, technology has evolved very quickly in this area, and with a Linux Workstation and the right kind of projector, a virtual world can be created which will allow stakeholders to view the project options in 3-D virtual reality. This becomes a powerful way to make sales before any actual construction on the site has begun. The first system will be the most expensive, specifically because various software systems need to be integrated.

The virtual models will allow all aspects of the built form to be tested before there is a construction. For instance, transportation is a big issue for everyone. If everyone with a drivers license in the community has a car, then a significant amount of the building space will be for parking cars. After all a car needs an 8'x20' space, and for each 200 foot diameter tower on the initial model, there is approximately 3,000 square feet of floor space per floor, which means about 15 cars can park on one floor of a basement parking lot. However, remember this is a community built around people instead of cars. Everything needed for basic living will be in the complex, or can be delivered to your unit without needing a car. Transportation on site will be by walking, or maybe by using something like the Segway, a two-wheel transportation device. If all community cars are owned by a group like Enterprise Rental, parked offsite at the airport, and only brought on-site when someone checks one of them out from their computer terminal, then the parking issue is minimized.

Numerous other scenarios will be tested in the first three design phases. For instance, the topography allows for collection of rain water and snow. The walkways could be heated by running the hot water pipes and central heating ducts under them, which melts snow and ice, which is collected for community use as runoff. The same way there are auto vacuums, which automatically vacuum a house; there could be automatic snow blowers, which automatically capture the snow from all community sidewalks for the community water source. It might make sense for some percent of the habitat units to be hotel rooms during certain seasons of the year, to help defray community costs. This can be modeled. There have obviously been earthquakes in the past, which formed the mountains. There have not been any significant earthquakes in recorded history. However, there was a large rock slide at the top of Red Cove in the 1990's. Over time, the idea is that over time the impact of rock slides, earthquakes, floods, wind, sunlight, and other natural phenomena will all be modeled.

Working with Professors and students at Southern Utah University and Dr. Carolina Cruz and her students at Iowa Sate University and VRAC (Virtual Reality Application Center), the initial virtual reality system and presentations of design options need not cost more than \$200,000.



## Advanced Structures Incorporated

Projects from the web pages of ASI. <http://www.asidesign.com>

ASI is a key partner in Design/Build from a kit-of-parts.

### **Phase IV: Construction.**

Construction cost will be calculated based on the Opportunity Matrix, the Feasibility Matrix, and the Visualization Model. Because the goal is to model the entire construction process, and because these data are available to all stakeholders, the construction costs should have minimum errors, once they are optimized and approved.

The initial proposed design consists of three 15 story towers, each 200 feet in diameter. For three towers, this implies a total of 165,000 square feet in the towers. In addition, the 50'x200'x20' natural bridge housing units create another 17,500 square feet of space. Floor separation is assumed to be 20 feet. Two of the towers would go from the 6,100 foot contour to the 6,400 foot contour. The other tower would go from the 6,300 foot contour to the 6,600 foot contours. This configuration includes elevators. In addition, there will be walkway's, or Segway roads, which allow personal access to each building. This configuration is assumed to hold somewhere between 50 and 220 housing units. Allocating the entire 40 acres, to calculate density based on somewhere between 200 and 1,000 residents implies between 5/acre (3200/square mile) and 25/acre (16,000/square mile). For comparison, Cedar City has 1.597 people per acre (1,021.8/square mile), Enoch has 1.633 people per acre (1,047.1/square mile), and Iron County has 0.016 people per acre (10/square mile) currently.

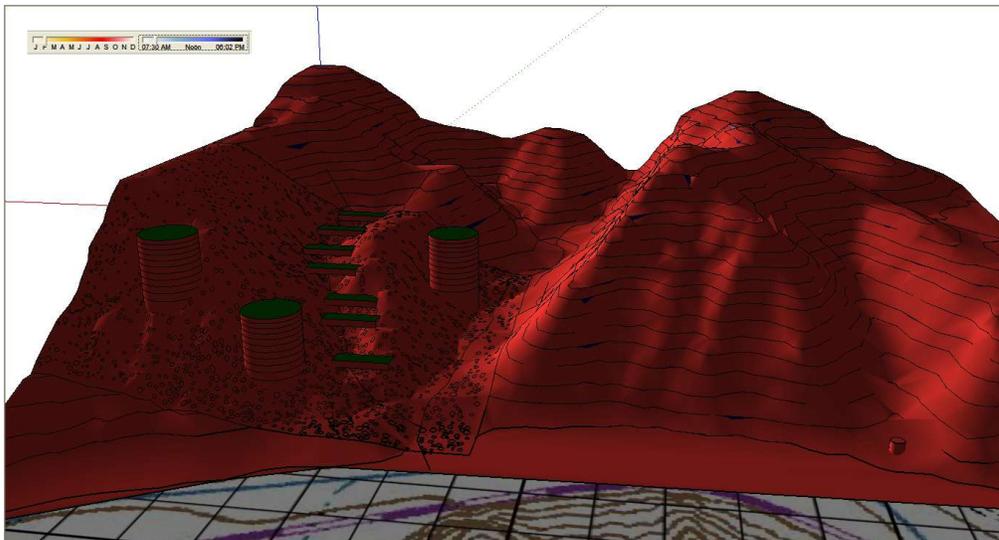
By comparison to places around the world, in 1969 New York City has 33 people per acre, Paris has 107 people per acre, Mexico City has 9 people per acre, London has 11 people per acre, Chicago has 26 people per acre, Phoenix had 3.3 people per acre, Delhi had 72 people per acre, Tokyo had 50 people per acre, and Paolo Solari's Arcosanti was designed for 215 people per acre. Soleri's other arcologies in his book Arcology, The City in the Image of Man, ranged from 84 people per acre to 1,200 people per acre. Even though Red Cove's 5 to 25 people per acre is higher than some urban areas, it is very much at the low end of Soleri's predictions.

Construction will follow detailed planning, data collection, re-planning, modeling, re-planning, and design.

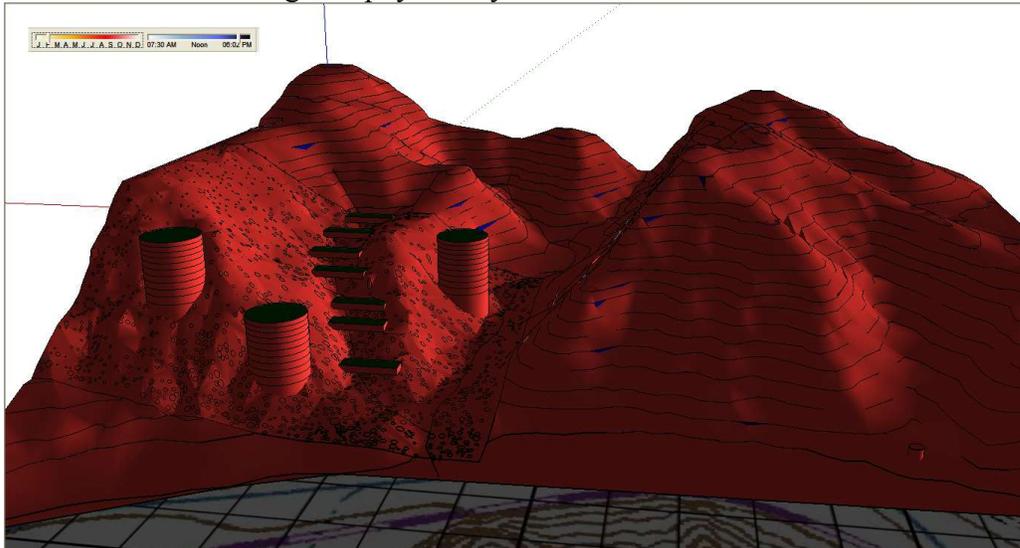
**Phase V: Long-Term Commitment.**

The idea of the project is to demonstrate how measurement of all aspects of a community, and dynamic monitoring of those measurements, allows for the community to be run optimally. Changing needs will be identified, and modifications made to the master plan. This plan will be available to all stakeholders, which will allow real-time buy-in by all interested parties. If they do not buy in, there are mechanisms whereby they can explain why, and this will allow optimal solutions to come to the front of everyone’s attention.

The idea is to extend this beyond the physical infrastructure and specifically the operations and maintenance systems, to include all information and a management update system, social support systems, and an on-going interdependency analysis of the built form and its functions within both the natural and social systems. The idea is to be sensitive to changing environmental needs, and able to adapt to a dynamic social system.



The ability to model the sunlight at 8:00 AM or 7:00 pm in February is an example of the power of interactive modeling of a physical system.



## 5. Red Cove Investment Plan and Time-Line

Walden 3-D, Inc. is seeking an initial investment of \$400,000 (\$10,000/acre) for the 40 acre real estate investment opportunity described in this proposal. For this investment, the investor will obtain 100% ownership of the property. W3D is receptive to granting the investor in the first project exclusive use of W3D IP (Intellectual Property) within specific markets, like India, Nigeria, Colorado, etc.

Walden 3-D, Inc. retains control of the development planning, 100% ownership of any intellectual property which results from data collection, planning, and design of the project, and the rights to have 25% ownership transferred to Walden 3-D, Inc. as a back-in position, once the investor receives 120% cash return on their investment. This means that if W3D were to do the initial design, and then, with permission of the investor, sell 50% ownership to a Las Vegas developer for \$500,000 in six months, the investor would receive \$434,463.12 cash, and retain  $75\% \times 50\%$  or 37.5% ownership in the project. Walden 3-D would have  $25\% \times 50\%$ , or 12.5% ownership in the project.

If this sale were made in 12 months the investor would receive \$479,760.43 plus their ownership position. After 18 months the investor would receive \$529,780.45 plus their ownership position. After 2 years the investor would receive \$585,015.59 plus their ownership position. The bottom line is that the 20% cost of money encourages W3D to move as quickly as possible in moving the development ahead.

An time-line goal for this applied research project is:

- February 2006: \$400,000 funding for Phase I. Design Initiation and purchase of the property.
- August 2006: \$250,000 funding for Phase II. Design Focus, which is largely about data collection.
- January 2007: \$200,000 funding for Phase III. Computer-Enabled Design,
- April 2007: Obtaining a construction loan for Phase IV. Construction.
- November 2007: First residents move in and provide the funds for Phase V. Long-Term Commitment.

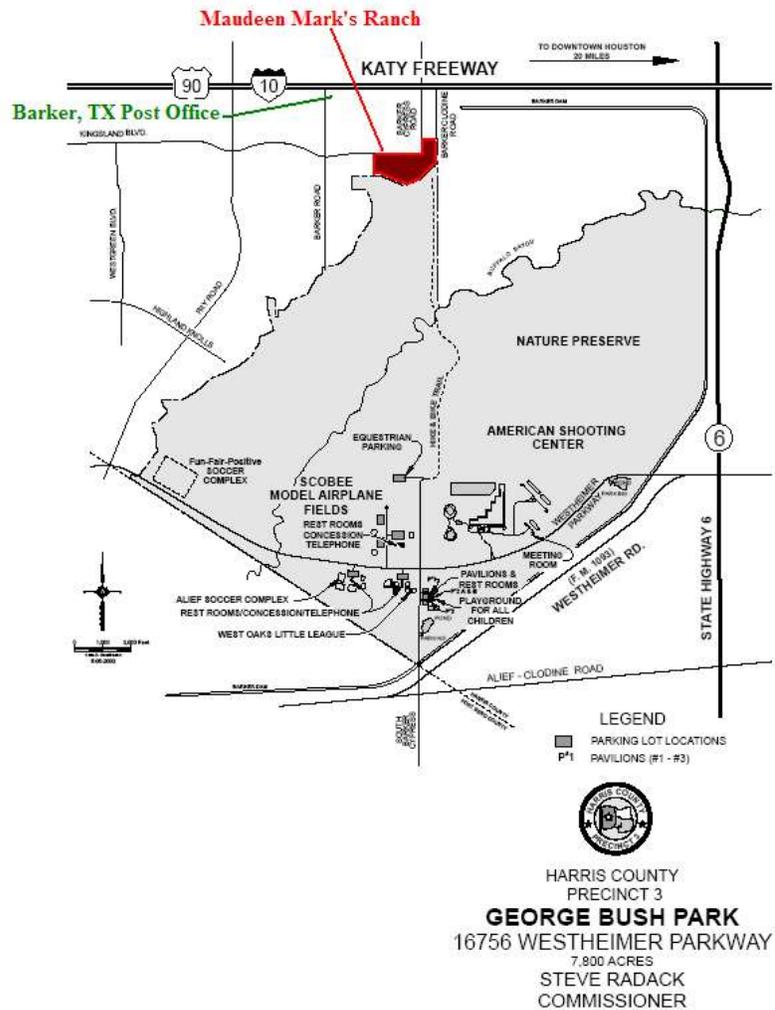
## **6. Investor Communications**

A secure password protected web site will be set up by Walden 3-D, Inc. for exclusive access by the Investor and contractors working on the project.

This secure web site will be updated every time there is any expense related to the project, or any time there are new technologies identified which will become part of the project IP. It will include a dialog board, so that whenever the investor wants to ask questions, leave notes, or otherwise get or provide an update relative to the project, he will have an easy-to-use mechanism for doing so.

**7. Other Identified Potential W3D Projects**

7.1. Barker, Texas (<http://www.walden3d.com/w3d/design/W3D89A>)



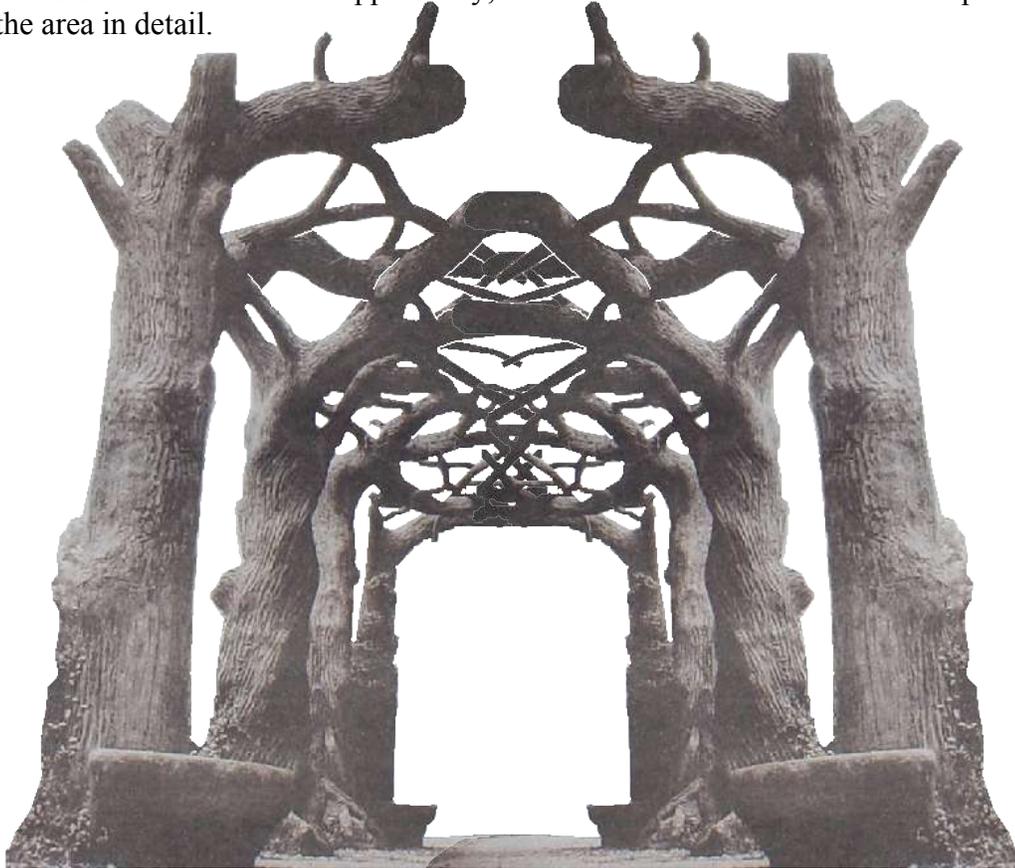
7.1.1. Phase 1, Maudeen Mark's 23 acre ranch

This was the first project Walden 3-D seriously pursued. At the time the ranch was 40 acres. However, Kingsland Boulevard was extended and bisected the property, and without financial resources to pursue the project it has sat fallow. Maudeen's family have sold off their property, and she has 23 acres left. This property is adjacent to Barker Reservoir, which is a 7,800 acre public park. Barker Reservoir is normally dry. It is leased to run cattle, and was the site of the original Houston Rodeo. Maudeen is in her 80's and recently wrote me to tell me she is going to sell the property. She has the original Barker, Texas Post Office, the first black church in Houston, and other historical buildings on the property. Development would need to work around these historical treasures. Maudeen also started the Rodeo Trail Rides, and has the first wagon in the famous Salt Grass Houston Rodeo Trail Ride.

## Red Cove Investment Description

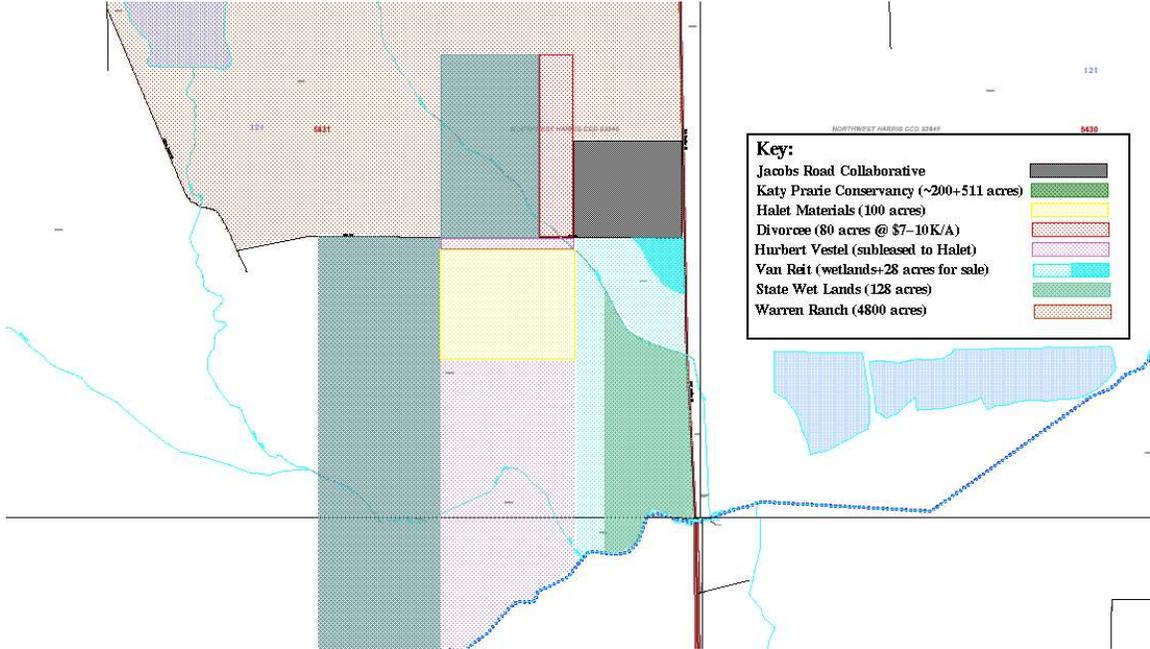
### 7.1.2. Phase 2, Barker, Reservoir

There are many places around the world where communities are built on lakes or reservoirs. As stated above, Barker Reservoir is dry 90% of the time. However, by building housing on cement trees, like the ones illustrated above, Walden 3-D villages can be built in the reservoir, and these will be within walking distance of BP, Shell, ConocoPhillips, Park 10, and numerous other employers in West Houston. A 63 slide PowerPoint Presentation was prepared by Walden 3-D in August of 2004 to describe the opportunity, and is available for review. The air photo below shows the area in detail.



## Red Cove Investment Description

### 7.2. Jack Road, Texas (<http://www.walden3d.com/JackRoadCollaborative>)



The map above shows two properties, 100 acres dedicated to Walden 3-D for design, at W3D's own expense, and 80 acres adjacent to it and outlined in red. The Warren Ranch (4800 acres) was recently transferred to the Katy Prairie Conservancy. Between this organization and wetlands, these two pieces of property will remain surrounded by a natural environment. On the east side of Morton Ranch Road, the largest new town development in the history of Houston, since The Woodlands, is currently being built. The opportunity is to build a W3D Village, which will demonstrate a better way to build our cities and make an excellent return for investors.

7.3. Shirts Canyon, Utah



360° Panorama of Shirts Canyon



Zoom on Panorama, showing the two houses which have been built in Shirts Canyon.

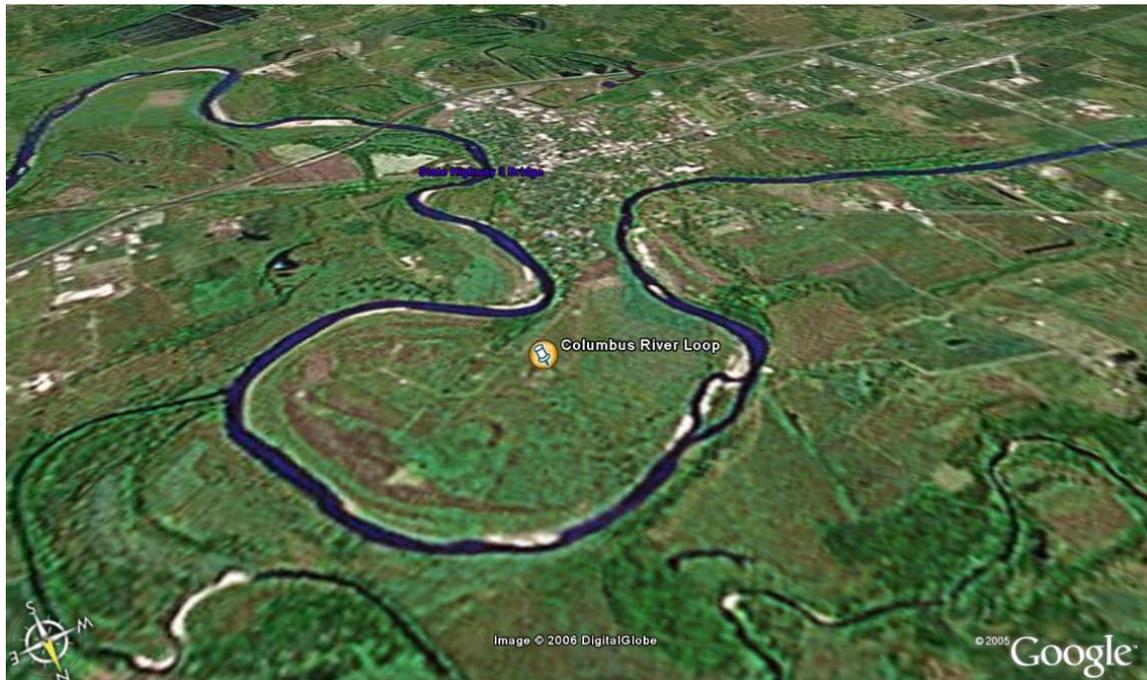
Shirts Canyon is 5 miles south of Cedar City Utah. The mountains and the canyon are owned by the Federal Government BLM (Bureau of Land Management). The valley floor has recently been subdivided, and two houses, seen above, have been built. The opportunity is to create a W3D Village, which can be a population larger than the present population of Cedar City. The first step is to purchase the land.



#### 7.4. Colorado River Loop, Texas

Columbus, Texas is one of the truly historic western towns of the state. The first Spanish explorers of the area explored the site, because of a 10 km river loop on the Colorado River, which is only 1 km wide at the narrowest portion. The original Texas settlers traveled through what is now Columbus. There were riverboats on the Colorado River. The first railroad in Texas went from just across the river from Columbus to the Port of Houston. The biggest meat packing plant in South Texas was in Columbus. The Chisom Trail started at Columbus. There were gunfights in the street. A young black man was hung by a mob in the 1920's. And the tails go on and on.

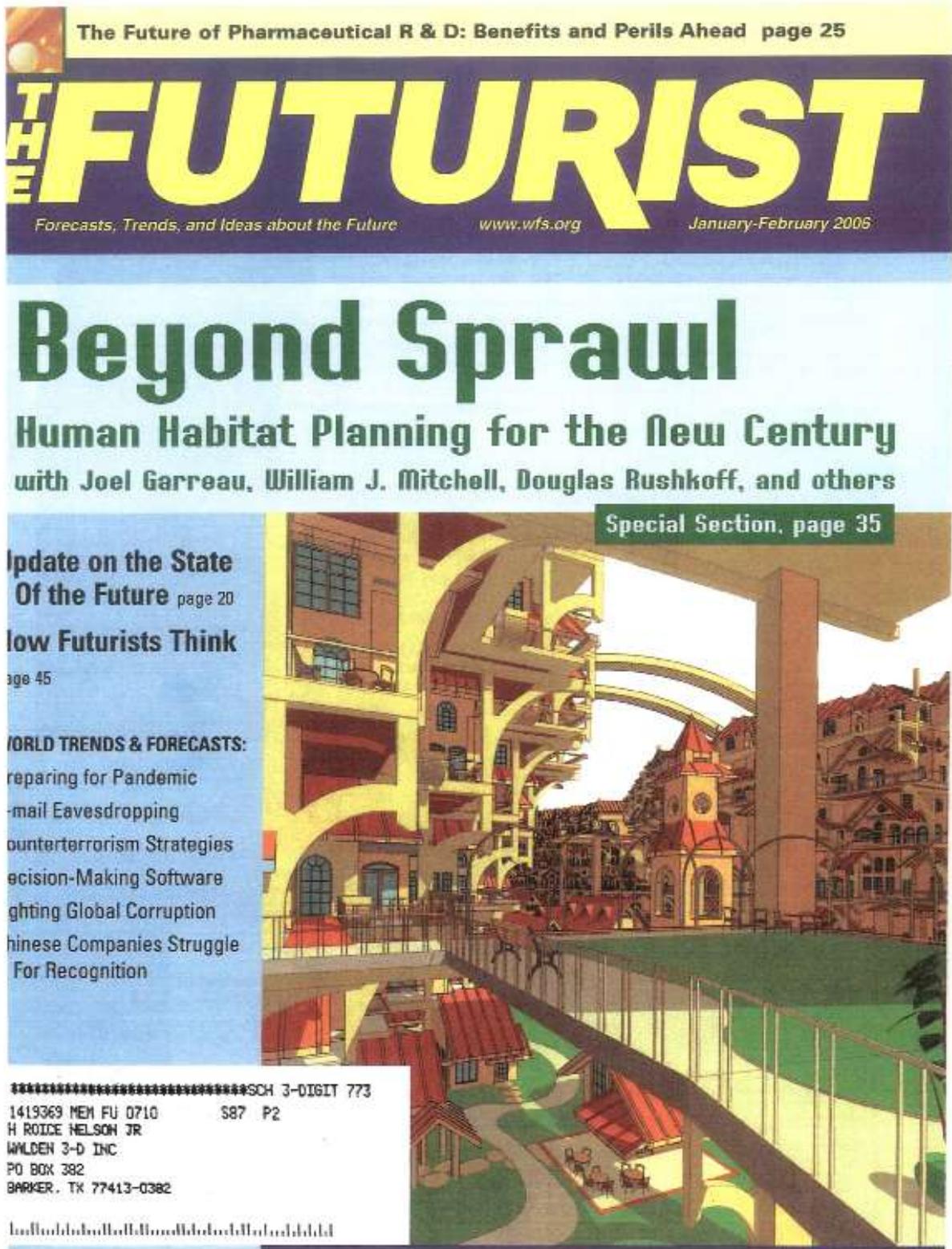
Columbus sits across the narrowest portion of the River Loop. The farm land enclosed by the river loop is owned by three families. It is an ideal place to build a new town, adjacent to and complementing a historical town. It is located midway between Houston, Austin, and San Antonio. The first step is to obtain ownership of the three farms that cover the River Loop, and then the W3D Design Process can optimize planning.



#### 7.5. Johnson 40 Acres, Simonton, Texas

No details yet.

Appendix I. January/February 2006 The Futurist Cover

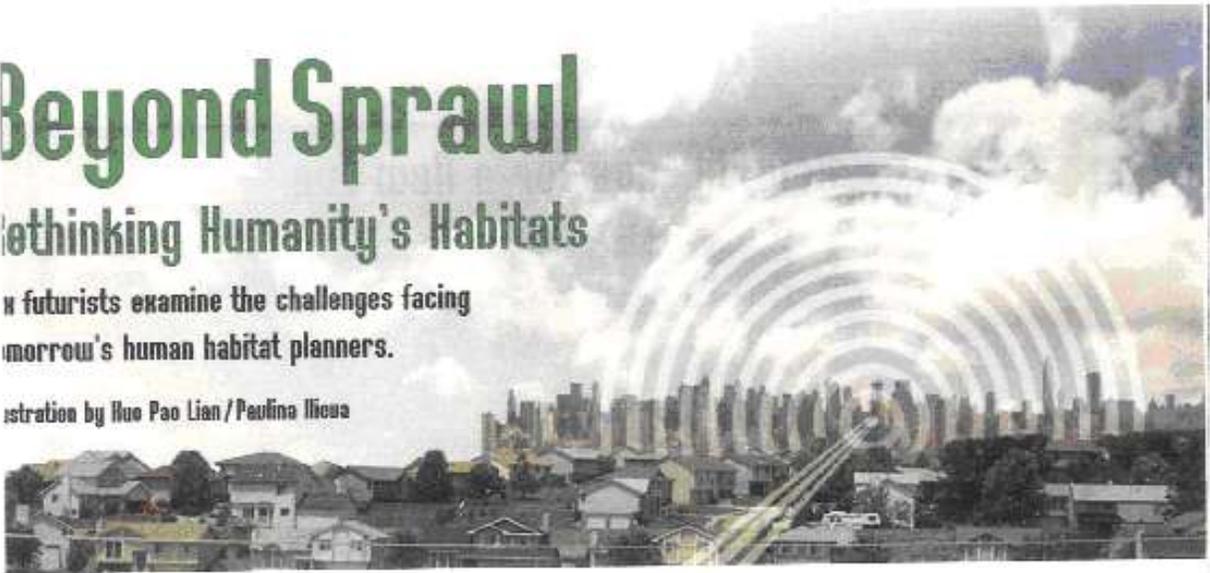


# Beyond Sprawl

## Rethinking Humanity's Habitats

As futurists examine the challenges facing tomorrow's human habitat planners.

Illustration by Huo Pao Lian / Paulina Ilieva



**H**ow will technology affect where we live in the future? How will where we live affect our technology? A simple look around us may give us a clue.

The teaming cities of the United States, Europe, and Asia provide living testament to humanity's gift for transforming our environment. The technological innovations of the flying shuttle and the spinning jenny led millions away from life on quiet country farms to new lives in thriving cities.

Unfortunately, in the United States, Europe, and even parts of Asia, our great cities are showing signs of age. The American Society of Civil Engineers has estimated that the cost of bringing U.S. infrastructure up to acceptable levels will equal \$1.6 trillion over the next five years. Events like Hurricane Katrina and the terrorist attacks in New York and London (and elsewhere) remind us that our cities are vulnerable to disasters new, old, and as yet unimagined, in addition to the problems of crime and pollution that have always plagued urban centers.

The automobile revolution allowed individuals to seek a life outside of the busy metropolis, in the suburbs. The dream of a little house and a manicured lawn remains an appealing one to this day, perennially promising a stress-free life that is close to work but also close to nature. The reality of today's suburbs is somewhat contrary to that idyllic vision. Millions of people commuting to work via dangerous freeway systems is neither a particularly stress-free nor an especially natural way to live. The environmental aspects of unrestrained suburban sprawl in terms of smog, greenhouse-gas emissions, and even noise pollution are monumental. The economic benefits, in terms of real GDP growth and high real-estate prices, are increasingly being offset by rising external costs: Americans waste more than 2 billion gallons of gas idling in traffic

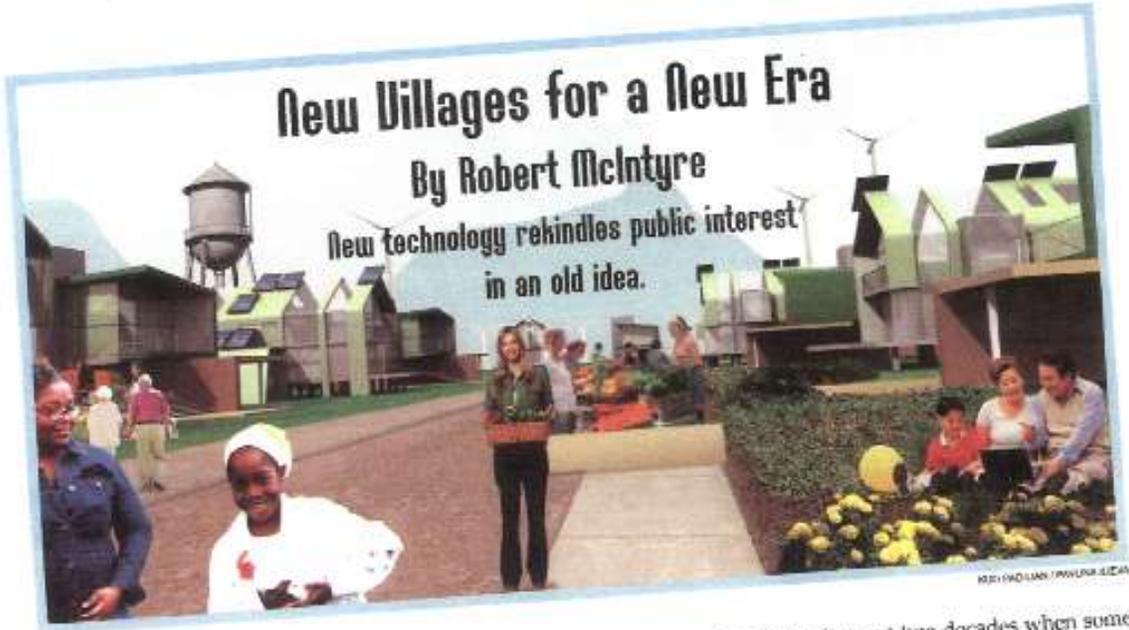
jams each year. The social effects of sprawl are no more desirable. Suburbanites have long complained of feeling socially uninvolved and isolated. A sense of real community is inherently lacking in most of today's bedroom suburbs. Is there no other way?

We may be on the verge of an answer. Our special urban planning section begins with a piece by **Robert McIntyre** (page 36) on reestablishing rural villages. As part of THE FUTURIST's continued efforts to inspire, encourage, and lead a dialogue on the future and all its possibilities, we have asked a number of cultural critics, urban planners, and futurists about the major trends shaping the human habitats of tomorrow. Their responses, in the essays that follow, are critical, dissonant, and imaginative. We are especially grateful to our contributors and are extremely proud to present their findings to you. As you read these pieces by thinkers such as **William J. Mitchell** (page 39), **Douglas Rushkoff** (page 40), **Mitchell Gordon** (page 42), and **Joel Garreau** (page 43), we hope you will cast a glance to the side of each page where excerpts from **L. Gene Zellmer's** book *A Town Primarily for People* form a continuous narrative. Allow yourself to tour Zellmer's prototype as it constructs itself before your eyes.

We present these ideas solely for the purposes of furthering a debate on how we might use science—and common sense—to create new and superior habitats for future generations. The greatest accomplishment of our technological resourcefulness may be its capacity to liberate us from obsolete technologies and dysfunctional ways of thinking. Once we make up our minds to live differently, we may well discover a new way of life that promotes better interaction, that is truly stress free, and that is, authentically, closer to nature.

—Patrick Tucker, assistant editor

Appendix I. January/February 2006 The Futurist continued



The U.S. Department of Agriculture has noted a remarkable demographic trend: In the 1990s, more Americans moved to rural areas than moved out. Why are so many Americans moving to exurban areas beyond the range of easy commuting and shopping?

Urban problems such as traffic congestion, crime, pollution, and high housing costs are driving people not only out of the city but also beyond the suburbs in search of a pleasant, relaxed environment that's closer to nature. This trend is likely to continue. As rural America braces for a surge of home-based workers and retired baby boomers, land planners face a difficult challenge. They must design new communities that appeal to homebuyers and allow small developers to make a profit, but minimize any adverse social, economic, and environmental impacts.

The need for creative solutions is greatest in parts of the South and West, where rapid growth is expected in areas lacking countywide zoning necessary to corral future development within existing cities and towns.

During the 1990s, the population of nonmetropolitan counties grew by 5.3 million, or 10.3%. The majority of this growth occurred in counties near large urban areas, but the most rapid increase was (and continues to be) in scenic, mountainous counties of the western United States. This trend is consistent with surveys from such sources as the Gallup Organization and *American Demographics* magazine that show most Americans would prefer to live in a small town or rural area. Those making the move are usually college-educated people seeking a detached home on a large lot (one-half acre or larger) with adequate privacy. This rural revival will

likely accelerate over the next two decades when some 85 million baby boomers retire. The highest percentage growth of people 65 or older will probably occur in the mountain states of the West, followed by the South.

To meet the surging demand for rural housing, the United States will likely depend on existing small towns and new residential subdivisions. But disenchantment with subdivision life may give rise to another alternative: moderately self-sufficient rural communities that I call "New Villages." In recent years, the rapid increase in home-based businesses (common in rural areas), farmers' markets, and mini-farms has enhanced the potential for these tiny new communities. Satellite networks have made television and high-speed Internet service available at almost any rural site. The continued movement of retiring baby boomers into rural areas will transform rural America over the next two decades, and traditional villages may again become common.

### The New Village

For thousands of years, people in rural areas around the world have created villages for the safety, sociability, economic specialization, and agricultural cooperation they provide. Today, many of the world's traditional villages are nearly self-sufficient.

In the United States, a village is usually defined as a community that's larger than a hamlet (50 people or fewer) but smaller than a town (1,000 people or more). Like conventional rural subdivisions, New Villages would range in size. Some would consist of a few houses clustered at a crossroads, while others would be bustling communities with up to 1,000 residents. Each

## Appendix I. January/February 2006 The Futurist continued

state has its own laws governing the creation of incorporated communities.

Unlike traditional neighborhood developments modeled after the compact American cities developed in the early 1900s, New Villages are inspired by earlier settlements—the scattered New England villages that were common in the 1700s. As one prominent geographer pointed out, colonial settlements in New England had a strong sense of community even though they were usually dispersed agricultural villages centered around a meetinghouse. Conventional subdivisions designed for commuters often have bucolic names including the word “village,” but they lack the self-reliance of a traditional village. In a New Village, however, more than half of the jobs, food, and water could be produced within the community.

Today’s New Villages are small, freestanding settlements with limited authority. In most cases, they cannot enact zoning laws or create taxes to fund new community services. However, a small, unincorporated village seldom needs these powers. A New Village is designed to help residents work at home, protect the natural environment, socialize with each other, and develop a sense of community.

The heart of the community would be the village center, which would reflect the character of the villagers and their reasons for congregating. A village center might feature a tiny meetinghouse and a chapel or temple depending on the importance or prevalence of a single faith among the villagers, or it could be a small park, green, or square with sculptures as well as outdoor tables for meals. In addition, a cluster of mailboxes would draw the community together each day, encouraging the social interaction that’s often missing in today’s impersonal suburbs.

In most cases, this walkable village would be 30 to 80 miles from the outskirts of a city having an airport and any necessary retail, entertainment, and professional services lacking in the village. Some New Villages near public-transit stations could be even further from cities.

### Enabling Energy Self-Sufficiency

A modest level of energy self-sufficiency avoids much of the air pollution, traffic congestion, and other urban problems created by parasitic bedroom communities, where transportation can account for half of the total energy use. Like today’s suburbanites, residents of a New Village would also drive to the closest city, but they would do so less often and usually not at rush hour.

The design of each New Village would vary considerably, depending on environmental conditions at the site, housing preferences of the intended buyers, the potential for mini-farms, and other factors. The design might also have characteristics of historic villages

within the region. Examples include the use of country lanes with natural drainage systems and houses that face south toward the sun.

Theoretically, a New Village could use any conventional or unconventional energy source that was locally abundant. One of the exciting aspects of building a New Village from scratch is that it can serve as a laboratory for innovative ideas in fields like energy conservation, as well as building construction, telecommunications, social and health planning, and education. For example, if the village is several miles from the nearest power pole, each homeowner could generate electricity using some combination of photovoltaic panels and a wind generator or microhydroelectric unit.

### Encouraging Agricultural Self-Sufficiency

In a typical New Village, several large “estate lots” would surround the community, or residents could use the help of a nonprofit land trust to create a conservation easement around the village. The easement would protect critical wildlife, prevent unwanted development near the community, yield tax benefits for the developer, and increase the value of adjacent lots.

In addition, the easement could supply villagers with fresh organic produce. In a New Village with an agricultural economy, a small parking lot could also be designed as an outdoor farmers’ market on weekends. Here, residents could sell a variety of high-quality and specialty products directly to people from the nearby city who enjoy a pleasant weekend outing in the country. These products might include fresh organic vegetables, nuts and tree-ripened fruits, specialty mushrooms, herbs and herb vinegars, honey and maple syrup, and dozens of other items. A traditional grocery store would be impractical in a small village unless it draws shoppers from outside the community. Fortunately, a New Village is likely to attract residents who would grow some of their own food and sell or preserve the surplus. Villagers lacking an interest in vegetable gardening could buy some of their food at the farmers’ market or barter with neighbors.

Another alternative is to create a Community Supported Agriculture (CSA) program where residents could buy “shares” of the next season’s harvest from a small farm within or near the village. Shareholders would receive fresh organic produce at a reasonable price, while the advance payments would give the farmer a guaranteed market for all of his or her crop. Since 1995, the number of CSA farms in the United States and Canada has grown from 450 to more than 1,000. If some of the soil in the village is arable, part of the economy could be based on the production of high-value specialty crops. For example, while writing the master plans for several mini-farms, I compiled information on more than 40 specialized crops producing

## Appendix I. January/February 2006 The Futurist continued

gross returns of \$4,000 to \$100,000 per acre per year for some experienced growers working small tracts.

The New Village could even be designed with smaller lots on nonproductive hillsides overlooking mini-farms on rich bottom land soils. If the farms are fenced, located downwind, and use organic growing methods, the neighbors should have few complaints. In fact, hundreds of subdivisions in the United States lure buyers who gladly pay premium prices for lots overlooking green areas in the form of manicured golf courses and parks.

### Ensuring Economic Sustainability

Unlike many existing communities with zoning and deed restrictions impeding home-based businesses, the New Village would create a diversified economy by actively promoting home enterprises and cottage industries. Unless a small village serves a larger trade area, the population would be insufficient to support retail shops and municipal services such as a library or a neighborhood school. However, the Internet provides new options for the way these products and services are delivered.

Additionally, many of the residents could use the Internet to avoid commuting to work. According to the recent AARP *Working in Retirement* study, most retiring baby boomers want to do consulting or other part time work, but do so from home—or at least not from an office. Improvements in teleconferencing and other changes will increase the number of teleworkers in the United States to 50 million within five years, according to some estimates. Interactive video would also allow villagers to participate in classes taught at distant locations and to receive expert medical diagnosis and treatment. Thirty states now have telemedicine programs serving rural clinics.

The increasing availability and affordability of high-speed Internet is making the New Village concept a more viable and attractive option not only for retirees but for young people as well. Without leaving home, people can shop, bank, earn a living, worship, access world libraries, earn college degrees, and educate their children. There would probably be less crime in communities where most of the residents work from home; there is also less need for day care (for both children and the growing number of elderly), and there is more social interaction within and between households. Such interaction is vital to creating a sense of community among the residents.

Some home businesses, however, may cause social and environmental conflicts in a residential community. For this reason, all properties in the village would be subject to deed restrictions controlling advertising signs, direct sales, and noise, fumes, odors, or other potential problems for neighbors.

### Recycled Villages

New Villages need not be built from scratch. I've explored ways for non-developers to "recycle" some of the thousands of small, unmarked rural subdivisions that are mostly vacant and undervalued. In my experience, using existing subdivisions can greatly reduce the environmental impact, government red tape, and financial capital required to build a New Village. In recreational subdivisions alone, the United States has an estimated 15 million vacant lots, mostly in Florida and southwestern states.

It is also possible to create a New Village from, of all things, a ghost town. The landscape of America is littered with skeletons of towns that died because of various economic and political changes. In fact, I've identified more than 5,700 ghost towns across the United States and Canada that are less than 300 years old. There are advantages to reviving a ghost town instead of building a community from scratch. The lots are already platted, and some of the buildings and other improvements may be usable. Also, many ghost towns were located near prime farmland and a year-round source of drinking water. Finally, there's the satisfaction of breathing life into an abandoned community full of history and character. These same characteristics can also attract enough tourists to sustain the economy of a small town. Some of the rehabilitated ghost towns in the western United States attract over 300,000 tourists each year.

Another creative alternative is to use existing houseboats to form a floating New Village. In Asia, houseboat communities have existed for hundreds of years. The economy of a floating village might include commercial fishing, aquaculture, and fishing guide services.

### Final Thoughts

Sometimes the future resembles the distant past. As digital interconnectedness, a growing retirement population, and a rising need for more communal and sustainable living transform rural America over the next two decades, traditional villages in the style of our ancestors may again become common. Like all land developments, New Villages have some negative effects. But these tiny new communities may offer a benign alternative to some of the thousands of new rural subdivisions that will otherwise be built.

#### About the Author

Robert McIntyre is a graduate of the School of Architecture at the University of Texas at Austin and has worked as both a community planner and a landscape architect. For more than 20 years, he has researched New Villages at his homestead near Austin, Texas. E-mail: [SwitchbackMc@aol.com](mailto:SwitchbackMc@aol.com).

#### About the Illustrators

Kuo Pao Lian and Pavlina Ilieva are architects in Baltimore, Maryland.

## A New Garden of Eden

By William J. Mitchell



Some years ago I consulted on the film *Minority Report*, and I was asked to provide a vision of the "city of the future." I had to disappoint everyone by saying that cities actually have enormous inertia and change very slowly in their overall form and appearance. The city of the next 50 to 100 years will look a lot like the city of today—just as today's London would be very recognizable to a Londoner from a century ago. That wouldn't have been very entertaining, so we just made up some futuristic eye candy for the sheer fun of it. Don't take it too seriously.

Cities mostly change through successive overlays of new infrastructure and technology upon existing patterns. These overlays enhance, rather than erase, what is already there. Today, by means of the technologies of ubiquitous digital networking, embedded computation, and tiny, inexpensive sensors, buildings and cities are being overlaid with electronic nervous systems. This latest layer of capability will, over the coming decades, make cities much more intelligently responsive and adaptive—more like ecosystems composed of intelligent artificial organisms than inert structures of stone, steel, and concrete.

The Internet—an early form of this evolving artificial nervous system—has already transformed the ways in which citizens of cities work, shop, educate, and entertain themselves. Over the next few decades, designers and planners will have increasing opportunities to apply the capabilities of ubiquitous networking and intelligence to solving crucial urban problems. Those problems are sure to include efficient resource management and long-term sustainability, safety and security, equalization of opportunity, and well-being and medical care. Cities will begin to deal with these tough old problems in new ways, by working smarter, not harder.

Don't expect them to look high tech, though. Paradoxically, really good technology typically becomes tiny, unobtrusive, and robust. (Just look at the cell phone, the laptop computer, and the iPod.) It disappears into your pocket and into the woodwork, and it doesn't have demanding environmental requirements. As a result, designers and planners can now—without loss of functionality—go back to designing buildings and cities around the very basic human needs for natural light, air (everyone loves operable windows), view, and sociability, instead of around the demands of increasingly obsolete, industrial-era technical systems. We will be able to get rid of a lot of the ugly and obtrusive junk that now crowds in on us. Think of a new Garden of

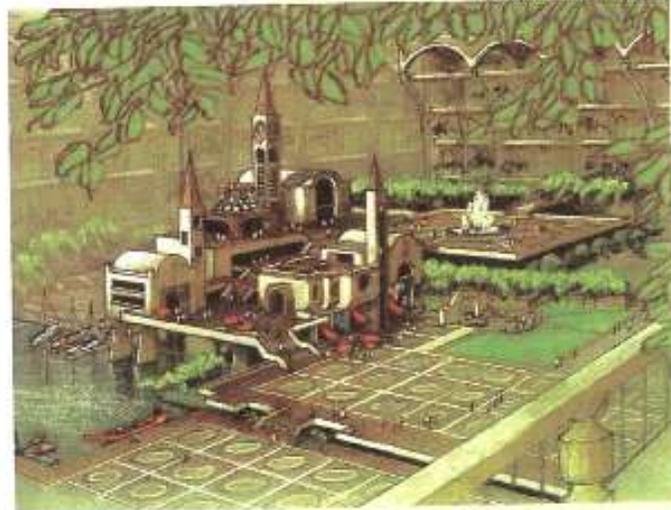
## Rethinking Utopia: A Town Primarily for People

By L. Gene Zellmer

Is it possible to design a city that would satisfy issues of affordability and transportation, as well as saving farmland and the environment? Is it possible to do all this efficiently and economically, and in a way that would be as lasting as historically significant buildings from the past?

A major paradigm shift in our concept of a town is necessary. Streets, designed primarily for automobile makers rather than pedestrians, can consume up to 50% of the flat, structured space of any city. But maximum livability can only be achieved if a town's circulation is pedestrian—no cars—and everything is within a short walk.

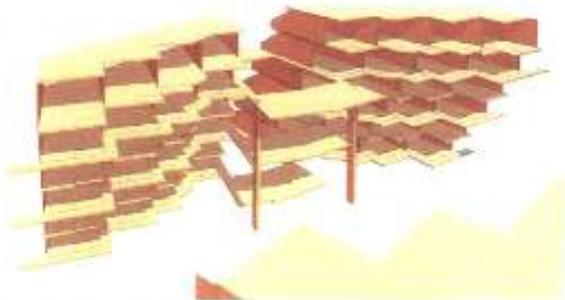
Designing such a town would entail examining the solutions others had employed before the time of cars, before even the wide use of horses, when pedestrian mobility was the primary mode of urban transportation. The Anasazi cliff dwellings—a series of small houses that stand both piled on top of one another and beside each other—provide a clear example. On a fundamental level, a town is one big structure spread out flat over a



Appendix I. January/February 2006 The Futurist continued

surface. That's true whether the town's residential buildings are one, four, or six stories tall. What if we were to look at the design of a town as a comprehensive architectural problem—one town, one building?

1. TOWN/NEIGHBORHOOD SPACING SOLUTIONS



### Rethinking Utopia: Facing Challenges through Innovation

Our town will face the design challenges of any other town: It will have to be protected from the weather, stable, and permanent. We will need to leave space for every imaginable or future utility, recycling system, and service technique. The individual units will have to be flexible and interchangeable as homes, work-places, and service providers. Additionally, the units will have to be easily maintainable. We will have to construct our town to maximize energy efficiency, in addition to promoting pedestrian mobility.

The final structure may look similar to a honeycomb, but with square-cornered, rather than hexagonal, spaces. With this stair-stepped arrangement, weather extremes will affect only the back wall of each home site and a small roof portion, which supports the backyard above the unit. The patio of the yard above will project translucent light into the center of the home below.

The structure will be built of concrete, steel, and new lightweight epoxy cements that have been reinforced with new high-tensile fibers.

### Life on the Node

To achieve something similar to hill-town terraces, living units will be stacked and stair-stepped in groups of three. If our town is to attract residents, we will need to encourage a sense of extended neighborhood and community. This

Eden, in which an invisible intelligence discreetly provides what you need without messing up the beauty and humanity of your surroundings. But it isn't God; it's silicon and bits.

#### About the Author

William J. Mitchell is academic head of media arts and sciences at MIT and a professor of architecture.

He is the author, most recently, of *Placing Words, Symbols, Space, in the City*, as well as *Me++: The Cyborg Self and the Networked City*, and *e-topia: Urban Life, Jim—but Not as We Know It*, among numerous other titles, all of which are available from the MIT Press, Web site [www.mitpress.mit.edu](http://www.mitpress.mit.edu).



## Of Neighborhoods, Networks, and Nodes

By Douglas Rushkoff



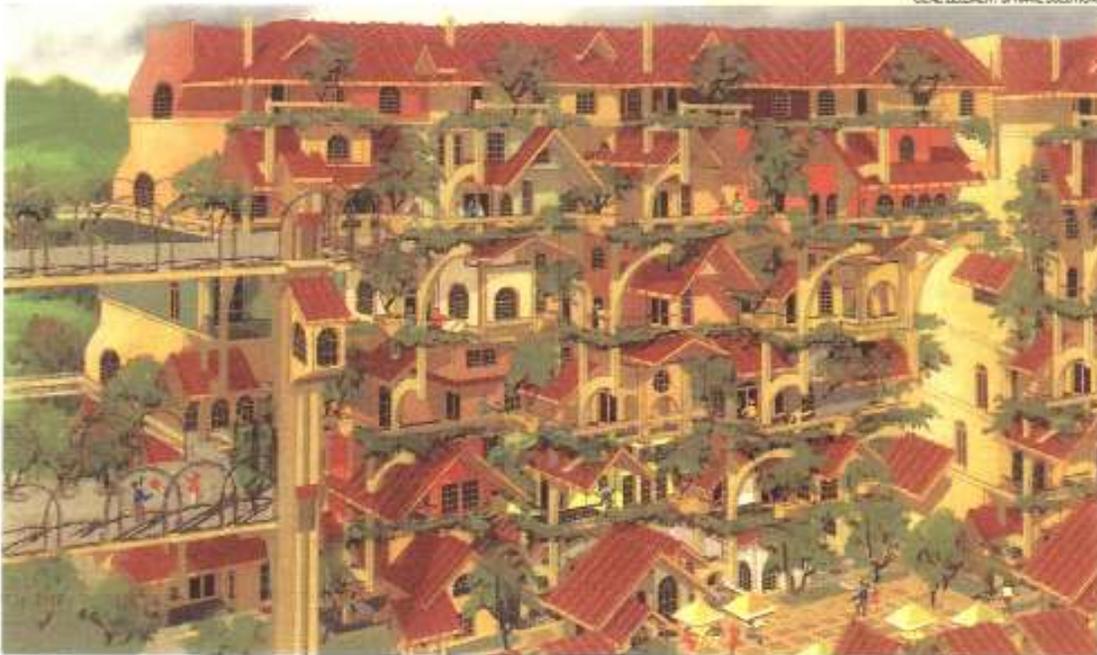
In the near future, habitat planners will be challenged by three main trends, all of which are in development today: environmental, physiological, and socio-spiritual.

Hurricane Katrina should remind us that sea levels will be continuing to rise as climate changes take effect. Populations will either move inland toward higher ground or develop coastal habitats that float like barges and rise with the tides. We'll also need to either steer urbanization clear of sunny regions or develop large systems of shades and covered walkways to protect people from all the ultraviolet radiation.

In the West, obesity and fertility treatments are already megasizing some populations, leading to a megasizing of public spaces. The multiple births resulting from advanced reproductive and fertility technologies have already led city planners in Brooklyn, New York, to widen park gates to permit double-wide strollers. Meanwhile, home architects regularly offer larger bathrooms, toilets, and tubs to meet the ever-growing needs of overeating Americans.

On the plus side, I think that architects will come to understand "universal access" as something much more than making a space available to the disabled. Universal access is, quite simply, good design. From properly sized doorknobs to intelligently designed elevator interfaces, universally accessible environments almost always benefit all users.

Appendix I. January/February 2006 The Futurist continued

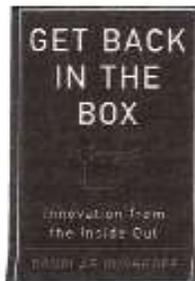


As our society moves into the “next renaissance,” we will exchange the meager rewards of individuality and competition for the great rewards of connection and collaboration. People will look for habitats that are more open to their neighborhoods. Instead of seeking out private fortresses on highly segregated plots, the community-oriented will look for neighborhoods that reflect the values of group cohesion.

Future habitats may reflect the values of the virtual spaces in which people are spending a great amount of time. Networks are defined much more by their connections than their nodes, which should translate into dwellings that are more porous. The more open to others they become, the more we’ll think of minimizing the insulation—both physical and psychological—they afford from the outer world. Instead, we’ll choose to make the outer world a more pleasant place to live. Habitats will provide the minimum shelter and protection required from an environment and a society decreasingly hostile to our survival.

**About the Author**

Douglas Rushkoff, best-selling media and culture writer, is the author most recently of a book about what he describes as the coming renaissance, *Get Back in the Box: Innovation from the Inside Out* (Harper Collins, 2005).



means we will have to:

- Arrange spaces so people will have an expansive view from their front porches.
- Facilitate security by enabling friends to look out for each other.
- Gather enough units together to financially support a block of shops, a local sidewalk café, or other places to visit at any time.
- Enable convenient access to the street in order to encourage participation.
- Create an arrangement that brings together front porches of the extended neighborhood to within a distance convenient for watching or waving to friends.
- Arrange so every home participates visually in its extended neighborhood.
- Provide an atmosphere where children can realize they are part of a neighborhood and a community.

**The Return of Main Street**

The space of each extended neighborhood is about the same size as the inside of the largest cathedrals in Europe, but much wider in the center and open to the sky. This space is only partially noticed from the street that passes through it. Street trees and shops with apartments will screen the home terraces from view.

Appendix I. January/February 2006 The Futurist continued



L. GENE ZELMER ARCHITECTS

The main street of our town will grow the community for the future. Shops will be refined over time to reinforce vitality. It's the kind of place where children can go anywhere freely with their own means of transportation: feet. Our town will provide a setting where they can have independence under the watchful eye of neighbors they know and who will enjoy watching them grow up. It is also a great place for seniors.

### A New Day Downs

Imagine we are in the future and have discovered this community that's only 300 years old. We are just entering the immediate neighborhood of our ideal home. It's in a small cluster of dwellings with each front porch overlooking a play area. We are in the play area. Children are motioning to a friend on an upper porch to come down. Three grandmothers are looking after the younger children. They've known each other since they were kids in this same neighborhood.

The town's permanent ageless concept and mature landscaping provide the opportunity for personal touches to enrich its character over hundreds of years.

Five hundred years later, future generations don't want to leave the town. The original structure now functions as a foundational platform for high-rise towers.

Looking out of front windows and stepping out onto porches, we get a warm feeling of friends nearby. The gentle transition of viewing, moving toward, and then entering the activities of Main Street becomes its own special form of recreation.

#### About the Author

L. Gene Zeltmer is an architect and planner who has received two awards from the American Institute of Architects. He is the author of *A Town Primarily for People* (Traford, 2003). His address is P.O. Box 1444, Carmel Valley, California 93924-1444. Telephone 631-659-4566; e-mail gzeltmer@redshift.com; Web site www.sprawl-solutions.com.

## Designing for Democracy

By Mitchell Gordon



Big-box retailers and shopping malls are increasingly obliterating the public roles of sidewalks and town squares. Most of these businesses forbid protests, petitioning, and other overtly political acts on their premises. The emphasis is on sales, not politics or community conferencing. Fewer places outside the home for local politics will translate into fewer places for local activists to recruit and inform. The freedom to assemble—a basic right—may not be as easily achievable as it once was.

Sprawl and private development, author Robert Putnam argues, make participation in politics a function of check writing rather than a commitment of time. Putnam mentions that membership in political clubs in the United States decreased by 50% over the past 20 years. Another 20-year study showed a 40% drop in the number of Americans attending even one public meeting on town or school affairs. The freedom to assemble is being eroded by designers who are leaving less real (as opposed to virtual) space for democracy to flourish.

This trend is compounded by the eroding of public space brought on by the onslaught of developers who believe that gated communities and privacy circumvent the need for public access to open space. Philadelphia's waterfront, for example, is becoming a battleground between those who wish to walk and bike along a grand expanse and those who wish to keep nonresidents out of their river walks.

The freedom to assemble could be more relevant if we did for public-interest groups and organizations what we did for food merchants—bring them under one roof. Think of a supermarket that served information and civic engagement rather than food. People may be willing to invest time in such groups if they can see four or five of them in an afternoon rather than going to one meeting at a time, with all the added inconvenience that that entails. Designing for democracy in this way would ensure that civic, nonprofit, and educational associations endure rather than fade away in the wake of television conglomerates.

Democracy cannot be confined to a small screen or ballot box; it needs physical space and real places for free association. Creating such public space needs to be a higher priority for suburban developers and regional planners.

#### About the Author

Mitchell Gordon is an urban planning journalist and a member of the World Future Society. Telephone 215-625-0670.

# The Santa Fe-ing of Civilization

By Joel Garreau



THE GARREAU GROUP

Human settlements are always shaped by whatever is the state-of-the-art transportation device of the time. Shoe-leather and donkeys at the time of Jesus resulted in Jerusalem; horse-drawn wagons and ocean-going vessels produced Boston; railroads yielded Chicago; automobiles, Los Angeles and Detroit; the jet passenger plane gave us modern-day Dallas, Houston, and Atlanta.

Add to this list of catalysts the networked computer, and what do you get? I think the answer is "the Santa Fe-ing of America." What we're seeing is the rise of places designed to facilitate face-to-face contact. These places are concentrated, like villages. But many are also dispersed far beyond our current definition of either urban or urbane. They arise wherever people find it nice to congregate.

This logic starts with the question, "Is there any future to cities of any kind in the twenty-first century?" Some would have us believe that with enough bandwidth we could each wind up on our own personal mountaintop in Montana, coming down to the flatlands only to breed. That's a preposterous view of human nature. We are social animals.

On the other hand, many of the historic reasons for human concentration are gone. You don't have to live within walking distance of your factory. Depending on your daily schedule you may not even need to be within driving distance of your office. You certainly don't need a metropolis for anything a dot-com is willing to sell—which is a very great deal and growing exponentially.

The one and only reason for congregation in the near future will be face-to-face contact. There are 87 classes of real estate that make up cities, according to William J. Mitchell. They are all being transformed. The only reason you need to go to a supermarket is face-to-face contact with your tomatoes. The only reason you need go to a campus is face-to-face contact with smart people. Sometimes, you don't even need jails, as demonstrated by Martha Stewart's ankle bracelet.

This makes sense. Humans will always default to whatever bandwidth does the job. Many times, phone calls are good enough. So are e-mails.

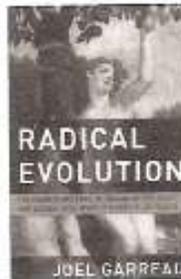
Yet, some activities require maximum connection to all senses: negotiating, trust building, falling in love, having fun—these seem to require face-to-face contact.

The people with lots of choices will get to these high-value, direct-contact places first, because they have either few needs or high resources. (Think of artists' lofts later colonized by high-rollers.) However, as the price of staying connected drops, the value of being someplace that is great for reasons that can't be digitized will rise.

Some of these eye-to-eye enclaves are embedded in urban tissue, like Greenwich Village, or Reston, Virginia. Others obviously are rising in places far beyond metropolitan areas, like the Gold Country of the Sierras or the Piedmont of North Carolina.

#### About the Author

Joel Garreau is a reporter for *The Washington Post* and is principal of The Garreau Group, [www.garreau.com](http://www.garreau.com). He is the author most recently of *Radical Evolution* (Doubleday, 2005), reviewed in the November-December 2005 issue of THE FUTURIST, as well as *Edge City: Life on the New Frontier* (Doubleday, 1991).



### FUTURIST UPDATE

Your Link to Tomorrow's World

*Futurist Update: News and Previews from the World Future Society* is a free electronic newsletter sent to all members who provide their e-mail address. Nonmembers are welcome to sign up too! There is no better way to experience the world of tomorrow—today. Recent editions of *Futurist Update* have covered a wide range of fascinating stories, including:

- Intensive fertilization of forests could slow global warming.
- Ethics education is increasingly popular at business schools worldwide.
- A new "predator and prey alert" system could nab cyberstalkers.

Here's what readers are saying about *Futurist Update*:

"Another great and useful issue. Thanks!"

"Way to go on your online newsletter. A true fan."

"I just wanted to let you know how impressed I am with the content of *Futurist Update*. I receive approximately 20 e-mail newsletters and yours certainly stands out."

"FABULOUS"

To subscribe, send an e-mail to [majordomo@wfs.org](mailto:majordomo@wfs.org) with "subscribe futurist-update" in the body of the message. *Futurist Update* is archived on the World Future Society's Web Site at [www.wfs.org/futuristupdate.htm](http://www.wfs.org/futuristupdate.htm).

# Building Creative The Role of Art and Culture

A leading authority on information technology argues that cities must nurture the creative potential and community engagement of their citizens.

By John M. Eger

Cities across the globe are struggling today to reinvent themselves for the postindustrial economy anticipated by sociologist Daniel Bell and others in the 1960s.

Many communities have been adapting their communications infrastructure to meet the needs of an age in which information is the most valuable commodity. Most of these initiatives, such as the U.S. National Information Infrastructure and Singapore's Intelligent Island, focus on the technological aspects of the postindustrial economy.

San Diego even commissioned a City of the Future committee in 1993 to make plans to build the first fiber-optic-wired city in the United States in the belief that, just as cities of the past were built along waterways, railroads, and interstate highways, the cities of the future will be built along "information highways"—wired and wireless information pathways connecting every home, office, school, and hospital and, through the World Wide Web, millions of other individuals and institutions around the world.

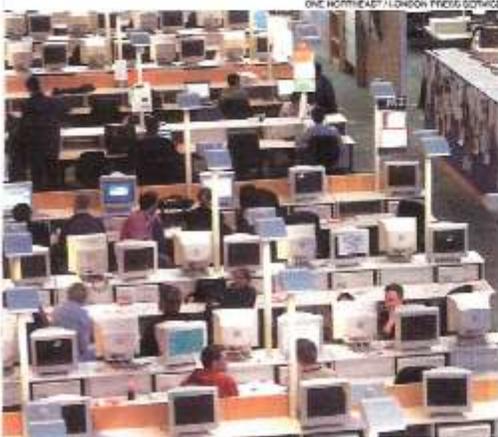
These new information infrastructures are undoubtedly important. But creating a twenty-first-century city is not so much a question of technology as it is of jobs, dollars, and

quality of life. A community's plan to reinvent itself for the new, knowledge-based economy and society therefore requires educating all its citizens about this new global revolution in the nature of work. To succeed, cities must prepare their citizens to take ownership of their communities and educate the next generation of leaders and workers to meet the new global challenges of what has now been termed the "Creative Economy."

At the heart of such an effort is recognition of the vital roles that art and culture play in enhancing economic development and, ultimately, defining a "creative community"—a community that exploits the vital linkages among art, culture, and commerce. Communities that consciously invest in these broader human and financial resources are at the very forefront in preparing their citizens to meet the challenges of the rapidly evolving, and now global, knowledge-based economy and society.

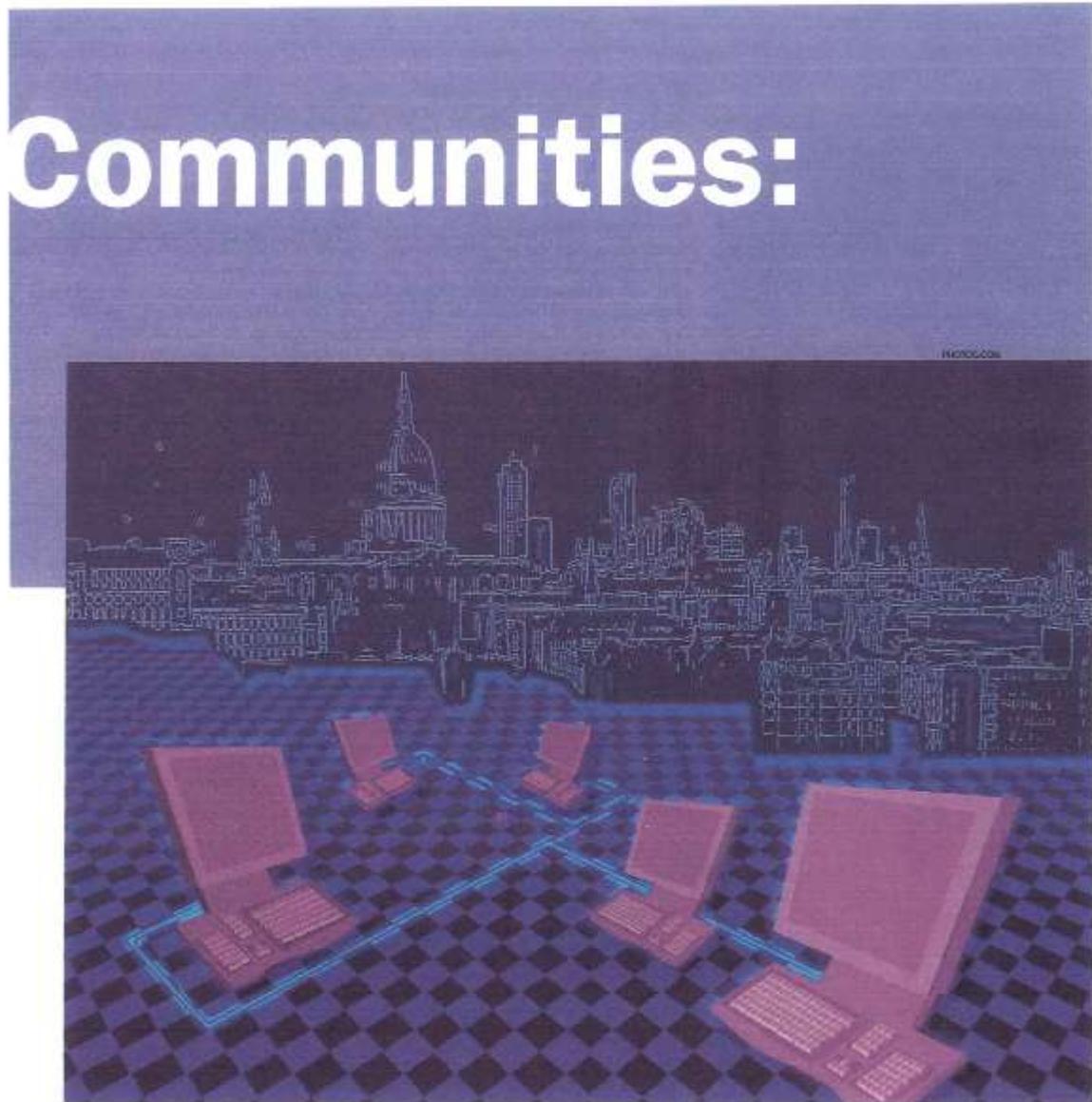
## Cyberspace and Cyberplace

The mammoth global network of computer systems collectively referred to as the Internet has blossomed from an obscure tool used by government researchers and aca-



**The Intelligent Community Forum recently selected the city of Sunderland, England, as one of the world's "top seven intelligent communities of 2005."** The Forum's judging was based on such factors as the availability of broadband infrastructure, the presence of a knowledge-based workforce, a communal focus on innovation, and a progressive social and political culture.

Appendix I. March/April 2006 The Futurist continued



**Cyberspace to cyberplace:** Communities in which citizens are connected and creative will become stronger and more vital in the Creative Economy.

demics into a worldwide mass communications medium. The Internet is now recognized as the leading carrier of all communications and financial transactions affecting life and work in the twenty-first century.

Internet usage statistics point to one billion users worldwide, with a growth rate of 15% per month. The World Wide Web, the Internet's most popular component, is being integrated into the marketing, information, and communications strategies of almost every major corporation, educational institution, charitable and political organization, community service agency, and government entity in the developed world. No

previous communications advance has been adopted by the public so widely so rapidly.

Many people are concerned about where this phenomenon ultimately will lead. Predictions range from electronic "virtual communities," in which individuals interact socially with like-minded Internet users around the world, to fully networked dwellings in which electronic devices and other appliances

**THE FUTURIST** March-April 2006 19

Appendix I. March/April 2006 The Futurist continued

respond to the spoken commands of residents.

In recent years, people habitually have referred to the domain in which Internet-based communications occur as *cyberspace*, an abstract communications space that exists both everywhere and nowhere. But until flesh-and-blood humans can be digitized into electronic pulses in the same way that computer scientists transform images and data, the denizens of cyberspace will have to continue living in some sort of real physical space—a home, a neighborhood, and a community.

Many communities, often without being directly conscious of it, are beginning to design the initial blueprints for the cyberplaces of the twenty-first century. As early as 1976, the French government launched an aggressive plan called *Télématique*, which sought to place computers on every desktop and in every residence in France. Singapore's Intelligent Island plan includes the world's first nationwide broadband network, Singapore ONE. Japan is working toward an electronic future known as *Teletopia*, with 150 municipalities transforming themselves into "cybercities" specializing in various industrial applications of information technology. Dubai has launched its Internet City, and Torino, Italy, has its *Infoville* initiative. In the United States in the mid-1990s, the Clinton administration unveiled the ambitious National Information Infrastructure initiative, with the goal of linking every school and school-age child to the Internet by the turn of the century.

The state of California in 1996 launched its statewide Smart Communities program, recognizing that electronic networks like these will play an increasingly important role in the economic competitiveness of its municipalities. The underlying premise of the California initiative is that smart communities are not, at their core, exercises in the deployment and use of technology, but rather active tools in the promotion

Many communities, often without being consciously aware of it, are already designing the initial blueprints for the "cyberplaces" of the twenty-first century.

of economic development, job growth, and higher living standards overall. In other words, technological propagation in smart communities is not an end in itself, but rather a means to a larger end with clear and compelling benefits for communities.

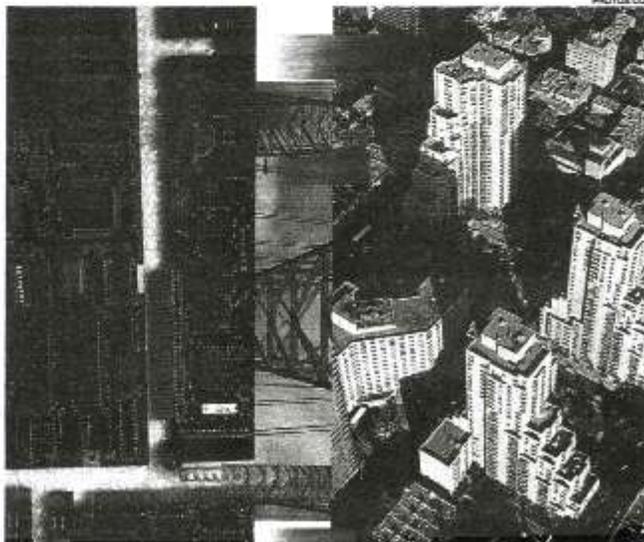
We have learned a great deal about the challenges that cities face in a new global "information economy," an economy based on something other than the production of goods and services or agriculture. Although these basic industries continue, the new economy relies on the production, use, and transfer of information and knowledge.

In fact, one distinct possibility is that cities of the future will not be cities in the usual sense, but rather powerful regional economies. Kenichi Ohmae, author of *The Borderless World* (1999), suggests we are witnessing the resurgence of the age-old concept of the city-state or, as he prefers, the "region-state." The new region-state has the power and authority to take ownership of its own future and establish a governing process reflecting a new model of government for the digital age.

Civic engagement and new civic "collaboratories" (collaborative projects and endeavors) will also be

needed to help reinvent our great cities to reclaim the sense of place and civic pride they once possessed, as well as to ensure that no one is left behind. In *The Magic of Dialogue: Transforming Conflict into Cooperation* (1999), Daniel Yankelovich argues that there is a "struggle between two one-sided visions of our future: the vision of the free market and the vision of the civil society." Citizens need to create the "social capital" that distinguishes their communities, and in the process close the gap between the electorate and those they elect, as Robert D. Putnam put it in his seminal work *Bowling Alone* (2000).

Cities of the future no doubt will be "creative communities" in the sense that they recognize art and culture as vital, not only to a region's livability, but also to the preparedness of its workforce. Future cities will understand that art-infused education is critical to producing the next generation of leaders and workers for the knowledge economy. While art, music, and all things cultural have been enjoyed and appreciated by every generation, there has often been an often unspoken assumption that they were nonessential, even frills. Today, the demand



## Appendix I. March/April 2006 The Futurist continued

for creativity has outpaced the ability of most nations to produce enough workers simply to meet their needs.

### Jobs in the Creative Age

Worrying about the lack of qualified workers in this day and age may sound odd. With the globalization of media and markets in full bloom, America, for example, is beginning to see the outlines of yet another out-migration of jobs, unleashing new concerns about rising unemployment. Many economists are alarmed that the latest round of losses, unlike the earlier shift of manufacturing jobs to Taiwan and less-developed East Asian countries, will have a dramatic impact on America's wealth and well-being.

Twenty years ago, it was fashionable to blame foreign competition and cheap labor markets abroad for the loss of U.S. manufacturing jobs, but the pain of the loss was softened by the emergence of a new services industry. Now that the service sector has also widely automated itself, banking, insurance, and telecommunications firms are eliminating layers of management and infrastructure. The traditional corporate pyramid is disappearing, replaced by highly skilled professional work teams. State-of-the-art software and telecommunications technologies now enable any kind of enterprise to maximize efficiency and productivity by employing foreign workers wherever they are located, making the service-sector jobs even more precious. Forrester Research Inc., a market-research firm, estimates that some 3.3 million service jobs will move out of the United States over the next 10 to 15 years. Others put that number at 15 million and say the results will be devastating for the U.S. economy.

While CEOs, economists, and politicians are telling us that these are short-term adjustments, it is clear that the pervasive spread of the Internet, digitization, and the availability of white-collar skills abroad mean potentially huge cost savings for global corporations. Consequently, this shift of high-tech service jobs will be a permanent feature

of economic life in the twenty-first century—but this does not necessarily mean the news is all bad for workers in the United States and other developed countries.

Some economists believe that globalization and digitization will improve the profits and efficiency of American corporations and set the stage for the next big growth-generating breakthrough. But what will that be?

A number of think tanks, including Japan's Nomura Research Institute, argue that the elements are in place for the advance of the Creative Age, a period in which free, democratic nations thrive and prosper because of their tolerance for dissent, respect for individual enterprise, freedom of expression, and recognition that innovation, not mass production of low-value goods and services, is the driving force for the new economy.

The new economy's demand for creativity has manifested itself in the emergence and growth of what author Richard Florida has termed the Creative Class. Although Florida defines this demographic group very broadly, he does a convincing job of underscoring the facts of life and work in the new knowledge economy. As he points out, "every aspect and every manifestation of creativity—cultural, technological, and economic—is inextricably linked."

By tracking certain migration patterns and trends, Florida did a huge service for those struggling to redefine their communities for the new knowledge economy. However, many questions remain. Can the community, through public art or cultural offerings, enhance the creativity of its citizens? And if the new economy so desperately demands the creative worker and leader, what should schools and universities do to prepare the next generation of creative people?

### Recent U.S. Initiatives

U.S. investing in the arts themselves is already a \$134 billion industry, according to the Washington, D.C., based advocacy organization Americans for the Arts. But the real benefit is that the arts are "a potent

RODRIK S. LEVINE/PHOTOGRAPHER SHOWCASE, NEWSCOM



Students at the Kipp Star elementary charter school in New York, New York, hone their music-making abilities. The Kipp Star charter schools are run by the U.S. Department of Education within the public school system.

source for economic development," according to a report by the National Governors Association. NGA credits Philadelphia, Newark, and Charleston, South Carolina, as cities that "have used the creation of arts districts as centerpieces in efforts to combat increasing crime and suburban flight by restoring vitality to downtown areas."

The governors' report vividly showed that arts funding reliably generates positive revenue. For example, Virginia collected \$849 million in arts-related revenue in 2000. That year, more than 245,000 arts-based jobs were created in the six states of New England. Michigan earned a tenfold return for every dollar invested in the Council for Arts and Cultural Affairs.

In the last three years, the Los Angeles County Board of Supervisors has developed Arts for All—a Regional Blueprint for Arts Education. The program's objective is for every public-school student in the county to receive an effective K-12 education, of which the arts are an important component. Under this plan, each school district will acknowledge that exposure to and

Appendix I. March/April 2006 The Futurist continued

participation in the arts strengthens a child's academic development and growth as an individual, prepares the child to feel a part of and make a positive contribution to the community, and ensures a creative and competitive workforce to meet the economic opportunities in both the present and the future. Thus, sequential instruction in multiple arts disciplines will be scheduled into each school day and accounted for in the budget of every Los Angeles County school district.

I first realized that we were doing something fundamentally wrong in K-12 education when I was asked to chair California's then governor Pete Wilson's Commission on Information Technology in 1996. About the same time, the governor had a subcommittee on education technology, which I also chaired. Participating in that effort were such luminaries as one of the founders of the personal computer industry, Alan Kay; Larry Ellison, founder and chairman of Oracle Corporation; Joanne Kosburg, former president of Californians for the Arts and secretary of state and consumer affairs under Wilson; and Jeff Berg, chairman and CEO of International Creative Management Inc.

Early on in our deliberations Larry Ellison suggested our goal should be "to put a personal computer in the backpack of every K-12 student by the year 2001." It was a big, startling idea and captured everyone's attention regarding the enormity of our task. California in 1996 was about fiftieth among the 50 states in computers per pupil.

But Alan Kay shouted across the room, "Would you give five pencils to a school, Larry?" The computer, Alan argued, was nothing more than a pencil. What about the paper, he asked, and more importantly, what about the ideas that must come when we ask the student to put pencil to paper? Our challenge, he said, was to better understand how students learn, what they needed to learn to survive and succeed in today's knowledge economy, and what our teachers in private and public learning institutions were doing about it.

Later that year I was asked to meet

with a senior vice president of the Los Angeles based Alliance of Motion Picture and Television Producers, who were asking Governor Wilson to declare a "state of emergency" to help Hollywood find digital artists. Silicon Valley, we learned, also wanted the governor to lobby Washington for more foreign visas for the same reason. There were

**"Arts initiatives will be the hallmarks of the most-successful schools and universities and, in turn, the most-successful and vibrant twenty-first-century cities and regions."**

people aplenty who were computer literate, they claimed, but could not draw. In the new economy, they argued, artistic talents are vital to all industries dependent upon the marriage of computers and telecommunications.

Sadly, we discovered that art and music had been cut out of most California schools over 20 years ago in our zeal to be number one in the world in math and science. At the time this decision was made, the United States was about eleventh in the world, according to the Organization for Economic Cooperation and Development. Now, the United States ranks about twenty-fourth in the world while Singapore, Sweden, Denmark, and Finland are in the top 10, in part because they have found a way to underscore the linkages between music and math, art and science.

One institution working to prepare its students for the challenges of the new millennium and the information age is the University of California at San Diego's Sixth College. The new college's themes are art, culture, and technology. Students will study the progress of the human species and its varied cultures and will explore watershed events in history in which art, culture, and technology converged. Provost Gabrielle Weinhausen has noted that the rediscovery of perspective during the Renaissance enabled architects and artists to collaborate on the creation of maps. The

key to studying events like that, Weinhausen says, is learning how to ask the questions that illustrate relationships and patterns.

Until recently, there has been only limited evidence of the connection between education and appreciation of the arts and success in the post-industrial age of information. But now it is becoming increasingly apparent that arts initiatives will be the hallmarks of the most-successful schools and universities and, in turn, the most-successful and vibrant twenty-first-century cities and regions. One key to this vision is that we must acknowledge the current out-migration of high-tech jobs as a challenge to the status quo. As former Hewlett-Packard CEO Carly Fiorina told a panel of governors a short time ago, "Keep your tax incentives and highway interchanges; we will go where the highly skilled people are."

Those communities placing a premium on cultural, ethnic, and artistic diversity, and reinventing their knowledge factories for the creative age, will likely burst with creativity and entrepreneurial fervor. These are the ingredients so essential to developing and attracting the bright and creative people to generate new patents and inventions, innovative world-class products and services, and the finance and marketing plans to support them. Nothing less will ensure a city's economic, social, and political viability in the twenty-first century. □



**About the Author**

John M. Eger is executive director of the International Center for Communications at San Diego State University and holds the Van Deere Chair of Communication and Public Policy. He has served as a planning expert for CBS Broadcast International and as a director of the White House Office of Telecommunications Policy. His address is International Center for Communication, San Diego State University, 5500 Campanile Drive, PFSA 160, San Diego, California 92182. Telephone 619-594-6910; e-mail jejer@mail.sdsu.edu.

**FEEDBACK:** Send your comments about this article to letters@wfs.org.

Appendix 2. Appraisal Report Red Cove 1 of 31

**APPRAISAL REPORT**

**40 ACRES  
CEDAR CANYON/COAL CREEK  
CEDAR CITY, UTAH**

Effective date  
12-1-2004

FOR

H Roico Nelson, Jr  
P.O. Box 382  
Barker, Texas 77413-0382

BY  
BRADFORD C. SCHMUTZ  
Certified General Appraiser

Appendix 2. Appraisal Report Red Cove 2 of 31

444 South Main, Suite C-4  
Cedar City, UT 84720  
(435) 586-2212  
Fax (435) 586-8076

## Realty Appraisal Service

*Bradford C. Schmutz, Certified Appraiser*

12-10-04

Mr. Roice Nelson  
P.O. Box 382  
Barker, Texas 77413-0382

Dear, Mr Nelson

Re: 40 Acres of Property  
Cedar Canyon  
Cedar City, Utah

I have inspected the above referenced property for the purpose of estimating the market value as of December 1, 2004. I hereby submit the following report with the outlined assumptions and limiting conditions. The property was inspected as of the date of the appraisal. The report contains the information used in arriving at a market value for the subject property. The valuation in this report is for the fee simple interest in the property. The property is located at the mouth of Cedar Canyon just east of Cedar City and south of Coal Creek. Details are contained within the report.

Based on my findings and analysis my opinion of the market value of the subject property as of December 1, 2004 is:

\$ 200,000.00

TWO HUNDRED THOUSAND DOLLARS

**SUBJECT TO AVAILABLE TO UTILITIES BEING AVAILABLE**

I appreciate the opportunity of providing this appraisal report for you. I have made an effort to make a complete study of the subject property and the current real estate market so that an accurate estimate of the market value of the property could be made.

Sincerely,

  
Bradford C. Schmutz  
Certified General Appraiser

Appendix 2. Appraisal Report Red Cove 3 of 31

12-10-04

Mr. Roice Nelson  
P.O. Box 382  
Barker, Texas 77413-0382

Dear, Mr Nelson

Re: 40 Acres of Property  
Cedar Canyon  
Cedar City, Utah

I have inspected the above referenced property for the purpose of estimating the market value as of December 1, 2004. I hereby submit the following report with the outlined assumptions and limiting conditions. The property was inspected as of the date of the appraisal. The report contains the information used in arriving at a market value for the subject property. The valuation in this report is for the fee simple interest in the property. The property is located at the mouth of Cedar Canyon just east of Cedar City and south of Coal Creek. Details are contained within the report.

Based on my findings and analysis my opinion of the market value of the subject property as of December 1, 2004 is:

⊥ 200,000.00

TWO HUNDRED THOUSAND DOLLARS

**SUBJECT TO AVAILABLE TO UTILITIES BEING AVAILABLE**

I appreciate the opportunity of providing this appraisal report for you. I have made an effort to make a complete study of the subject property and the current real estate market so that an accurate estimate of the market value of the property could be made.

Sincerely,

Bradford C. Schmutz  
Certified General Appraiser

Appendix 2. Appraisal Report Red Cove 4 of 31

**SUMMARY AND CONCLUSIONS**

Type of Property:	Vacant land
Identification:	40 Acres Cedar Canyon and Coal Creek
Purpose of Appraisal:	To establish an opinion of the market value
Effective Date:	December 1, 2004
Estate Appraised:	Fee Simple Absolute
Zoning:	A-20-H Agricultural Hillside
Highest and Best Use:	Vacant
Land Size:	40 Acres
Improvements:	No improvements are valued in this appraisal.
Legal Description:	See attached descriptions and map.
Value estimate:	<b>\$ 200,000.00 (SUBJECT TO UTILITIES AVAILABLE)</b>

Appendix 2. Appraisal Report Red Cove 5 of 31

**SCOPE OF THE APPRAISAL**

The scope of the appraisal means the extent of the process of collection, confirmation and reporting of the data and the conclusions.

This report includes a site inspection and description with an analysis of zoning, neighborhood conditions, highest and best use, comparable sales information, replacement cost and depreciation factors for improvements if applicable, income potential was considered and a final value conclusion made based on current market conditions and a normal marketing time.

Diligent efforts have been made to research, analyze and include in the appraisal, the market information from which a reasonable value estimate can be made. I have made an effort to obtain all the factual market data available upon which to base the conclusions contained within this report.

It should be recognized that Utah is a non-disclosure state. This means that it is not possible to complete verification of a sales transaction by public records. We are compelled to rely on the information supplied by individuals who claim to have knowledge of the sale. We cannot warrant that every available sale has been cited due to the lack of public disclosure.

This report has been prepared so as to be in compliance with the reporting requirements established by FIRREA, USPAP and the Appraisal Institute.

Appendix 2. Appraisal Report Red Cove 6 of 31

CERTIFICATION

I certify that, to the best of my knowledge and belief:

The statements of fact contained in this report are true and correct.

The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions and conclusions.

I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.

My compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event, including the approval of a loan.

My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with USPAP, FIRREA and the code of professional ethics of the Appraisal Institute.

I have made a personal inspection of the property that is the subject of this report, unless otherwise stated.

No one provided significant professional assistance to the persons signing this report.

My license as a certified appraiser has not been revoked, suspended, canceled or restricted.

  
Bradford C. Schmutz  
Utah State Certified General Appraiser  
Certificate CG37326 Expires 7-31-05

12-30-04  
Date

Appendix 2. Appraisal Report Red Cove 7 of 31

**DEFINITIONS**

**MARKET VALUE**

The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby: (1) buyer and seller are typically motivated; (2) both parties are well informed or well advised, and each acting in what he considers his own best interest; (3) a reasonable time is allowed for exposure in the open market; (4) payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and (5) the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

**FEE SIMPLE INTEREST**

"An absolute fee; a fee without limitations to any particular class of heirs or restrictions, but subject to the limitations of eminent domain, escheat, police power and taxation. An inheritable estate."

**HIGHEST AND BEST USE**

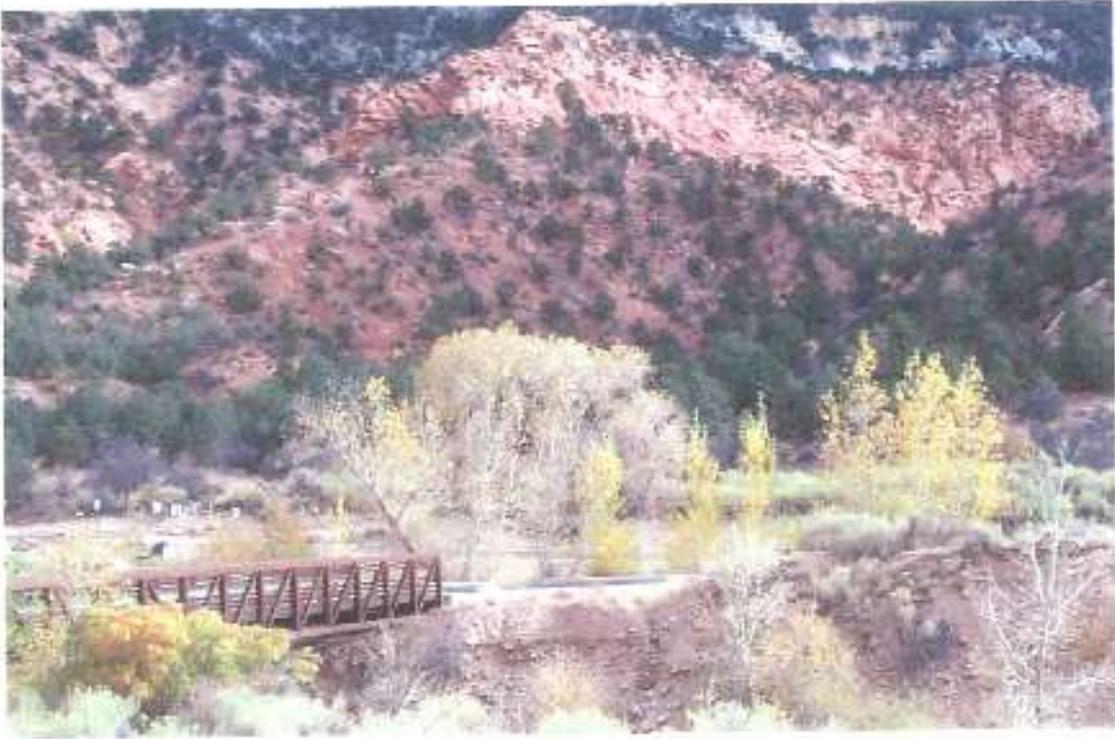
That reasonable and probable use that will support the highest present value, as defined, as of the effective date of the appraisal.

Alternatively, that use, from among reasonable, probable and legal alternative uses, found to be physically possible, appropriately supported, financially feasible and which results in the highest land value.

In estimating highest and best use, there are essentially four stages of analysis:

1. Possible Use- to what uses is it physically possible to put the site.
2. Permissible Use- what uses are permitted by zoning, law and deed restrictions on the site.
3. Feasible Use- which possible and permissible uses will produce the a net return to the owner of the site.
4. Highest and Best Use- among the feasible uses, which use will produce the highest net return or the highest present land worth.

Appendix 2. Appraisal Report Red Cove 8 of 31

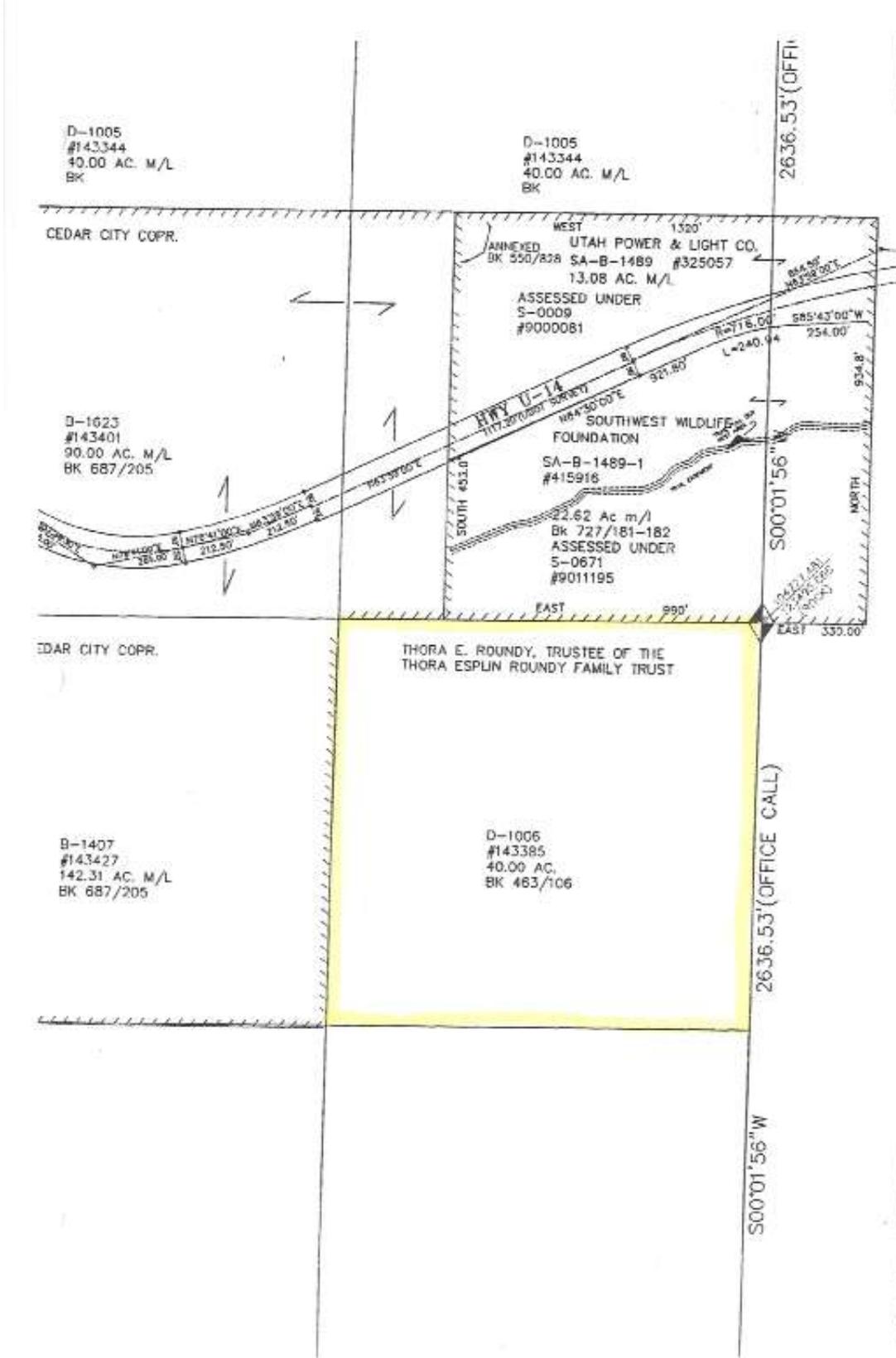


Appendix 2. Appraisal Report Red Cove 9 of 31





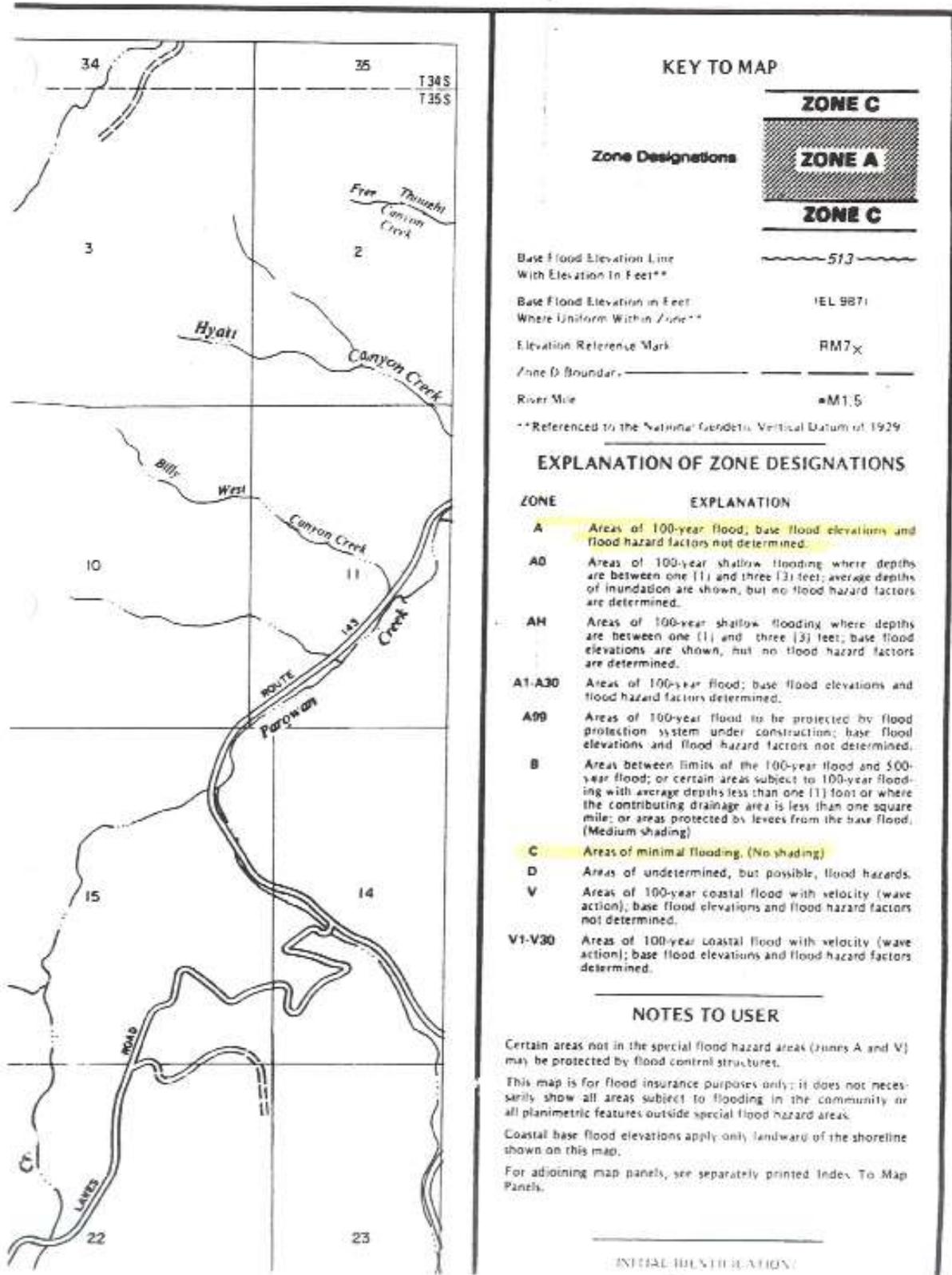
Appendix 2. Appraisal Report Red Cove 11 of 31



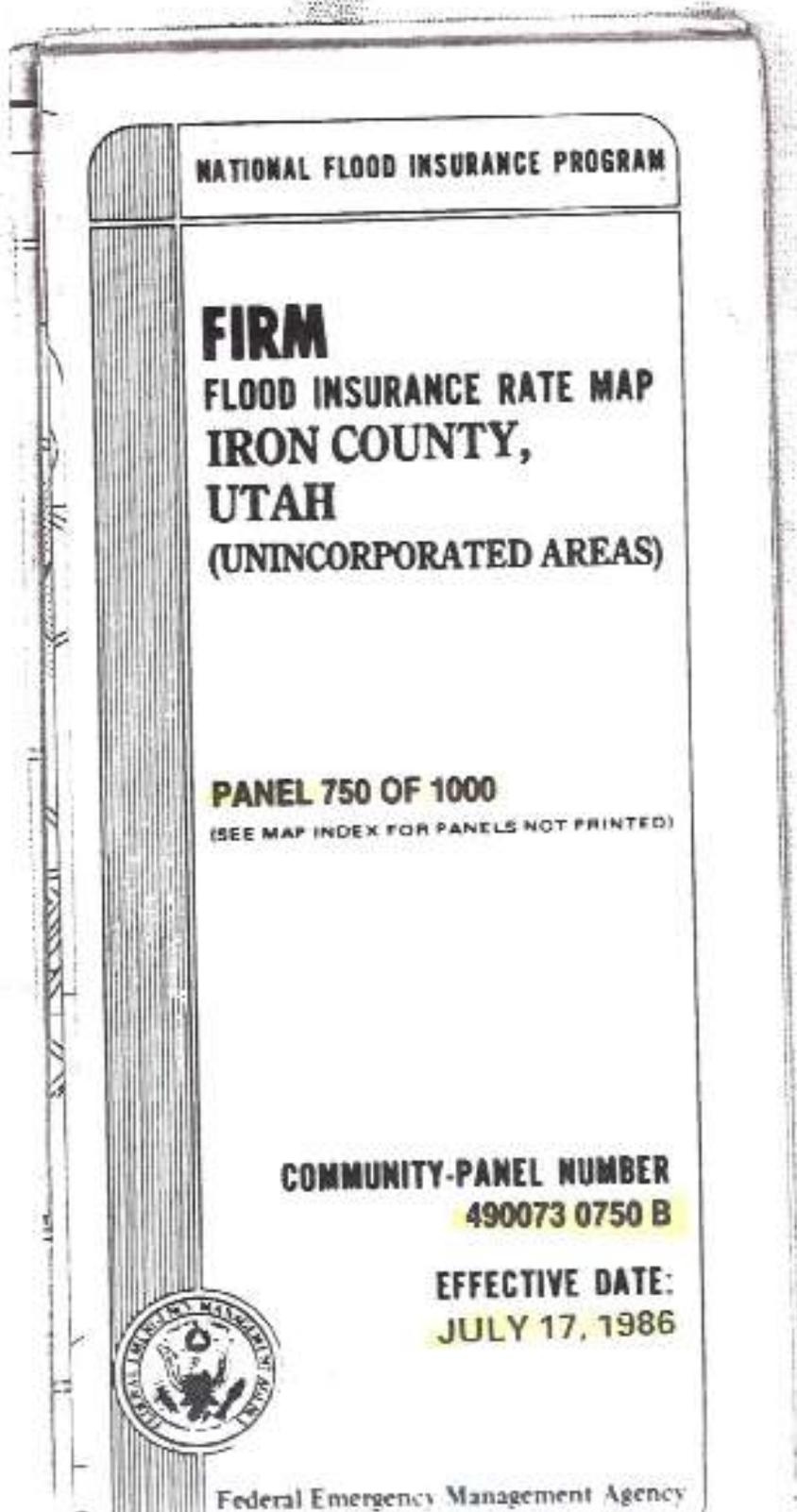
Appendix 2. Appraisal Report Red Cove 12 of 31



Appendix 2. Appraisal Report Red Cove 13 of 31



Appendix 2. Appraisal Report Red Cove 14 of 31



Appendix 2. Appraisal Report Red Cove 15 of 31

**SALES COMPARISON APPROACH TO VALUE**

In valuing any real estate, the method most often utilized, and sometimes considered to be the most reliable is the direct sales comparison approach, sometimes referred to as the market approach to value. This involves investigation of recent sales of similar type properties and comparing them with the subject of the appraisal to arrive at an estimate of value. This approach is based on the proposition that an informed purchaser would pay no more for a property than the cost of acquiring an existing property with similar characteristics and utility.

This approach to value is based upon the principle of substitution which states that an informed purchaser would pay no more for a property than the cost to him of acquiring an existing property with the same utility, assuming no costly delay in making the substitution. This approach entails a comparison of the subject property with other sales of similar type properties. Adjustments are then made to make allowances for the differences in the properties which would be representative of the differences a buyer would consider in the market place.

A search of similar type properties as the subject was made for the purposes of this appraisal. The investigation indicates that there are no properties that have sold with exactly the same characteristics due to the specific nature of the subject property. There are some sales indicated below that represent vacant land near development and assist in the analysis of the subject property and help to determine an estimate of market value.

Appendix 2. Appraisal Report Red Cove 16 of 31

**COMPARABLE SALES -- VACANT LAND**

**Sale #1**

Seller: Turner family  
Buyer: Undisclosed  
Date: 2-29-00  
Location: I-15 & Coal Creek  
Size: 40.49 acres  
Price: \$650,000 or \$ 16,053 per acre.  
Terms: Cash to Seller

This property was purchased for development into a high density residential subdivision.

**Sale #2**

Seller: Curtis DeMille  
Buyer: Undisclosed  
Date: July 15, 2000  
Location: South of Cedar City  
Size: 6.7 acres  
Price: \$ 100,000 or \$ 14,925 per acre.  
Terms: Cash  
Utilities: None

This property was purchased for future development into commercial use.

**Sale #3**

Seller: Undisclosed  
Buyer: Academy at Cedar Mountain  
Date: 11-2000  
Location: South of Cedar City  
Size: 30 Acres  
Price: \$ 510,000 or \$ 17,000 per acre  
Terms: Owner Financing  
Utilities: None

Purchased for development into a residential and school.

**Sale #4**

Seller: Detamonte  
Buyer: Roundy  
Date: 3-02  
Location: Subject property  
Size: 40 Acres  
Price: \$ 15,000 or \$ 375 per acre  
Terms: Cash  
Water: None

Red Cove Investment Description

Appendix 2. Appraisal Report Red Cove 17 of 31

**Sale #5**

Seller: Jones Land and Livestock  
Buyer: Ainsworth Family Trust  
Date: 3-20-97  
Location: Section 8 T 36 S R 11 West  
Size: 29.84 Acres  
Price: \$ 298,400 or \$ 10,000 per acre  
Terms: Cash  
Water: None

This property was purchased for investment.

**Sale #6**

Seller: Keith Smith  
Buyer: Steve Sevy  
Date: Fall 2000  
Location: West Highway 56  
Size: 125 Acres  
Price: \$ 500,000 or \$ 4,000 per acre  
Terms: Cash to Seller  
Water: Full Water Right  
Comment: Purchased for farm land & future development

**Sale #7**

Seller: Jones  
Buyer: MLS #16138  
Date: 8-19-02  
Location: Westview Drive  
Size: 1.18 Acre  
Price: \$ 18,750 or apx \$ 16,000 per acre  
Terms: Owner contract  
Comment: Purchased for investment.

**Sale #8**

Seller: Southern Utah University  
Buyer: Longview Fiber  
Date: 12-20-94  
Location: Adjacent to the subject West.  
Size: 21.57 Acres  
Price: \$ 250,000 or \$ 11,590 per acre  
Terms: Cash  
Comment: Purchased to construct manufacturing plant.

Red Cove Investment Description

Appendix 2. Appraisal Report Red Cove 18 of 31

Sale #9  
Seller: State Trust Lands  
Buyer: Cerro Copper  
Date: 6-14-00  
Location: 888 N 5300 West  
Size: 58.95 Acres  
Price: \$ 7,500 per acre with \$ 2,500 per acre concession  
net \$ 5,000 per acre.  
Terms: Cash to seller  
Comment: Purchased for manufacturing plant.

Sale #10  
Seller: Western Properties  
Buyer: Cedar City Corp  
Date: 4-18-03  
Location: Sec 9 T36SR11W  
Size: 8.81 Acres  
Price: \$ 88,127 or \$ 10,000 per acre  
Terms: Cash to Seller  
Comment: This was purchased to install a railroad spur.

Sale #11  
Seller: Bauer Family  
Buyer: Meisner  
Date: 2-04  
Location: 4200 West Highway 56  
Size: 26 Acres  
Price: \$ 520,000.00 or \$ 20,000 per acre  
Terms: Cash  
Comment: Purchased to expand residential development

Sale #12  
Seller: Jones  
Buyer: MLS #16139  
Date: 9-1-03  
Location: Westview Drive  
Size: 3.08 Acres  
Price: \$ 26,900 or \$ 8,734 per acre  
Terms: Conventional

Sale #13  
Seller: Bulloch Brothers  
Buyer: Travis Batty  
Date: 4-28-04  
Size: 40 Acres  
Location: Base of Square Mountain  
Price: \$ 80,000 or \$ 2,000 per acre  
Terms: Cash

Red Cove Investment Description

Appendix 2. Appraisal Report Red Cove 19 of 31

**Sale #14**

Seller: Voss  
 Buyer: MLS #17449  
 Date: 8-31-04  
 Size: 40 Acres  
 Location: Quitchipa area  
 Price: \$ 200,000 or \$ 5,000 per acre  
 Terms: Undisclosed  
 Comments: Included well with 3 acre feet of underground water rights and a perimeter fence.

**Summary**

Sale #1	2-00	\$ 16,053 per acre	40.49 acres	Cedar City
Sale #2	7-00	\$ 14,925 per acre	6.7 acres	Cedar City
Sale #3	11-00	\$ 17,000 per acre	30 acres	Cedar City
Sale #4	6-00	\$ 9,000 per acre	2 acres	Cedar City
Sale #5	3-97	\$ 10,000 per acre	29.84 acres	Cedar City
Sale #6	9-00	\$ 4,000 per acre	125 acres	Cedar City
Sale # 7	8-02	\$ 16,000 per acre	1.18 acres	Cedar City
Sale #8	12-94	\$ 11,590 per acre	21.57 acres	Cedar City
Sale #9	6-00	\$ 7,500 per acre	58.95 acres	Cedar City
Sale #10	4-03	\$ 10,000 per acre	8.81 acres	Cedar City
Sale #11	2-04	\$ 20,000 per acre	26 acres	Cedar City
Sale #12	9-03	\$ 8,734 per acre	3.08 acres	Cedar City
Sale #13	4-04	\$ 2,000 per acre	40 acres	Cedar City
Sale #14	8-04	\$ 5,000 per acre	40 acres	Cedar City

Appendix 2. Appraisal Report Red Cove 20 of 31

**REASONING AND CONCLUSION OF COMPARABLE SALES DATA**

The sales above are all relevant in the evaluation of property values relating to the subject parcel. Sales indicate a value for the property similar to the subject ranging from \$ 2,000 to \$ 20,000 per acre. This is a fairly wide range of value. The most similar sales to the subject property indicate a value from \$ 2,000 to \$ 5,000 per acre. The individual characteristics of the subject property that influence the value are the potential for development and more critical the access and availability of utilities ie: water and septic or sewer. These are unknown factors at this point however and unless assured the higher end of the range of value is probably out of reach. The subject property does have some potential but it is limited by the unknowns at this time. The most similar sale is perhaps the last two sales and they are at \$ 2,000 and \$ 5,000 per acre. The last sale did have an existing well with three acre feet of water rights.

Appendix 2. Appraisal Report Red Cove 21 of 31

**COST APPROACH TO VALUE**

The cost approach to value involves calculation of the cost new of the improvements to the subject property and then adding the value of the real estate to form an opinion of the final value estimate. Applicable depreciation is applied to the cost new of the improvements to reflect their current condition. This approach is based on the assumption that an informed buyer will pay no more for an improved property than the cost of producing a substitute property of equal desirability and utility. The steps involved in the cost approach are as follows:

- 1: Estimate the replacement cost of the improvements.
- 2: Estimate the accrued depreciation in terms of physical deterioration, functional obsolescence and economic or locational obsolescence.
- 3: Subtract all depreciation from the cost of the improvements, giving the current value of the improvements.
- 4: Add the site value to the current value of the improvements.

To estimate the replacement cost new, the Marshall Valuation Service is referred to as well as discussion with local contractors. The appraisers judgment factors in the equation as to the quality of construction and the remaining economic life for depreciation calculations. Each property is considered on it's own merits. The Cost approach does not always apply to a property. If there are no improvements then of course there is no basis for using the cost approach to value, such as in the case of an appraisal on raw land or unimproved real estate. This is the case with the subject and so the cost approach cannot be used in the valuation process for the subject property.

Appendix 2. Appraisal Report Red Cove 22 of 31

**INCOME APPROACH TO VALUE**

The income approach to value is based on the premise that the value of the real estate is equal to the present worth of the anticipated future benefits or the income to be derived from the ownership rights in that real estate. An investor purchasing income producing real estate is in effect trading present dollars for anticipated future income.

The income approach to value views the subject through the eyes of a typical investor and how the income stream of the subject property could be sold in the market. The income approach converts the anticipated future benefits, dollar income or amenities to be derived from the ownership in to a present net worth value. This process is accomplished by using a discounted cash flow or by using a capitalization rate applied to the income of the subject property.

The net operation income, which is the income the property is expected to produce during the time the investor owns the property is converted to an indication of value through this capitalization process. The value is the amount which an informed purchaser or investor would pay for the income over the period specified.

The cap rate is derived from other similar properties that have sold in the marketplace. It is a function of income and return of and on the moneys invested by the owner of the respective properties.

There is not any income produced by the subject property and so the income approach to value is deemed to be not applicable to the subject property.

Appendix 2. Appraisal Report Red Cove 23 of 31

**FINAL VALUATION OF THE SUBJECT PROPERTY**

The subject property has been evaluated with the current market conditions in mind and based on the comparable sales information. In addition to the sales of acreage quoted above I have considered sales of one to 20 acre residential building sites when forming an opinion of value for the subject property. Due to the steep elevations of the subject property and current zoning the residential potential is only there for two home sites. As the highest and best use for the subject property is for residential use I have considered the subject used as one or two potential building sites for custom residential homes. Currently in the Cedar City area custom residential home building lots run from \$ 40,000 up to \$ 150,000 each. Examples of this are the Cross Hollow Hills Subdivision and the Cedar Highlands Subdivision. These sites are one to five acres in size and sell from \$ 50,000 up to \$ 150,000 for each building site. These sites have good street access and utilities stubbed to the site including water, power, phone and some have natural gas. The subject does not have these amenities yet. If water and power were available to the subject property the subject parcel would be similar to the residential sites mentioned here. The current zoning would only allow for two building sites and each site would support a value of \$ 100,000 for a total value for the subject of \$ 200,000. This is a value of \$ 5,000 per acre and this is within the supported value range. If no utilities are available in the way of water and power then the subject property would not support this value. Water could be from two sources. A connection to Cedar City municipal water system, which would require the property to be annexed or from a private well which would require the purchase of water rights and approval to drill a water well from the State Engineers office. Power is nearby and would probably only require an extending the line to the subject site. A survey may even indicate that the existing power line runs across the subject property. In any case the subject property value at \$ 200,000 is based on the hypothetical conditions and extraordinary assumptions that the subject site would have water and power available and legal access to allow for residential use. If these conditions and assumptions are not possible then the value of the subject property would be substantially reduced. It is therefore my opinion that the subject property has a market value as of December 1, 2004 of \$ 5,000 per acre for a total value of \$ 200,000 subject to the conditions and assumptions outlined in this paragraph above.

40 acres @ \$ 5,000 = \$ 200,000.00

**TWO HUNDRED THOUSAND DOLLARS**

Appendix 2. Appraisal Report Red Cove 24 of 31

**VALUATION PROCESS**

The valuation process in an appraisal of real estate is accomplished by following certain steps and applying the facts and conclusions to the subject property. Normally the valuation process is used to arrive at what is considered to be market value for the subject property. The ultimate goal of the valuation process is to arrive at a well supported conclusion of value for the subject property which will be well supported by the findings of the appraiser concerning all factors that influence the market value of the property being appraised. To arrive at this conclusion the appraiser studies the subject property from three different viewpoints, which correspond to the three traditional approaches to value. These approaches to value are as follows.

1. The value indicated by recent sales of comparable properties in the market--known as the direct sales comparison or market approach.
2. The current cost of reproducing or replacing the improvements, minus the loss in value from depreciation, plus the land value--known as the cost approach.
3. The value of a property's earning power based on the capitalization of it's income--known as the income capitalization approach.

These three approaches to value are interrelated and each involves gathering information from the market and the analysis of data relating to the subject of the appraisal. One or more of the approaches may be less significant or not applicable to a particular parcel being appraised due to the specific nature of the parcel or the data available. For example, in many cases when an appraisal is done on vacant land the only approach to value applicable would be the direct sales comparison approach to value as there are no improvements to use the cost approach and the land may not be useable to command an income from rental of the vacant parcel to produce income and thus use the income approach.

To complete the appraisal valuation process the appraiser integrates the information obtained from the research and analysis of the data in the market place and forms an opinion or conclusion of the value of the subject of the appraisal using each of the applicable approaches to value. These conclusions are then analyzed and represented as a single estimate of value. The effective integration of each of these elements to form an accurate opinion of value depends on the appraisers skill, experience and judgment. To this end we have arrived at the findings contained in this report.

Appendix 2. Appraisal Report Red Cove 25 of 31

**ZONING**

The property is zoned A-20 H for agricultural hillside overlay with a 20 acre minimum for any residential building. The subject conforms to this zoning and I did not observe any illegal uses in the neighborhood.

**SALES HISTORY OF THE SUBJECT PROPERTY**

The subject property was purchased by the current owner in March 2002 for a purchase price of \$ 15,000. I am not aware of any other sale or listing of the subject property in the past three years.

**MARKETING TIME AND MARKETABILITY**

The subject property would be a marketable parcel of property.

**HIGHEST AND BEST USE ANALYSIS**

As vacant.

The site as if vacant would be used for future development.

As improved.

The site may or may not be able to be developed into residential use depending on availability of a water connection and sewer or septic approval.

**HAZARDOUS MATERIALS OR OTHER LIMITING USE CONDITIONS**

Inspection of the site indicates that it appears to be virgin land and no other use has been made of the property. Contamination by any hazardous material is highly unlikely. I am not aware of any specific problems and observation does not indicate any existing problems with hazardous substances, either on the subject property or in the immediate vicinity. I am not a qualified expert to determine whether there is any contamination of soils in the area or on the site however. Should the site be contaminated the value indicated by this appraisal would have to be reduced for the costs of cleaning the site.

Appendix 2. Appraisal Report Red Cove 26 of 31

**SUBJECT PROPERTY PROFILE**

The subject property consists of a 40 acres of land located in the mouth of Cedar Canyon and South of Coal Creek. The property is accessible by way of a gravel maintenance road going to a Cedar City water tank. It is unknown whether this access would be available to the subject parcel by new owners and for permanent use or not. There are not any utilities currently serving the subject property and although there is power and water nearby it is not sure if these would be able to be used for development of the parcel by the owner. The property borders the Cedar City limits on two sides and would probably be able to be annexed to the city with owners consent. Legal description is attached as an addendum item to the report.

**SITE DATA:**

**TOPOGRAPHY AND DRAINAGE**

The subject is steep sloping with very limited level area. The lower elevations of the subject site are probably in flood zone A with the higher portions of the site not in the flood zone. Flood map is attached as exhibit addenda item.

**EASEMENTS AND ENCROACHMENTS**

I have not reviewed a title report for the subject property. There may be some utility easements affecting the subject property. I did not observe any other adverse factors in the way of easements or encroachments affecting the subject property.

**SOIL AND SUBSOIL**

The soil of the subject appears to be typical of the area and would probably be acceptable for the typical construction in the area. I am not in possession of a soil survey for the subject property however. There may be some collapsible soil on the site and soil tests should be done prior to making any decisions about building on the subject site.

**LIMITING CONDITIONS AND ASSUMPTIONS**

This appraisal is made subject to the following conditions and assumptions, and to any other specific conditions and assumptions as set forth in this report:

1: **LIMIT OF LIABILITY:** The liability of the Realty Appraisal Service firm and employees is limited to the client only and to the fee actually received by appraiser. There is no accountability, obligation, or liability to any third party. If this report is placed in the hands of anyone other than client, the client shall make such party aware of all limiting conditions and assumptions of the assignment. The appraiser is in no way to be responsible for any costs incurred to discover or correct any deficiencies of any type present in the property - physically, financially, and/or legally.

2: **COPIES, PUBLICATION, DISTRIBUTION, USE OF REPORT;**  
Possession of this report, whether original or copy, does not carry with it the right of publication, nor may it be used for other than its intended use. It may not be used for any purposes by any person other than the client without the prior written consent and approval of the appraiser, and in any event, only with the proper written qualification, and only in its entirety. The By-laws and Regulations of the American Institute of Real Estate Appraisers of the National Association of Realtors require each member to control the use and distribution of each appraisal report signed by such member. The client may, however, distribute copies of this appraisal report in its entirety to such third parties without the prior written consent of the signatory of this appraisal report. Neither all nor any part of the contents of this appraisal report, especially the identity of the appraiser, Realty Appraisal Service, any reference to the American Institute of Real Estate Appraisers or to any designation, shall be disseminated to the public through advertising media, news media, public relations media, sales media, or any other public means of communication without the prior written consent and approval of the appraiser.

3: **CONFIDENTIALITY:** This appraisal report must be considered and used only as a unit. No part is to be used without the whole report, and it becomes invalid if any part is separated from the whole. All conclusions and opinions as set forth in the report were prepared by the appraiser whose signature appears on the appraisal report, unless otherwise indicated. No change of any item in the report shall be made by anyone other than the appraiser. The appraiser shall have no responsibility if any such unauthorized change is made. The appraiser may not divulge the material (evaluation) contents of the report, analytical findings or conclusions, or give a copy of the report to anyone other than the client or his designee as specified in writing except as may be required by the American Institute of Real Estate Appraisers as they may request in confidence for ethics enforcement, or buy a court of law or body with the power of subpoena.

Appendix 2. Appraisal Report Red Cove 28 of 31

4: **INFORMATION USED:** No responsibility is assumed for accuracy of information furnished by work of or work by others, the client, his designees, or public records. The market data relied upon in this report has been confirmed with one or more parties familiar with the transaction, from affidavit, or other source thought reasonable; all are considered appropriate for inclusion to the best of our factual judgment and knowledge. An impractical and uneconomical expenditure of time would be required to furnish unimpeachable verification in all instances, particularly as to engineering and market related information. It is suggested that the client consider independent verification as a prerequisite to any transaction involving sale, lease, or other significant commitment of funds or subject property.

5: **TESTIMONY, CONSULTATION, COMPLETION OF CONTRACT FOR APPRAISAL SERVICE:** The contract for appraisal, consultation or analytical service is fulfilled and the total fee is payable upon completion of the report, unless other arrangements have been made. The appraiser will not be asked or required to give testimony in court or hearing because of having made the appraisal, in full or in part, nor engage in post-appraisal consultation with client or third parties except under separate and special arrangement, and at additional fee. If testimony or deposition is required because of any subpoena, the client shall be responsible for any additional time, fees, and charges regardless of issuing party.

6: **EXHIBITS:** The sketches and maps in this report are included to assist the reader in visualizing the property, and are not necessarily to scale. Various photos, if any, are included for the same purpose as of the date of the photos. Site plans are not surveys unless shown from separate surveyor.

7. **LEGAL AND TITLE CONSIDERATIONS:** No responsibility is assumed for matters legal in character or nature. No opinion is rendered as to the title, which is presumed to be good and marketable. The property is appraised as if free and clear, unless otherwise stated in particular parts of this report, of all debts, liens, mortgages, encumbrances, or leases of an adverse nature, unless so specified in the report. It is further assumed that all real estate taxes and special assessments have been paid in full. Responsible ownership and competent management are assumed. The legal descriptions utilized throughout this report are assumed to be correct as furnished by the client, his designee], or as derived by the appraiser.

Appendix 2. Appraisal Report Red Cove 29 of 31

**8: ENGINEERING, STRUCTURAL AND MECHANICAL CONSIDERATIONS:** No responsibility is assumed for matters of an architectural, structural, mechanical, or engineering nature. No advice is given regarding mechanical equipment or structural integrity adequacy. The lender and owner should inspect the property before any disbursement of funds. Further, it is likely that the lender or owner may wish to require mechanical or structural inspections by qualified and licensed contractors, civil or structural engineers, architects, and other experts. The appraiser has inspected as far as possible, by observation, the improvements. However, it was not possible to personally observe hidden structural components. I have not critically inspected mechanical components within the improvements and no representations are made herein as to these matters unless specifically stated and considered in the report. The value estimate considers there being no such conditions that would cause a loss in value. All mechanical components are assumed to be in operable condition, and status standard for properties of the subject type. Conditions of heating, cooling, ventilating, electrical and plumbing equipment is considered to be commensurate with the condition of the balance of the improvements unless otherwise stated. No judgment may be made by the appraiser as to adequacy of insulation, type of insulation, or energy efficiency of the improvement or equipment which is assumed standard for subject age and type.

**9: SOIL AND SUBSOIL CONSIDERATIONS:** No advice is given regarding soils and potential for settlement, drainage, and such. The appraiser has inspected as far as possible, by observation, the site. It was not possible to personally observe conditions beneath the soil. The value estimate considers there being no soil or subsoil conditions that would cause a loss of value. Except as noted in the appraisal, the land or the soil in the area being appraised appears firm. The appraiser does not warrant against this condition, or occurrence of problems arising from soil conditions. The appraisal is based upon the assumption that there are no hidden, unapparent or apparent conditions of the soil or subsoil, except as noted, that would render it more or less valuable. The appraiser assumes no responsibility for any costs or consequences arising due to the need, or the lack of need, for Flood Hazard Insurance. An agent for the Federal Flood Insurance Program should be contacted to determine the actual need for Flood Hazard Insurance.

**10: LEGALITY OF USE:** The appraisal is based on the premise that there is full compliance with all applicable federal, state and local governmental regulations and laws unless otherwise stated in the appraisal report. Further, it is assumed that all applicable zoning, building, use regulations and restrictions of all types have been complied with unless otherwise stated in the appraisal report. It is assumed that all required licenses, consents or other legislative or administrative authority from any local, state or national government or private entity or organization have been or can be obtained or renewed for any use on which the value estimated contained in this report is based.

Appendix 2. Appraisal Report Red Cove 30 of 31

**11. COMPONENT VALUES:** The distribution of the total valuation in this report between any of the components of the property, particularly between land and improvements, applies only under the reported highest and best use of this property, or under the existing program of utilization. The separate valuations for land and building must not be used in conjunction with any other appraisal, and are invalid if so used.

**12. AUXILIARY AND RELATED STUDIES:** No environmental or impact studies, special market study or analysis, highest and best use analysis study or feasibility study has been requested or made unless otherwise specified in an agreement for services, or in the report.

**13. DOLLAR VALUES AND PURCHASING POWER:** The market value estimated, and the costs used are as of the date of the estimate of value. All dollar amounts are based on the purchasing power and price of the dollar as of the date of the value estimate.

**14. INCLUSIONS:** Furnishing and equipment or personal property or business operations except as specifically indicated and typically considered as a part of real estate have been disregarded with only the real estate being considered in the value estimate, unless otherwise stated. In some property types, business and real estate interests and values are combined.

**15. PROPOSED IMPROVEMENTS:** On all appraisals subject to satisfactory completion, repairs or alterations, all appraisals subject to or under construction, or all appraisals subject to rehabilitation, modernization, or remodeling, the appraisal report and valuation conclusions assume and are contingent upon completion of the improvements within a reasonable period of time, using quality workmanship and materials, and further assumes substantial compliance with the plans and specifications provided to the appraisers. In all such cases above, the appraisal is subject to change upon inspection of the property after construction is completed. The date of market value is as of the date shown, as proposed, as if completed and operating at levels shown and projected.

**16. FEE:** The fee for this appraisal or study is for the service rendered and not for the time spent on the physical report or the physical report itself.

**17. AUTHENTIC COPIES:** The authentic copies of this report are signed in ink in the letter of transmittal, and on the certification page. Any copy that does not have the above is unauthorized and may have been altered.

**18. INSULATION AND TOXIC MATERIALS:** Unless otherwise stated in the report, the appraiser has no knowledge concerning the presence or absence of toxic materials and/or UFFI in existing improvements. If such is present, the value of the property may be adversely affected and reappraisal at additional cost may be necessary to estimate the effect of such.

Appendix 2. Appraisal Report Red Cove 31 of 31  
Confidential Page 98 2/9/2006

19: CHANGES AND MODIFICATIONS: The appraiser reserves the right to alter statements, analyses, conclusions, or any value estimates in the appraisal if there becomes known to me facts pertinent to the appraisal process which were unknown when the report was prepared.

20: FHLBB REGULATIONS: The Federal Home Loan Board has special requirements (R-41b) for appraisals to be used by some lending institutions for some types of loans. This appraisal is not intended to be used for such unless specifically stated otherwise in the report, i.e.: that it is indeed intended for R-41b use. Additional research, analysis, and report writing may be undertaken at a later date upon client request at additional fee for time and costs.

21: ACCEPTANCE AND/OR USE OF THIS APPRAISAL REPORT BY THE CLIENT OR ANY THIRD PARTY CONSTITUTES ACCEPTANCE OF THE ABOVE LIMITING CONDITIONS. APPRAISER LIABILITY EXTENDS ONLY TO THE STATED CLIENT, NOT SUBSEQUENT PARTIES OR USERS, AND THE LIMITED AMOUNT OF FEE RECEIVED BY APPRAISER.

Appraiser(s)  Date 12-30-05