

CREATING A COHESIVE TRIPLE BOTTOM LINE:  
HELPING THE URBAN PLANNER AS A  
LIAISON TO THE CITIZEN

By

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ABSTRACT

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This thesis is an attempt to create a viable liaison tool for the urban planner to create a cohesive idea of the Triple Bottom Line of sustainability between the citizen and the government of the city. By using consistent policy standards and adequate focus upon the new ideas of a sustainable lifestyle, the city should be able to create a viable structure for the future. In order to create a viable Triple Bottom Line, the citizen and the government will need to combine long term planning with current policy and standards of use and compliance in order to dedicate a path toward the new paradigm shift of a Triple Bottom Line of sustainability.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Research Question

The increased growth of the sustainable paradigm is reflected in the planning study programs today (Fountain, 2009). This influx of sustainability within the study of planning will reflect a greater increase in sustainability within the city structure in the coming years much as the social aspects were an increased focus in the past forty years (Fountain, 2009). The sustainability perspectives include a decrease in waste and an increase in reliable resources management along future stabilized growth patterns. The management of resources is going to require changes in companies (both public and private) in sustainable venues; whether social, economic, or environmental.

This thesis will attempt to answer the question of how municipal water policies within the Dallas/Ft Worth metropolitan promote sustainable water use. The thesis attempts to approach the idea of a water policy based upon the input of a sustainability paradigm. The use of the variable of water shows a way that the environmental and the social are not cohesive within the sustainability paradigm. By using the universally understood variable of water, the policies are more easily understood and a cohesive solution can be realized. The question of the thesis is: Do municipal water policies within the Dallas/Ft Worth metropolitan area promote sustainable use?

Balance within business structures is not the only equilibrium that is being reached for in the sustainability paradigm. Sustainability also requires a balance between the areas of social, economic, and environment. The balance of these three areas is considered a

sustainable triad. John Elkington referenced this sustainable balance as a Triple Bottom Line (or TBL) (Slaper, 2011). The relationship's members are also referred to as the Three Dynamic E's of communities — environmental, economics and equity (i.e. humanity in balance) (Edwards, 2005).

This balance of the triad is the focus of urban planners in both theoretical and applied practice. The balance needed for sustainability requires a shift in the way each of the areas of the TBL is approached. This new approach also changes the way the parts of the city are directed in each part of the city dynamic: government, urban planner, and citizen. The city's three areas also need balance a challenge when dealing with working systems (Edwards, 2005). Both the triad of TBL and the trio of citizen, urban planner, and government are all working systems. Each is interrelated but dependent upon the other. The systems in place are going to all face dynamic and at times complex change.

## 1.2 Overview of findings and results of thesis

This thesis attempts to approach the idea of a unified sustainability paradigm within the public realm. At times the regulation shows gaps and problems within the sustainability paradigm. The laws governing water are reflections of federal and state mandates, yet actions upon the citizen via policy show that the citizen is still not using water in a sustainable way. An example is the overall water conservation incentive plans that are present within a city structure in the sample cities of Bedford, The Colony, and Rowlett (all cities in Texas), as shown in the chapter on Body of Research and Data.

Each municipality represented in this thesis follows standards of law historically established. The water variable is regulated per suggested policy in the city's Comprehensive Plan. The Comprehensive Plan of a city, as well as federal and state mandates, guides the regulation body of the city structure. This thesis suggests that by using the rhetoric in policy but

not enforcing the policy by rules and regulations governing the citizen, the government (at any level) is not moving toward the paradigm of sustainability.

The study presented in this document also shows in how sustainability is a process of more than one step. The policy has to be in place, but the framework policy is directed changes the role of the citizen, the urban planner, and the government body. This thesis attempts to show missing connections in policy change on one hand and lack of universal context within the variable. By using policy study, the thesis attempts to show that framework and understanding of sustainable concepts will strengthen the municipality as a whole.

This study shows how to frame context and roles and apply framework to the various levels of the city structure. The study gives examples and an interdisciplinary input to understanding the role of citizen, urban planner, and government. The role of the urban planner is the focus of this thesis. How the urban planner frames policy and his or her role has a reflection both upwards to the other parts of the government as well as downward to the citizen. By enriching the liaison role of the urban planner, the citizen and the government can become more cohesive. This cohesiveness and consistency helps to prepare a way to reach the sustainability paradigm.

Variables such as context within government, the role of capitalism in the United States economic system, and the power of the urban planner are also investigated. If a sustainable paradigm is to be reached, the context, roles, and powers have to move toward cohesiveness. By addressing policy, ordinance, rule and regulation guides that direct the population toward citizen and government relationships, then using framing and direction toward a sustainable concept, the citizen is better given sustainable examples in the structure of government.

The study of existing policy in regards to municipal areas within a region attempt to show how the theoretical and application of a sustainable paradigm change will be enacted. The three case studies used in this thesis give context to overall application of policy. The similar

characteristics of municipal areas combined with data analysis of the policy as applied toward the variable shows how a sustainable context will grow within a city. The need for the three study areas is due to an attempt to show applied use of policy is universally in error when application to sustainable context. By using municipal areas characteristically similar but with different goals, this thesis will show that universal policy changes toward sustainability are possible.

## CHAPTER 2

### BACKGROUND

#### 2.1 Overall Context

The urban planner is the main audience of this thesis so the first area of background research is within that area. An urban planner's job has changed over the years. Urban planners began the discipline with physical manipulation of the city structure. Nigel Taylor describes this in his book *Urban Planning Theory Since 1945*, which gives a concise overview of urban planning before World War II and afterward. Up until the end of World War II, the planning field is ingrained in the "political ingredients" that created a more "interactive role" within the city structures (Taylor, p. 85, 1985). With influences based in expanded roles of the city, including as providers of services, the role of the urban planner needed to expand to incorporate more social and economic inputs (Taylor, 1985).

Town planning still situated itself within physical planning but with an eye toward enacting a place for each basic or developed need within the city. Consider the role of the planners in Great Britain who redesigned the restructuring of London after World War II (Corporation of London, 1941). The urban planner(s) of the time were involved in creating viable areas for social and economic venues, but the focus was on physically designating a footprint for the various inputs allowing variables in the city as opposed to using the physical space to augment change (Taylor, 1985). Maps are the focus of the document. This physical representation did not go into how the systems would be fulfilled but only focused upon the layout of services (Corporation of London, 1941).

The more socio-economic applications are begun after the point of World War II but were more intensively used toward the late period of 1960s to the mid-1980s. This change from

the designator to the manipulator is the new characteristic of the urban planner. Urban planners today use planning to change social behavior, entice economic growth, and stabilize both within the public structure of the city. How and to what extent these aspects of planning have come to fruition shows the influence of the planner growing over the past fifty to sixty years of the American planning experience.

The urban planner in the United States from the 1960s to the 1980s used the formulas of influence in policy change and resident compliance. By challenging the federal policy of mandates such as redlining after World War II, the urban planner, along with the federal mandates, created homogenous, suburban growth in the United States. While encouraging consistent growth in the suburbs, the planner also created a sense of neglect in the city. As the upwardly mobile growing Caucasian American Middle Class grew and moved to suburban enclaves, the city was left with a stagnant underclass of minority and decay of infrastructure (Taylor, 1985). The stagnation of the minorities did not mean that various members of the city residents were without advances, but the chances of upward mobility were hampered by laws which structurally divided groups within the city by ethnic groups. At the same time, groups were homogeneously divided by income and interest outside the city limits (i.e. in the suburbs).

Using Dallas (TX) as an example, the city's minority group of African Americans was collected by race not by income level or interest. The poor lived with the well to do African American population as a collected group (Behnken, 2011). This intermingling created diversity within the community and opened opportunity inside but confined to the perimeters of the community. The same thing was happening in a different way in the suburbs. The suburb areas were homogenous in context with primarily Anglo populations grouped by income levels and interest groups. This created growth patterns to upward probably but not with diversity, as people in suburban areas moved to better neighborhoods as better opportunities were realized.

Planning changed the socio-economic structure for perceived advantages by ethnic groups and type of lifestyle. The mid 1960s to the mid 1980s context of change to correct improper inputs created ideas such as mixed use zoning replacing Euclidean zoning and more diversity in city uses and needs (Taylor, 1985). Infrastructure was focused toward the distribution of people along the needs of the automobile. The focus of infrastructure was applied to the homogenous communities to create viaducts to move people from where they lived to where they worked. Work and lifestyle were completely separated in most aspects of living in the United States. This division of living and working environments was a suburban and an urban reflection of the times. The work and live spaces of a city were as divided as the separation of the population income levels and ethnic backgrounds.

This segregation and homogenous make up is not able to weave into the use of a paradigm change of sustainability. The sustainability encourages an intermingling of social, economic, and environmental constructs with the same footprint. The new current uses of mixed use zoning were again a physical form of change that was to help change or direct the population. This physical zone change does not change the values of the resident, only the physical place the resident has chosen to live or been manipulated into living.

## 2.2 Sustainability Context

Sustainability is simply referred in the base form as a means of support. An understanding of this support is ingrained in balance. With the Elkington reference to a Triple Bottom Line (TBL), the use of sustainability is ingrained in long-term stabilization and “stewardship” of the entire planet (Edwards, 2005). Management of resources is necessary to ensure all uses for the present or future is equally predictable. Urban planners refer to the long term in regards to ideas such as Comprehensive Plans that give an overview guide of how his

city will function (Peterson, 2003). Comprehensive Plans are usually in terms of twenty year plans where adjustments are made incrementally.

Context concerning sustainability within the terms of the citizen, the urban planner, and the government are needed to understand how a sustainability paradigm creates conflicts for growth stabilizers. The University of Georgia's article concerning social and political foundations for sustainability discusses how sustainability is measured (Whitford, 2009). The results show that as a group of people are driven towards a path of a sustainable lifestyle, understanding is based in creating new ways of engaging with the environment phase of the TBL. The study shows that "environmental stabilizers are value based and because values change over time, there is no one means of environmental sustainability" (Whitford, p 190, 2009). The study by Whitford shows a noteworthy insight for the use of liaison urban planner between citizen and government. The study shows that a deeper citizen involvement is in a political environment of democracy. The importance of free speech and free rights is directly linked to the informed citizen (Whitford, p. 191, 2009). The success of the sustainability paradigm is therefore encapsulated in freedom of the citizen to encourage his or her government to change. The change in sustainability toward a more cohesive trio of the city structure's citizen, urban planner, and government is the result. This citizen involvement infers that the smaller government structure will have more success in sustainable growth than a top down approach through federal venues (Whitford, pg. 192, 2009).

Sustainability movements toward a more cohesive union between the TBL and the trio of the city rely upon combined use of direct pressure from the three areas (i. e. citizen, urban planner, and the government) within the city. To create a path of understanding for the citizen, theoretically the urban planner will need to move the citizen to deeper knowledge of sustainability and then be able to reflect this knowledge to create change in the government. This knowledge exchange and deepening is reciprocal to the author of this thesis due to



readings from Whitford that displayed a growth of economic prosperity rise while sustainability lowers but the deeper understanding of sustainability grows at a certain level (Whitford, 2009). In other words, the ideas of sustainability grow at a certain economic prosperity level (Whitford, 2009).

### 2.3. Government Context

The third part of the trio is the influences of the government to the citizen. Historically the city had little powers of control over the citizen and physical layout. After the American Revolution property rights were given to help encourage self-rule and to have personal freedoms ensured via federal documents such as the Declaration of Independence, The Bill of Rights, etc. which federally based democracy focused downward.

Cities had little power. States and local governments have simple powers that are given down federally and then through channels via the state. Development of the need for basic services slowly enhanced city power and was guided by the planning of a city. The planners as independent or private business moved into a more public realm (Taylor, 1985). Intense growth over timeframes, especially growth after the intense urban growth patterns of the Industrial Revolution and then again after World War II, developed the city planner (i.e. the urban planner) to have a viable context in having a city developed.

Guidance from the urban planner helped to develop a city toward a specific direction. Ideas such as the City Beautiful movement as a reflection of the 1893 World's Columbian Exposition created design, application, and movements toward city design standards and influence. Ebenezer Howard (though technically not a practicing planner) pushed a movement toward a "greening" of the citizen's neighborhood and the city in general (Peterson, 2003). The next movement of a deeper sustainability paradigm may also have the same influences via the urban planner toward the city structure as a whole.

The government creates understanding by having gradually created a more dynamic way of governing the city via the urban planner. The Comprehensive Plan was developed to give an over encompassing idea of how to guide the city in the coming years. The Comprehensive Plan would help a city function better with overall top down guide for large scale and new growth. The first Comprehensive Plan (commonly referred as a Comp Plan) was the Plan of Chicago in 1909 (Peterson, 2003). This means that in the last approximate one hundred years, the Comp Plan has slowly come to guide each and every city in the United States. In a concise way, the Comp Plan uses an overall focus and references for interconnecting the city. Goals, alterations, plans, and checks and balances are all included in the planning process.

By engaging in an overall approach via connectivity, the city can have a way to gauge predictable needs. The government guides the citizen to how to better reflect current policy. Government uses the Comp Plan to format change and if the urban planner can help the citizen understand new paradigms such as sustainability, the city will be enhanced. The context of a sustainability paradigm is in longer terms; therefore, a deeper understanding is necessary and a longer future growth plan.

#### 2.4 Capitalism in Context

The ideas of changing perspective within the Triple Bottom Line (TBL) and influencing change between the triad of the TBL is to understand that a very set perspective is in place that has begun guiding the citizen and governments. To use sustainability paradigms, influences will pertain to how the citizen (and therefore the government) will enact game changes toward sustainability. The unsustainable trend of the past is complex and not part of the reasoning of this thesis. The thesis focuses on creating change and accepting that change has to come to

this point forward. Reflection goes into understanding the framework and values that are instilled in the citizen.

The United States was faced with a game changing set of inputs in 2008 and 2009. The prosperity of the previous years was wiped out and the nation was faced with changing the policy and practice of past years. A meeting of the unsustainable trends of the past years in energy, economy, and environment were met with challenges in all facets of the structure according to the author of *The Crash Course*, Chris Martenson, PHD (Martenson, 2011). The time came to go forward in the future with a new group of standards and practices within a world that has an operating system of economy with no physical limits (Martenson, 2011). Economic basis is the fact that economic principles are always in a growing forward motion. This was based in the long term feelings of the fact that the source of the motion (i.e. energy) is not lacking, therefore economy could always grow.

The beginning of human skills was pushed forward by a source for energy, according to Martenson. First of personal energy, then wood was used for energy sources followed by coal, then whale oil, and then petroleum. The main question facing the future of the economy is what is to follow petroleum. There are issues of time, scale, and cost that Martenson is worried that the planet may not be able to overcome. There is a current foreseeable peak in current energy extraction based on the way humans currently acquire petroleum. Environmental issues are triple fold: agricultural soils are depleted meaning high yield goods are lowering, mineral costs of production are growing at a faster rate than sustainable, and a new paradigm of scarcity will soon lead to the decline of economic progress (Martenson, 2011). This depletion is expected within the next twenty years according to Martenson. The question is open to how the new shape of the future reflects: by design or by disaster. Status quo is wanted by the current power holders to defend his or her economic power. The perspective of seeing changes in the future and adapting is a wish among the environmental power holders. This change by design will help

keep the structures in place solid but open the new paradigm that will not lead to the disaster that current power faces.

The time is now to frame the discussion toward the realist optimist and away from the doom and gloom that is going to follow disaster. By opening the dialogue to change, the design of the future will help keep economic prosperity in place and stop any large scale disaster from completely erasing the successes of the past. Environment is resource specific and limited. There are renewable environment sources but for the most part the environment is static and will not increase through time. The economy depends on growth to survive so stagnant economy is a predecessor to disaster. Energy is created to fuel the economic. A gradual fuel source change will be necessary in order to find a way to stabilize growth and the economy. Petroleum (i.e. oil) is not going to completely run out but the availability of oil will gradually run short of need. This does not mean that technology will not improve as it did to change oil gain from shale and fracking. Technology is the tool of energy while energy is the source for the fuel that runs the economy (Martenson, 2011). The environment is not going to completely run out of fuel options, only cost of technologies to extract and change fuel sources grow and the cost of the fuel outweighs the ability to gain more fuel (Martenson, 2011).

It is essential that all three parts of paradigm are used in balance: Energy, Economic, and Environmental. It is no longer an option of waiting for the next generation to solve the problem, the future will face direr circumstances than those of today. The best recourse is to begin to find alternative ways to use and conserve the fuels available. The best way to do this is to create a world within the economic and natural limits which will not overuse or tax an already unstable system.

## 2.5 Complete Context and Context Conclusion

The situation that brought the human perspective to this 2012 place is necessary to understand how to move forward. It is necessary to understand how the situation has presented

itself. The creation of a more deeply considered sustainability paradigm change is necessary due to changes in how the human population treats the environment. The TBL of sustainability is no longer in balance and therefore an idea of support and intertwined variables is no longer in place to enact change effectively. Change will be foreign to some and in conflict to most current systems.

In the perspective of sustainable lifestyle change, the necessary conduit is primarily understanding on each level. This includes the active citizen, the liaison urban planner and the functioning government. The urban planner has been given the tools to interdisciplinary inputs that will help him or her create communicative and responsive citizen government. The urban planner can reach back to help the citizen understand the path and framework of change. The urban planner can also reach above his or her position to show the government how to enact guidance to show better sustainable futures. This trio working simultaneously will help the city reach a more sustainable paradigm perspective and help achieve the TBL of sustainability.

The factors of capitalism will be a major hurdle to help change perspective. Set patterns in economic capitalism will be difficult to change without first understanding the framework of sustainability and then following the values presented with understanding perspective changes. Environment is resource specific and limited. There are renewable environment sources but for the most part the environment sources increase with time (Martenson, 2011). The economy is dependent on growth so a stagnant economy is a precursor to disaster. Energy (i.e. national resources in action) is a fuel for economic growth, a stable economy is necessary. This understood factor is not the base for the thesis but a resource management of the citizen will help create more resources for the needs of a larger group within the city systems. Technology is the tool of energy but energy is the source for fuel to run the economy (Martenson, 2011) While the environment will not run completely out of fuel options, the cost of technology to enact the fuel will grow and possible outsources the resource according to Martenson's studies.

As a governmental group, the urban planning field has to create a citizen that has developed a trust toward the position of the urban planner. The citizen needs to have a solid understanding of the governing body and the policy that directs the citizen. This framework and communication will create a powerful move to ensure the TBL of sustainability paradigm.

## CHAPTER 3

### RESEARCH QUESTION

#### 3.1 Introduction

This thesis will attempt to answer the question of how municipal water policies within the Dallas/Ft Worth metropolitan promote sustainable water use. The thesis attempts to approach the idea of a water policy based upon the input of a sustainability paradigm. The use of the variable of water shows a way that the environmental and the social are not cohesive within the sustainability paradigm. By using the universally understood variable of water, the policies are more easily understood and a cohesive solution can be realized. The question of the thesis is: Do municipal water policies within the Dallas/Ft Worth metropolitan area promote sustainable use?

#### 3.2 The Study of the Thesis

The thesis presents a focus on sustainability upon the urban planner. The urban planner faces a new paradigm input to his or her interdisciplinary knowledge of power to affect change. The context of the input of the TBL is now incorporated into the citizen and government within a city and the urban planner can be presented as the liaison to understanding, framework, and direction for a substantive TBL of sustainability.

The thesis studies the context first and puts the “players” in place around the urban planner. Ideas of economic capitalism and value driven choices go into how the citizen will enact change(s). The process of actually considering the rules and regulations are the next portion of the research. The Body of Research portion will identify the actual cities that are used

for consideration and how such is situated in the urban or regional planner's perspective in the Dallas/Ft. Worth area will be shown and the focus of the chosen cities of Rowlett, Bedford, and The Colony is the research portion of this thesis. These suburban cities will be processed individually in this thesis in regards to the variable of water rules and regulations within the city structure and how the water variable is affecting the citizen.

Water is the variable that is easily understood though maybe not the primary process for the greatest TBL change in long lasting sustainability. Water is the most necessary resource to the human body and also universally understood for every individual in the city. A choice of transportation could be framework used as a variable (for example) but everyone has a different vehicular movement pattern and a universal commonality was looked for as the conversation variable direction. Each suburban municipality is researched for data inputs, a way of creating areas needing to be questioned are shown. Comparison of the Comprehensive Plans of the three cities and examples of how each directs policy toward structured water distribution and conservation shows perspective in the policy toward TBL.



## CHAPTER 4

### METHODS

#### 4.1 Methods: Introduction

The thesis begins with attempting to understand how an urban planner can become a liaison between the citizen and the government in order to establish a more substantial and long lasting TBL of sustainability. The first input was a qualitative question concerning how the researcher of how the inputs of understanding TBL from the bottom up that would ensure a long term and stable change which will be understood to keep TBL as effective and within the stability of the city structure. The research was begun with a basis in that the framing of a conversation will create better understanding and a group of questions were developed. The question to answer is: Do municipal water policies within the Dallas/Ft Worth metropolitan area promote sustainable water usage?

The first step was to define sustainability and what influences are put into place. An understanding or framework of sustainability not only puts all of the players in the decision making process but also places a common knowledge. The relationship of capitalism and the environment is placed into the framing of the research. Government's function is also combined into the citizen and environmental triad and how the three parts work together.

#### 4.2 Methods: Data

Within this thesis water is then given the context within a city construct as the urban planner is generally placed in this vocation in the public realm. The Body of Research area of this thesis is concentrated upon the suburban municipality structure with similar characteristics but with some variables that will create a way to develop a study group that will represent the

entire population. Using demographic data analysis by using consistent characteristics which are used that give a commonality of comparison. There are also dis-similar areas that make the suburban city choices as a representative body of the cities in the Dallas/Ft Worth metropolitan area. One city was chosen as it is considered stagnant and the Comprehensive Plan suggests that consistency over time is the directive (i.e. the city of Bedford). The Colony was chosen as a variably changing city that embraces growth and change but could become as stagnant as Bedford or grow in the next forecast years. The city of Rowlett was chosen as a suburban city that embraces change and inputs that may lead to massive growth in the future.

Using Content Analysis as a basis and extrapolating from the guidelines of the book *Qualitative Analysis for Planning & Policy* by John and Sharon Gaber, each of the three cities were given in context of water via the Comprehensive Plan, any rules and regulations (including ordinances) which are water related, and the inclusion of any other variables which will affect or deter citizen to government understanding as the research compiled information (Gaber, 2007). After the three base suburban cities were studied, a major city within the metropolitan area was also chosen based upon a review of the same inputs as for the suburban cities. The city of Ft Worth, TX was chosen as an example of a large city that attempts not only ideas of TBL but also embraces communication between the citizen and the government. The focus of these is the liaison characteristics of the urban planner and the City of Ft. Worth already shows this distinctive characteristic of the TBL of sustainability.

## CHAPTER 5

### BODY OF RESEARCH BACKGROUND

#### 5.1 Water in Context

Solomon wrote in his book *Water: The Epic Struggle for Wealth, Power, and Civilization* about the fact that water is the “great unifier, the great divider” (Solomon, 2011). The dependence and deciding factors for societies during the last 5000 years of recorded history have shown that water has one of the most extensive and long lasting systems for success. The use of water today is mixed into uses that include “ancient, medieval, and modern methods of water use that coexist” in civilized and developing areas today (Solomon, 2011). Water has become according to Solomon, the singular large complex arrangement of a national resource that guides and grades survival today for the human race. Water resource management is a precursor to how or why a civilized group or city structure will decay or succeed.

Water use is the primary human body need according to many sources. Solomon noted that one gallon of water is needed per day for the human body’s simple existence; five gallons are needed per day per person for basic sanitation; thirteen gallons are needed for domestic well-being (Solomon, 2011). This statement in combination with Robert Jackson and his research group’s abstract in *Ecological Application Magazine* goes even further in noting that over half of the freshwater available is already in human use (Jackson, 2001). It is also noted by Jackson and his research group that human factors are not the only dynamic in place. Freshwater needs are universal to most plants and animals and the example of the fact that “47% of all animals federally endangered in the United States are made up of freshwater species” (Jackson, page 1027, 2001).

Though resource management factors in the beginning of this thesis regarded the fact that natural resources are available, technology to extract those resources grows in expense, the need for natural resource management is necessary to fill needs, and factors that are in place in cities causing depleted water resource supply. With Solomon's statement that 130 gallons of water are used by each individual each day on average by each person in the United States (with only a requirement of thirteen gallons) makes the statement an imperative in showing that water resource management is necessary to establish long term sustainability.

Solomon has shown that no viable large scale solution and no innovative moves are seen on the horizon that actually combats water scarcity universally or follows the ideas of the TBL. There are already power struggles in the United States via water reservoir use management and conflicts. Also noteworthy are the water problems facing Africa and the conflict in the Israel/Palestine area that is based not only in deep rooted conflicts and historical context but in water supply routes that compound political divisions of the Earth's footprint (Solomon, 2011).

Today the estimate according to Solomon is that twenty percent of the human population lacks access to sufficient clean freshwater. Forty percent lacks satisfactory access to water for sanitation purposes. The century of water abundance has changed to the century of water scarcity. "Water will replace oil as scarcest critical natural resource" (Solomon, 2011). Note also that when discussing agricultural aspects, the simple example Solomon uses of creating one pound of wheat requires one half ton of water to grow the plant itself. This does not include the processing part to convert the wheat to an edible staple for consumption.

## 5.2 Water and the City

Water is a resource which has now owner, according to Solomon, but is also the unified responsibility of no one (Solomon, 2011). This creates a value that is lacking in actual historical

perspective when relating to the TBL and also creates factors that are at times long term. Solomon's example of the former United Soviet Socialist Republic (USSR) and the country's water resource move within the Aral Sea which created an extinct water supply caused by redevelopment and redirecting of water supply for irrigation which in turn took fifty years to understand and see the complete loss of the Aral Sea as well as the devastation of the cotton and fishing industries in the areas (Solomon, 2011).

Water use in areas that are not satisfactorily replenished becomes a sustainable context and the reason for this thesis paper. Water is plentiful but freshwater is not readily accessible and alternatives very cost prohibitive, the resource becomes part of the sustainable framework. Jackson and his group relates water to the extraction of coal and oil since the factors regarding the amount of technology needed and the distribution are of similar constructs. As in Jackson and his group's research, it is necessary to engage in resource management in order to counteract the needs of the future so that future resources will also be plentiful for the city structure (Jackson, 2001).

### 5.3 Water as a Variable in the City and Thesis

Water resource management is part of many cost factors for the city structure. Matthew Gandy did a water resource study of the New York Water supply. Gandy found that some interesting policy conclusions and applications to the city water supply across the United States. "Ecological moderation" is the term used within the paper by Gandy which refers to a term developed by scholars at Free University in Berlin during the early 1980s (Gandy, 1997). Gandy and the scholars in Berlin which he referenced stated that as society and components in the society move toward environmental policy, the economy will actually benefit (Gandy, 1997)

Gandy states that more interaction needs to be applied both theoretically and physically to the ideas of "ecological management". Ideas based on how capitalism can be universally

sustainable are still debated but relationships within “economic and social structures” are desired (Gandy, p 340, 1997). Other policy construct problems are buried within overly abstract and simplistic rhetoric. The key to the degree of change is based upon how the complexity of regulations is applied to the need for change. A shift from current trend to applied approaches is necessary according to the Gandy study. “Relationships between state, capital, and society” is regarded as a new focus to consistent paradigm shifts (Gandy, p 347, 1997). It is important to understand that environmental concerns are interconnected to other large complex concerns of “individualism, consumerism, and new configurations of society and the consumption of energy and resources” (Gandy, p 344, 1997).

The inputs of Gandy, Jackson and his research group, as well as inputs used by Solomon, all indicate a much deeper level of input besides just applied rules and policy. Application to the city structure in the variable of water resource management is necessary. To direct change, the informed citizen has to be paired with the established government policy to have top down and bottom up change enacted.

## CHAPTER 6

### DATA

#### 6.1 Introduction: General

The data set forth here is presented in a departmental flow of information to build on the idea of how a planner builds a liaison position between the citizen and the government via various city structures. By using a way of reflecting how a flow of information is given, the data will show where the thesis is situated, what was studied, why that framework or set of inputs was studied, and who the liaison benefits.

The first part of the data shows a choice of framework among three suburban areas which are characteristically similar, revealing that the citizens throughout a metropolitan area are subjected to a similar context of policy (in this variable the subject is water). The data also reveal how that policy does not provide a clear framework for the citizen to engage actively with the government.

#### 6.2 Introduction: Cities

The aim of this thesis is to show a similarity of the need for policy change in an over-encompassing fashion, and the only way to show that a consistency in the policy chain exists is to show that similar cities direct policy in similar ways. Indicators such as population, age, income, and city structure show that the citizens in the metropolitan area chosen live in a similar way regardless of specific location in the metropolitan area of Dallas/Ft Worth.

Inputs and characteristics were chosen for the data via the United States Census via the website for Census Information (Census, 2012) and as the website for city data (AdvamegInc, 2012). The characteristics are specified data in terms of income, age level,

educational background, and basic ethnic structure. Housing considerations are also part of the choices, provides these indicators for the cities which are part of the study.

Table 6.2: Demographic Table of Cities Identified in Thesis

<b>DEMOGRAPHIC INFO</b>	<b>THE COLONY</b>	<b>BEDFORD</b>	<b>ROWLETT</b>
Population (2010)	31736	95665	93363
Density/sq mile	1607	4635	2065
% Renters	33	45	13
# Houses or Condos	20247	47078	61619
Median value of Homes	227190	159812	168580
Median age of population	3205	37.1	35.5
Average size of households	206	2.3	3.2
Median Income	77956	63864	80575
Age range of homes (in yrs)	20 to 40	20 to 50	15 to 25
Race: White	19084	70919	58812
Race: Black	1997	7120	12840
Race: American Indian	113	357	8036
Race: Asian	3798	4950	5206
Race: Pacific Islanders	44	1445	215
Race: Two or more race	933	1492	588
Race: noted as other	74	1823	187
Ethnic: Hispanic*	7164	7164	7789
% Male	49	50.4	49
% Female	51	49.6	51
*may have identified a race also			

The areas chosen were The Colony, located basically in the northwest quadrant of the target area; the city of Rowlett, located to the east within the target area; and Bedford, located centrally in the metropolitan target area. The choices of similar cities located in clustered areas within the metro area provide a way to make assumptions within the area. The individual characteristics of the citizens within the cities of Bedford, The Colony, and Rowlett share similar census data while giving characteristics which would represent municipal suburban areas across Dallas/Ft Worth. The cities chosen were based upon factors to represent a larger, a



smaller, and a medium sized suburban city in the metropolitan area studied. It was also important to choose cities that are geographically distanced from each other but still in the target area. This disbursement of size and geographic placement helped to ensure that a valid and rational choice was made in the research decisions (Gaber, 2007).

### 6.2.1 The Metropolitan Area of Dallas/Ft Worth

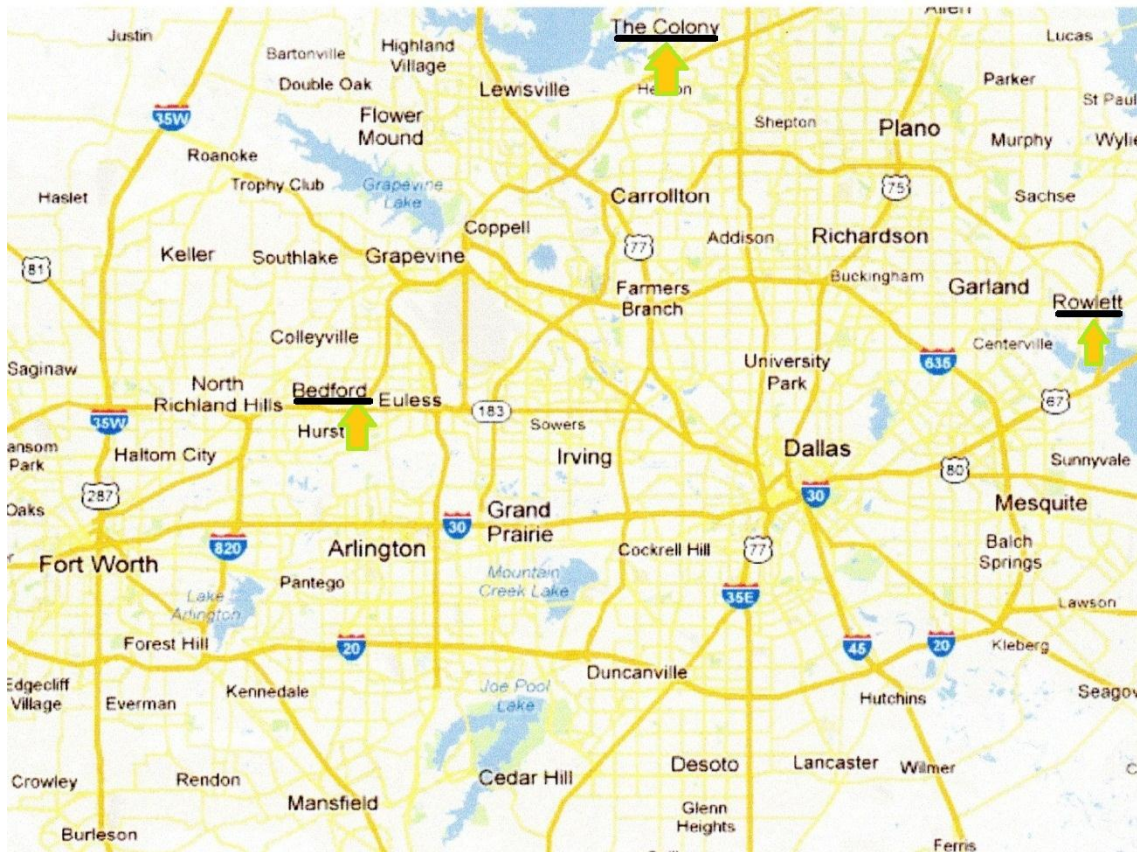


Illustration 6.2: Map of Dallas/ Ft. Worth Metropolitan Area: The Colony, Bedford, and Rowlett

The map shows the area Dallas/Ft Worth Metropolitan area, which is the focus of the research of this thesis. The cities direct in the study are The Colony, Bedford, and Rowlett, which are identified on the map. Note that the cities used in the study are spread across the

area of Dallas/Ft Worth to give a perspective of the suburban municipal areas and not just a specific portion of the city. By using cities spread across the research area, the information can be generalized for the entire suburban perspective of the area.

It is also of importance to note that The Colony uses the phrase “branding” many times within the document of the Comprehensive Plan. The city and the “long term vision of a place” that is “relevant and compelling to key audiences” all regard the same idea of creating the feeling of identity (Springbrook, pg. 46, 2007). This branding goes into the tie-in of framing that was discussed in earlier chapters when concerning the citizen and government. Branding and framing are therefore inclusive terms in creating consistency when relating necessary information between the citizen and the government by using the urban planner as liaison. “Value” is also referred to in research instead of self-interest (Springbrook, pg. 48, 2007) and refers back to how people vote or understand the policy as given. Citizen input means regarding the citizen as an informed participant. Cities that would incorporate the Springbrook ideas of value would benefit by increasing the Triple Bottom Line cohesiveness.

### 6.3 The Colony, Texas

The Colony is located in the northwest section of the Dallas/Ft Worth metropolitan area of Texas. As a locator for readers not familiar with the study area in this thesis, a map of the metro area and the relation of the three cities studies in part 5.2.1 of this chapter. The water variable is a large input in The Colony, as the reservoir Lake Lewisville is the western boundary of the city limit. This provides recreation and environmental concerns but also provides water consumption needs for the city of The Colony and surrounding local municipalities. Lewisville Lake is the second reservoir lake for the area needs, with Lake Dallas as primary water source in the past. Technically the two are incorporated into one reservoir as of 1995, which and is now referred to as Lewisville Lake. The lake is part of the overall Texas Water Development Board's

2006 Regional Water Plan (WDB, 2012). Cities stated as part of the thesis foci that The Colony has an almost triple water need from 2000 (at Census) to 2060 (Projected Census) (1City, 2011). The area is targeted as a growth potential area and the influx of population will require more water needs in the future. These projections mean progressive increases in water needs; in fact, and show that progressive need in the terms of water use is a common variable across all of the Dallas/Ft Worth metro area.

### 6.3.1 The Colony: Data

Following the establishment of the city in question, the next step was to read the Comprehensive Plan for the city of The Colony. The Comprehensive Plan (Comp Plan) has an initial date of 2007 with a revision or regulatory change no later than the year 2012. Though the results listed in this thesis are focused upon water directives. It is understood that the Comp Plan has inputs to land use, transportation use, and other characteristics that make up a city structure (Springbrook, 2007)

The one thing that is apparent by reading the Comp Plan is that while the city is choosing to generally enhance and present itself to the outside population, water an afterthought when considering the needs of a city and the cities' action plan. There are many visual descriptions of how the city will appear but no real direction on how the city will survive the long term. The city brands itself as a "city by the lake" but does not institute enough water based guidelines to ensure long term stability (Springbrook, pg. 49, 2007). The city also fails to give value to the branding of the city motto "city by the lake" (Springbrook, pg. 49, 2007).

The rules and regulations regarding water use is within the city reinforce the lack of careful water planning in The Colony. The main focus on page one of the water ration area of the city website is based upon watering of plants and gives a schedule for irrigation/sprinkler for public and private property (1City, 2012). There is a notation that "irrigation of landscaped

areas is permitted at any time if by means of a handheld hose” which is actually contradictory to the citizen outlook of water conservation regulated (1City, 2012). The Austin Ranch development within The Colony has a city restriction on vehicular washing, but, it is limited to private not commercial car wash services also that hotel/motels are encouraged to reuse linens for “multiple day patrons”, but the guidelines are nominal or vague in structure and are easily side stepped (1City, 2012). How these restrictions in water rationing are dealt with in relation to how height and construction inputs are placed within the Comprehensive Plan gives a representation of where water is placed into the needs and TBL of a city budget and structure. The thirteen pages of construction regulation show the degree of consideration in opposition to the two pages of water policy. The Colony does have specific new construction for water irrigation but does not regard existing irrigation systems as needing upgrades or regulation. The existing policies are all in regards to when and how to water, but there is no concrete of policy to regulate and sustain water use and address needs for the future (Springbrook, 2007; 1City, 2012; WDB, 2012).

### 6.3.2 The Colony: Conclusions

The growth projections coupled with new impacts of the TBL create a more dynamic input into water as a variable growth resource within the city. The Comprehensive Plan gives token regards to water use as it gives more strict points toward visual representation. Study of The Colony as a suburban city representation of the larger metropolitan area has the following main issues to consider:

- Growth of water needs over time
- value based citizen
- water as focus of branding but afterthought of policy
- “city by the lake” concept as brand but not part of comprehensive plan

- lack of precise water guidelines
- focus on visual representation of city instead of TBL
- irrigation schedule is vague in implementation
- handheld hose regulation is not in line with TBL
- vehicle private washing versus commercial washing
- new irrigation restrictions versus existing irrigation restrictions
- lack of existing inputs to sustain water toward TBL

#### 6.4 Bedford, Texas

The city of Bedford is located in the central area of the Dallas/Ft Worth metropolis: Dallas is 20 miles to the east of Bedford and Ft Worth is 13 miles to the west according to the website [www.travelmath.com](http://www.travelmath.com). For a map of the location of the city of Bedford, refer back to section 2.1 of this chapter. The city of Bedford adopted the current Comprehensive Plan in 2010 with an aim toward physical future development. The first Comprehensive Plan (MPRGinc, 2010) was in 1970 with the current plan extending from that initial perspective for the city (MPRGinc, 2010). This Comp Plan reviews and attempts to impact “light and air” issues, promote “general health and welfare”, and “facilitate adequate transportation, water, services, school, park and public requirements” (MPRGinc, 2010). In the initial 1970 plan, sixty three percent of available land was vacant, but at the implementation of the 2010 plan, only three percent of the land within the city limits was available (MPRGinc, 2010). Where The Colony anticipated growth in population, the city of Bedford works on the premise that the existing population maximum of 52,000 is near and will remain consistent over time; therefore, so the urban planners of the Comp Plan focus on single family housing (as exists now) and intend to continue the same type of living conditions over time. A density growth is not expected (MPRGinc, 2010).

#### 6.4.1 Bedford: Data

The water focus for the Comp Plan is directed toward “storm water drainage” (MPRGinc, pg. 3, 2010) with no reference to any other water-based or TBL inputs. There is one mention of the word sustainability in reference to water but not repeated in other forms in the document (MPRGinc, 2010). The Comp Plan could be more extensive: the very short fifteen-page document merely gives token planning inputs without being a visionary guide for the future.

Ordinances directed toward water use focus (as in The Colony ordinances), upon new irrigation services instead of existing change and compliance toward a TBL of sustainability (Kubala, 2009). The Watersource document refers all restrictions and water use back to ordinance; 08-2912 and 08-2913, which discuss irrigation systems. The actual policy is extremely difficult to find within the City of Bedford Texas website (1COB, 2012). A general search (as a citizen would possibly attempt to find information) gave no web based search engine result, as well as no actual document toward policy within the municipal code portal at [www.library.minicode.com/index.aspx?clinetid+14937](http://www.library.minicode.com/index.aspx?clinetid+14937) (2COB, 2012). There are notations that show a policy ordinance is available at the city secretary's office but a call to that effect led to an answering machine and no return call. This detachment between the city and the citizen shows a miscommunication at the least and a complete disregard at the most between the government body of the city of Bedford and the citizen of Bedford. It is not known whether the citizen has a particular record of need for information or if the information is not available. The detachment between the citizen and the government may be reciprocal but this document does not extend to interviews with government officials or the citizen specifically.

#### 6.4.2 Bedford: Conclusions

Bedford is concise and shows the overall patterns needed for general compliance to an initiation of a Comp Plan but the lack of details and accompanying website links or information reveal a detachment between the citizen and the government based upon data available. In the case of Bedford, it can be concluded that the data is either not concerned with conveying governmental policy or the government does not include the consensus of the citizen to make decisions.

Study of Bedford as a suburban city representation of the larger metropolitan area presents the following main issues:

- land locked
- lack of focus on light rail
- storm water policy
- vague Comprehensive Plan
- irrigation policy focused upon new construction
- lack of website links
- lack of interconnectivity
- detachment between citizen and government

#### 6.5. Rowlett, Texas

The city of Rowlett is located in the eastern quadrant of the Dallas/Ft Worth metro area. The city of Dallas is 16 miles from Rowlett and Ft. Worth is 46 from the city of Rowlett according to the website [www.roadmap.com](http://www.roadmap.com). The area map in section 5.2.1 of this chapter shows the location of Rowlett within the Dallas/Ft Worth area.

### 6.5.1 Rowlett: Data

The city of Rowlett has an ordinance directive portal similar to the city of Bedford (3City, 2012) with a portal showing a complete listing of ordinances as they pertain to any number of citizen functions such as irrigation, signage, waste water control, and other needs. Rowlett also has an overall “Realize Rowlett 2020” goal plan for the city that uses a progressive growth program which involves the business leadership, the citizen, and the civic leaders to develop a future focused document (4City, 2011).

A “desire for future generations” is the perceived initiative of Realize Rowlett 2020 (4City, pg. 11 2011). The focus is to show the public domain what the leaders and the citizens are seeking for the future of Rowlett in the next decade (4City, 2011). Rowlett is situated on the west side of Lake Ray Hubbard which creates a water based community lifestyle and the water is very important to the city and a way to grow the city. The city expects large and developed growth of the area which is driven by the historical growth and the influx of a transit orientated lifestyle that has come from a direct tie to the rest of the metropolitan area (4City, 2011). In juxtaposition of Bedford, TX’s idea of maintenance of current standards and Rowlett understands that growth is dependent on diversity and exemplifies the way a city frames itself for the future.

Rowlett understands that a clear commercial development is more desired to create a viable city as opposed to industry or narrow business visions (4City, 2011). Rowlett encourages science and technology and restricts big box retailers that will blanket the market but not support a long-term desirable lifestyle for the city. This focus on technology and smaller business will not only encourage sustainable growth but also protect water issues such as infrastructure and the lake (4City, 2011). The city understands water as a viable tool for growth so protection is vital. Most of the “Realize....” document focuses upon community sustainability, which is a tie into the TBL of sustainability. The idea of a focus upon one part of the TBL (i.e.



the social) upgrading the other portions is validated throughout the “Realize...” document (4City, 2011). A social or citizen foci intended to direct growth instead of an economic or growth cost initiatives without regard to long term TBL can be interpreted to mean that Rowlett is attempting to see long-term sustainability concepts and understand that long term need incorporated into smaller but contemplated steps. Water is not a primary concern in the “Realize...” document. The water facet is more directed in the zoning ordinances, which are which are similar to the ones of Bedford and The Colony (3City, 2012).

The water restrictions in Rowlett are similar to those within the other two cities, are again shown here with a restriction on watering based on how the citizen’s address (5City, 2012). Watering restrictions give options to water only every two weeks during the current Level 3 water restrictions, which is not consistent with the Texas guides from the Texas Nursery Association; therefore, which the citizen will need to choose between following the policy of the city and the guides of professionals (TNLA, 2012). Adequate water supply for the needs of the citizen is necessary to ensure the citizen follow policy. Consistency within policy directives is imperative to keep the citizen and government a path toward a sustainable lifestyle, which is encouraged by the TBL of Sustainability.

It seems to develop negative construct when the website allows the Waterview Golf Course to water as needed with no regard to conservation (5City, 2012), but it is of note that the water supply for the golf course is from a different source than the other irrigation and drinking supply (5City, 2012). The rules for a sustainable TBL balance should apply across the board, not in conjunction with specific sources in order to be effective. It is also of note that this is the first city in the research perimeters which have specific regulations and restrictions for public fountain water use as water consumption use across the entire city is imperative to reach the Triple Bottom Line within reach (5City, 2012).

### 6.5.2 Rowlett: Conclusions

The city of Rowlett shows more direct citizen-to-government information context when compared to the cities of Bedford and The Colony. By easily giving the links to other information to show the citizen a clear path to policy and instruction, the city in turn helps keep the city of Rowlett on a growth pattern. The TBL of sustainability is evident in the how the economic, social, and environmental all work in conjunction to create a viable city. Though some restrictions may need a reformat, the overall pattern is of potential growth and substantive infrastructure to ensure that growth.

The city of Rowlett gives very concise and clear steps for water rules and regulations as well as necessary limits to various subsidiary areas for water based applications. The city of Rowlett gives a citizen clear paths to help the city focus on water needs or questions and reflects clear and precise direction for water information. Compared to the water policy of the city of Bedford, the city shows a TBL of sustainability. It is also noteworthy that the city of Rowlett has a directly link to the Commission of Environmental Quality in order to gain more information which will allow the citizen to gain more information to engage in a Triple Bottom Line context (TECQ, 2012).

Rowlett as a suburban city representation of the larger metropolitan area has the following main concerns as a study of the Comp Plan, rules and regulations, and ordinances that make up a citizen base of knowledge:

- lack of water connection in the “Realize...” document
- water restriction on irrigation easy to circumvent
- adequate water guidelines for sustainable plantings are lacking
- need direct link to citizen and government

## CHAPTER 7

### RESULTS OF STUDY

This study is focused upon the policy within the municipal suburban areas of the Dallas/Ft Worth area in regards toward the shift to a sustainable paradigm. Current government structure of policy, ordinances, rules and regulations, reflect the past needs of the urban area. Paradigm shift to sustainability placed within the existing urban landscape, the thesis suggests needs to identify policy, ordinance, rules and regulations that are not within the sustainable paradigm. Focus upon direct policy, ordinance, rules and regulations examples which are citizen direct policy (such as water irrigation systems) and inputs of more public directives which effect how the citizen's perspective toward the directives is applied. An example of the policy is within the city of Rowlett which uses water use policy of private property owners but does not show the policy as equal for the public domain. The citizen receives mixed messages depending on how the variable of water applies.

A city is made of many complex areas such as commercial, industrial, and public spaces which need redeveloped policy concerns, but this thesis focuses on existing policy and how changes can be made to reflect the Triple Bottom Line. Cities will need many more perspective changes in policy in order to attain a Triple Bottom Line of Sustainability. The study conducted over three suburban city areas gave interesting points that not only refer to water but also infers how the city government creates a framework for the citizen. Bedford embraces a city that is bound by land issues and by stating that the population remains constant over the next decades, suggests that Bedford wishes to remain a single family density constant town of near 50,000 in population (MPRGinc, 2010).

In the same context, the city of Rowlett is embraced for change. "Realize Rowlett 2020" opens avenues to diversify the city, change the density and matrix of the city, and also embrace input changes to the city dynamic such as transit orientated development that will enact change in the city structure (4City, 2011). Bedford also has established mass transit but uses the mass transit option characteristically different than the city of Rowlett. The city of Bedford will enact policy to maintain the status quo while Rowlett embraces change to create a dynamic future (MPRGinc, 2011; 4City, 2010).

Water in all three cities is treated differently as to the value of water but consistency in the rules and regulations pertaining to a water variable. The Colony and Rowlett are enacting as cities by water sources as each has a boundary of a metropolitan reservoir (i.e. Lake Lewisville in The Colony and Lake Ray Hubbard in Rowlett). The Colony suggests that the embracing of water as a viable change factor on economic parts of the TBL. Rowlett directs land use, zoning, and supportive policy to enact change with the water as paramount (Springbrook, 2007; 4City, 2011)

Water policy in all three suburban cities is focused upon water use by the citizen. Water drought regulations affect each city's rules and regulations as well as the state policy directives (TECQ, 2012). Suggestive personal water use such as car washing, irrigation of plants, and waste management of water such as faucet leaks or timeframe suggestions for washing clothing or dishes all appear in some or all of the water restriction documents.

There are other inconsistent policy patterns that are apparent from the study of rules and regulations. The cities of Bedford, The Colony, and Rowlett give water standards and policy to save water, but each gives the policy in a way to make the rules and regulations easy to ignore. The example of The Colony using a suggestion of a water irrigation schedule that does not follow agricultural guidelines for water need for foliage and grasses suggests that to follow

one policy creates a problem within another (3City, 2012). This shows a communication lapse and a lack of a TBL of sustainability.

Another inconsistent factor is how water is focused upon waste of water instead of use of water or source of water. There are policies in place to deter home car washing but not any reference to deter commercial car wash systems that are already in place. The use of the water is the policy change need and even water recycle systems used in commercial car wash operations create conflict between if the use of water is bad or just the placement (i.e. private at home use or commercial via a paid water use). This private versus public use of water is a conflict of TBL and also the public lack of restrictions in some areas such as fountains as opposed to private use of water. Rowlett condones recycle water systems in decorative fountains but The Colony and Bedford makes no reference to public decorative fountain restrictions on public or commercial property.

## CHAPTER 8

### CONTEXT OF THE RESEARCH TOWARD A SUSTAINABILITY PARADIGM

#### 8.1 Introduction

The ideas of sustainability produce a new paradigm expansion for the urban planner. The ideas of sustainability, which are related to much more ideas of a sustainable lifestyle, are related to more long term plans than in projections for processes in the field. A Comprehensive Plan generally refers to a twenty year plan but in terms of sustainability, the plan may need an extension to deal with a one hundred year plan. The plan spread to that context would mean not only a larger viewpoint but also a deeper understanding of what a city's future should look like.

One problem that arises in a longer context for a document such as a Comprehensive Plan is that there has to be enough ambiguity to allow flux over time. Within that allowance has to also be enough guidance to make the document applicable to the current day. An example of a vague document that does not really guide a city is the Comprehensive Plan of Bedford (MPRGinc, 2010). The inputs of ideas and general guidelines means almost any interpretation is allowable, which will eventually cause conflict between government forces of guidance.

Policy, ordinances, rules and regulations are set up to not only restrict improper use but to also guide the reader (i.e. user) to how to apply the guidelines to the use at hand of whichever variable is directed. The guidelines are generally structured toward relationship to other variables as restrictions of size or placement. Sustainability influences the idea of the variable guidelines in a timely frame. To begin thinking of balance toward the Triple Bottom Line and sustainability concerns means a new framework has to be applied to the guidelines in order to fall into the paradigm shift of sustainability.

## 8.2 Results of Study toward Sustainability Paradigm(s)

The variable chosen for the research is water. Water, (as stated previously in this research), is vital to long term survival of the human body and therefore the well-being of the city as a whole. This research showed a concern in cities such as Rowlett or The Colony toward growth inputs to water as a resource. At the same time the same cities showed a lack of input toward the fact that each is bordered by a large reservoir. Both cities stated catch phrases that acknowledged the city and water relationship but did not give in depth thought about a variable as a growth framework to develop the city.

## CHAPTER 9

### CONCLUSIONS

#### 9.1 Results and Perceptions

The result of the research showed a direct correlation between framing and communication within the city structure. To answer the thesis question of whether municipal water policies within the Dallas/Ft Worth metropolitan area promotes sustainable water use, the study showed the city may need to engage in a deeper and longer term consideration for a Triple Bottom Line (TBL) of sustainability. The research showed a need for framing while consideration between how the city is developed and how the city will develop in the future. The way that the city constructed itself also shows how the city guidelines will develop a closer communication or farther communication consideration.

Guidelines within the city may need a complete change in order to engage in longer term considerations that are the basic constructs of a sustainable lifestyle. The choices of the suburban cities gives an indication that regardless of size or placement within the city as well as any previous regard toward growth, the city may need to re-evaluate guidelines that the citizen is operated by in order to grow a tighter citizen to government relationship and understanding. The need to create a more intensive sustainability context within the city will therefore need to be applied within the same guidelines. The city will need to apply new approaches in order to grow paradigm change.

The city has established long term guidelines for the direction of policy, ordinance, rules and regulations that pertains to the variable of water. Current guidelines will need change and regulation does not necessarily regard a longer term sustainability construct. The other factor that was implied by research is that the idea of a lack of concern or the idea of a citizen to



government ideology does not necessarily regard an understanding and development toward the Triple Bottom Line where balance and equality is present.

The city has developed guidelines to direct the citizen but a deeper understanding of the ideas of a Triple Bottom Line will need to be understood on both the citizen and the government as a whole before change can occur. Guidelines that regulate by source not use will need to be changed and this alone will require a new understanding of what the variable in question means to the city at large.

## 9.2 Summary of Contributions

This research has developed the following regards toward the urban planner as liaison between the citizen and the government:

1. Context such as how the city developed and where the city is planning on growing in the future must be regarded in longer terms than historically used when developing a more complex understanding and move toward a Triple Bottom Line of sustainability.
2. Though research has shown that the city may have regarded policy toward a better use or variable constraint, the city did not regard an understanding of a Triple Bottom Line and will need to do so if the sustainability paradigm is to grow successfully.
3. Long term change will depend on a cohesive understanding and cooperation in all areas of the city just as a successful Triple Bottom Line depends on balance between the triad of Economy, Social, and Environmental.

## CHAPTER 10

### FUTURE RESEARCH

This thesis was developed to attempt to answer the question of how to identify sustainable based needs in municipal policy as it pertains to the variable of water. Future research can be expanded to incorporate other variables such as transportation, density within the city, or even other natural resources. The universal variable created a way to use a middle ground of understanding and then move to other issues based upon sustainability paradigm shift change.

A tool to easily identify policy change needs could be developed such as a rubric. By using a tool such as a rubric, with a consistent list of questions to “grade” existing policy, the identification of problem areas can be considered. The participation of the citizen is another source of possible development toward paradigm shift changes. Using interviews, survey, and random sampling of the municipal population, a test of understanding could be developed.

The thesis showed distinctive gaps within the input of water as a variable within the Comprehensive Plan; therefore more input as to source and use of water within the Comprehensive Plan may be necessary in the future. A study to how to incorporate long term sustainable water source and use within the Comprehensive Plan could be another directive of future research.

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