Hillside District Plan
ALTERNATIVES
A Framework for Public Discussion

April 2008 www.hillsidedistrictplan.com






The Hillside District Plan is a project of the Municipality of Anchorage.

This report was prepared with assistance from MWH, Agnew::Beck Consulting, LLC, HDR Alaska, Inc., Larsen Consulting Group, LLC and Blue Skies Solutions.

Acknowledgements

For the past year, a number of dedicated people have volunteered their time and input to make this planning process successful, and a reflection of the desires, values and needs of Hillside residents and Anchorage citizens.

The Municipality of Anchorage and the team of professional consultants working on this plan would like to thank all those who have attended meetings and workshops for this plan, and in particular recognize the commitment of the Citizen Advisory Committee in this process.

Hillside District Plan Citizen Advisory Committee

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Hillside District Plan

Hillside District Plan
A L T E R N A T I V E S
A Framework for Public Discussion

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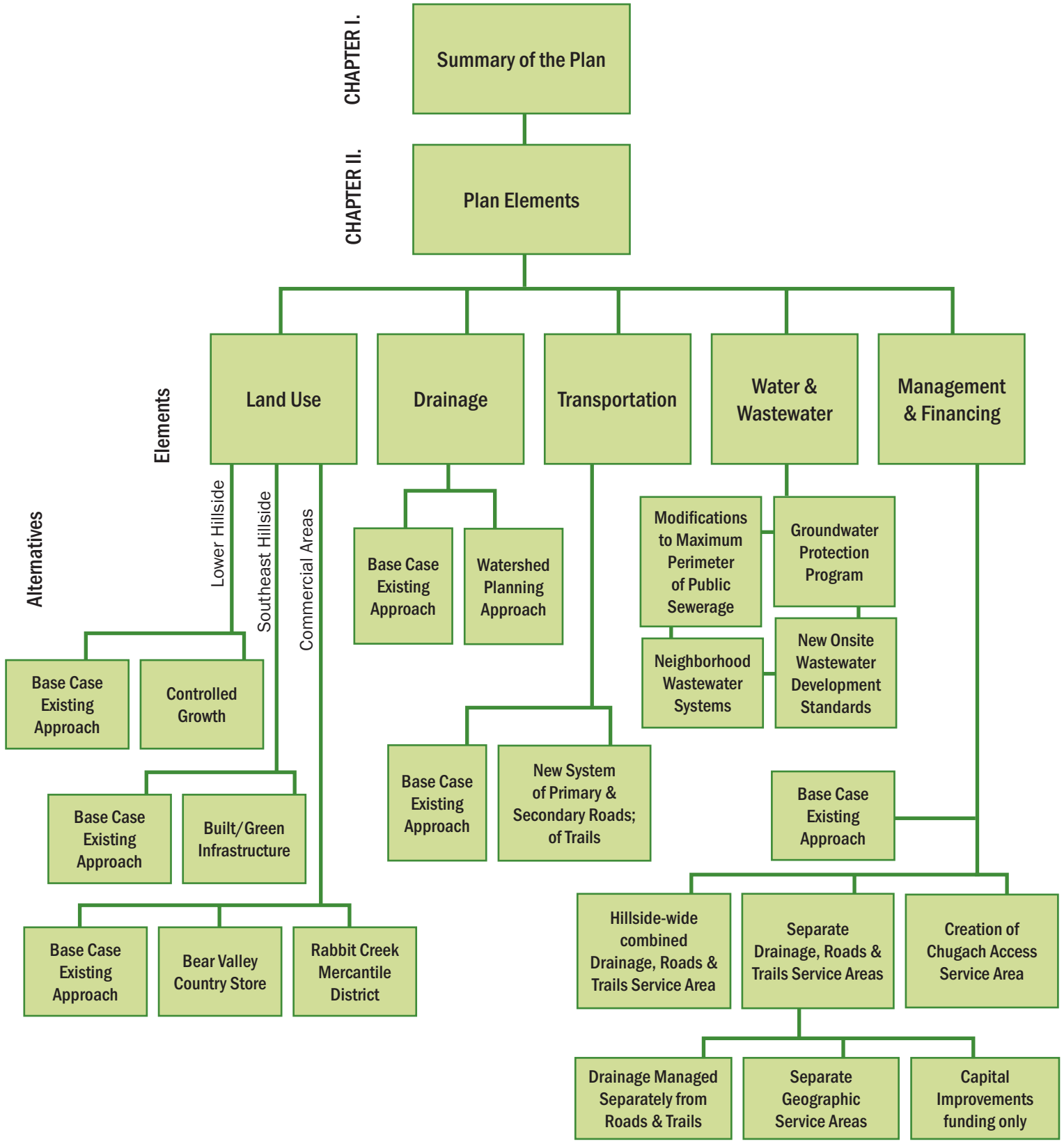
How to Use This Document

This document is intended to lay out alternatives for plan elements. Because the Hillside is a big place, with many opportunities and issues, there are many aspects to the issues laid out here and a range of alternatives for public review and consideration.

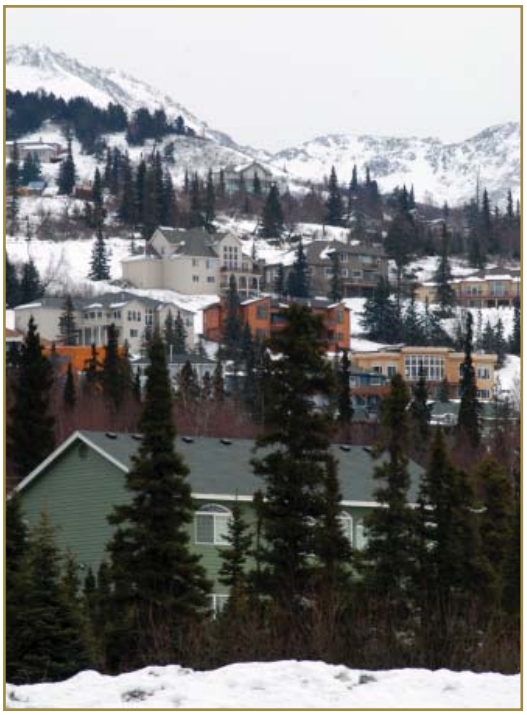
The figure below is intended to give you a map of the plan, so you can easily understand its organization and find exactly the element you want to review and learn about.



I. Introduction

1. The Hillside District Plan

The purpose of the Framework Plan is to present alternative approaches to issues raised during the planning process. The public is invited to shape the alternatives being considered, to review and revise judgements about the consequences of these options, and to express preferences for particular alternatives. The goal of this document is to invite an open, informed public discussion about key plan options, not to present final decisions on these possible future policies.



The Hillside District Plan process has now been underway for just over one year. During that time, the Citizen Advisory Committee has met 23 times; two rounds of public workshops have occurred; a survey was completed by 2,157 Hillside residents and landowners; and about 85 members of the public have contributed ideas and opinions to the Hillside District Plan website (www.hillsidedistrictplan.com). This *Framework Plan* combines the initial direction provided by the Anchorage 2020 Comprehensive Plan for the Anchorage Bowl with the input received from residents, community organizations, landowners and municipal departments, plus the findings from studies on the district's drainage, transportation, and water and wastewater systems. Municipal staff, contractors and the members of the Citizen Advisory Committee worked together to develop the set of alternatives presented in this document based on public comment and study findings.

The Hillside District Plan must strike a balance between the needs of a range of interests:

- Many residents, particularly those who live in the large portion of the district where housing densities are low, have expressed a strong preference for maintaining these low densities, protecting natural vegetation and the "rural" character of their surroundings.
- Many residents desire transportation system improvements, particularly to improve emergency access and reduce congestion and increase safety at several intersections.
- Owners of large vacant parcels of land in the southeast portion of the Hillside are preparing plans to develop these areas. Some landowners have expressed dismay at the potential for current or new regulations that could make this development more expensive, or even impossible.
- Other residents and landowners who have experienced impacts from new development (such as traffic congestion, flooding and glaciation on roadways) want assurance that the development process will be improved to avoid these off-site impacts.
- While a large majority of people living in the area expressed opposition to any new commercial uses within the district, some cited the benefits of specific commercial uses – such as a country store for basic supplies, or a neighborhood gathering spot – as long as it's well-managed and limited in size. A number of residents expressed the need to provide better standards for the nonresidential uses that already exist on the Hillside.

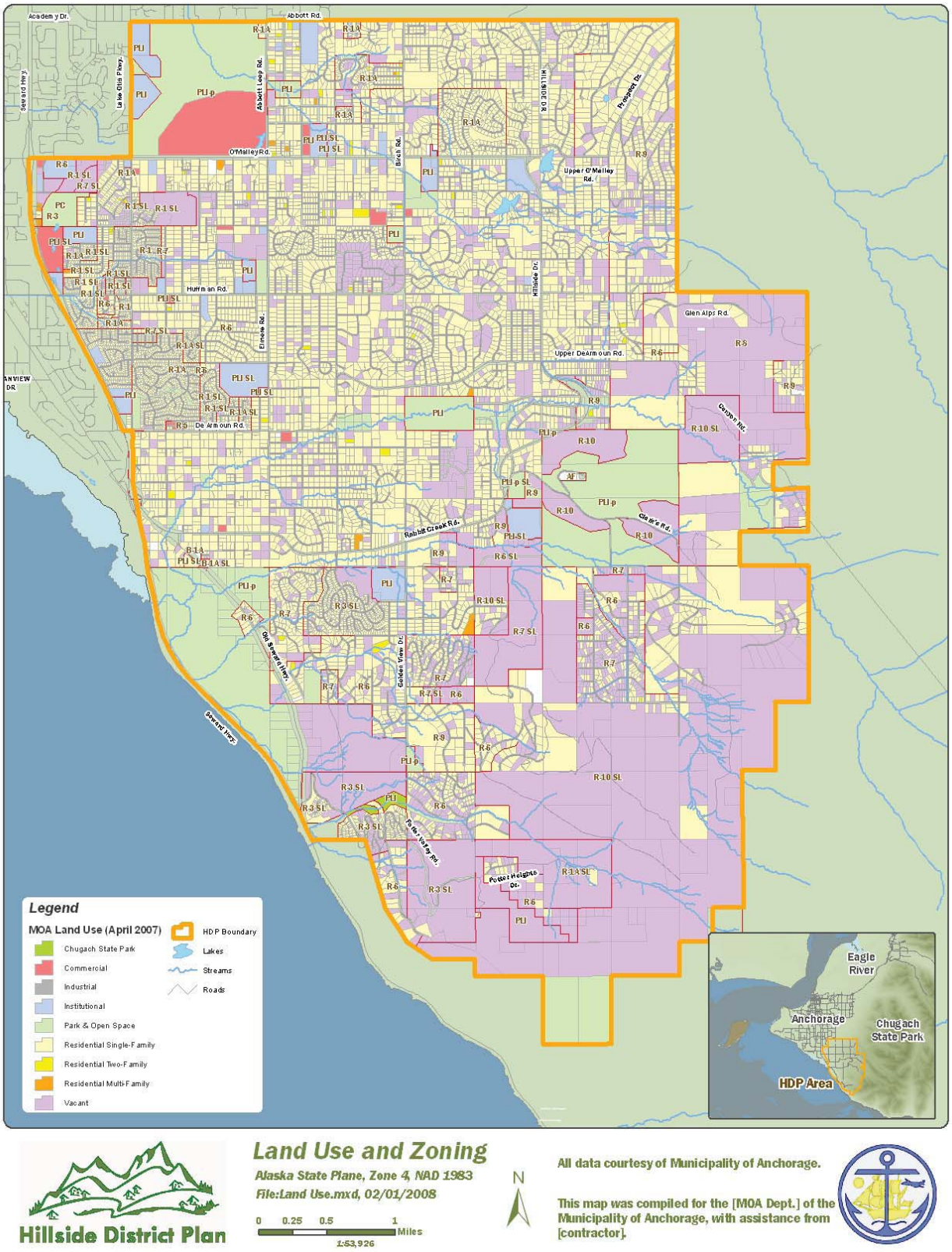
- Residents at the public workshops and those completing the survey expressed a very high level of support for preserving and connecting trails and for improved parks.
- Most of these issues are focused in specific areas, or are tied to future growth. Overall, as the public survey showed, residents are very satisfied with their quality of life on the Hillside and want to maintain those qualities that make their home a special place.

With current zoning measures in place, if all the Hillside's available lots were occupied (resulting in a build-out scenario), the area would grow from 8,500 to nearly 14,000 homes. While the plan cannot stop this growth, it can guide the location and quality of infrastructure and the character of future development. Some of the issues and questions addressed by the alternatives in this plan include:

- What mechanisms will resolve drainage issues caused by past and new development, e.g., how to keep ice off roads, basements and garages free of water, and streams and wetlands clean?
- What special standards should be developed to ensure that new development is suited to the particular environmental conditions of the Hillside? For example, what standards should be developed for retaining vegetation while reducing wildfire hazards? Are new standards needed for construction of roads, trails, home sites, commercial areas and other built infrastructure?
- What improvements to the road system are needed to relieve congestion, increase safety, support expected growth and provide better connectivity while maintaining neighborhood character?
- What actions are needed to reduce wildfire danger – such as emergency access, Anchorage Water and Wastewater Utility (AWWU) services and fire hydrants?
- Is it possible and desirable to reserve and maintain the most important traditional trail routes, especially since in many cases these trails cross private land? What is the best way to respond to the steadily increasing demands for access to Chugach State Park?
- Which portions of the Hillside should support more intensive development than what's already permitted under existing zoning? Which places should support less intensive development than is currently allowed?
- What can be done to improve the development-approval and review process so the process improves for developers, landowners, and residents?

Hillside residents value the beauty and privacy that comes with tree-cover and natural vegetation, as shown above and on the previous page. This is a contrast to examples of newer Hillside District developments which maintain less vegetation and retain fewer trees, as shown below. Development standards can help retain buffers of natural and planted vegetation to maintain the character of the Hillside.

Map I. 1A
Hillside Land Use and Zoning
(Yellow areas are developed. Pink areas are vacant.)



- How will new services and management mechanisms be paid for? What revisions to the current system of Limited Road Service Areas and independent road areas might meet the challenges posed by past and future growth, while maintaining local control?
- How will the viability of Onsite water and wastewater systems be preserved to provide quality groundwater for all residents?

2. Background to the Hillside District Plan

The Municipality of Anchorage has initiated this Hillside District Plan (HDP) process with the goal of establishing sound public policy that responds to pressures for growth and reflects the vision of residents and landowners. The Hillside District Plan, which was called for in the Anchorage 2020 Comprehensive Plan, provides more detail on land use and public services than what is outlined in Anchorage 2020, and may include revising existing zoning. The Hillside District Plan will also replace the Hillside Wastewater Management Plan.

The adopted Anchorage 2020 Comprehensive Plan provides broad direction on the general amount of future Hillside development. Decisions regarding the timing of development will be made by market forces. The Hillside District Plan focuses on the character and location of future development on Hillside and the infrastructure needed to support this development.

This Framework Plan presents alternatives derived from public comments, deliberations by the Citizen Advisory Committee, and the analysis of data gathered through studies on the following five topics: Land Use, Drainage, Transportation and Trails, Onsite Water and Wastewater, and Public Water and Sewer. The Framework Plan presents alternatives for discussion, not recommendations. The Framework Plan contains summaries of each of the full reports from these studies. The full reports can be found on the Hillside District Plan website at www.hillsidedistrictplan.com.

Public participation is critical to the success of this project; the planning process includes many ways for Hillside residents and other interested parties to shape the plan. More information about the Hillside District Plan is available at **www.hillsidedistrictplan.com**.

The purpose of the Hillside District Plan is to guide decisions on the *location and character* of future development on Hillside and the necessary infrastructure needed to support this development. Decisions on the general *amount* of development have already been made through the Anchorage 2020 comprehensive planning process. Decisions regarding the timing of development will be made by market forces.

Next steps in the process:

April 10, 2008
Framework Plan released for public review

April 10–May 12, 2008
Public review of alternatives, including Public Workshops

April 23–24, 2008
Public Workshops

May 12, 2008
Deadline for public comment on the Framework Plan

May–June 2008
Preferred alternatives selected, considering public opinion and working with the Citizen Advisory Committee

July 2008
Draft Hillside District Plan released for public review

The overall goal of the Hillside District Plan is to take active steps to retain the qualities of the Hillside most enjoyed by the residents and the area's visitors – including quality residential neighborhoods, natural vegetation, views, trails and access to open space – while accommodating the Hillside District's share of Anchorage's growth, as determined by the Anchorage 2020 Comprehensive Plan.

The Hillside District remains a highly desirable place to by a home in Anchorage.

3. Hillside Plan – Overall Goal

During the first phase of the planning process, goals were drafted to guide the development of the plan and to act as criteria by which the plan can be judged. These goals were developed working with the Citizens Advisory Committee and were reviewed by the public during the second set of workshops in October 2007. The overall goal of the Hillside District Plan is to take active steps to retain the qualities of the Hillside most enjoyed by the residents and the area's visitors – including quality residential neighborhoods, natural vegetation, views, trails and access to open space – while accommodating the Hillside District's share of Anchorage's growth, as determined by the Anchorage 2020 Comprehensive Plan. A complete list of plan goals, according to issue, is listed on page 17.

4. Hillside Character

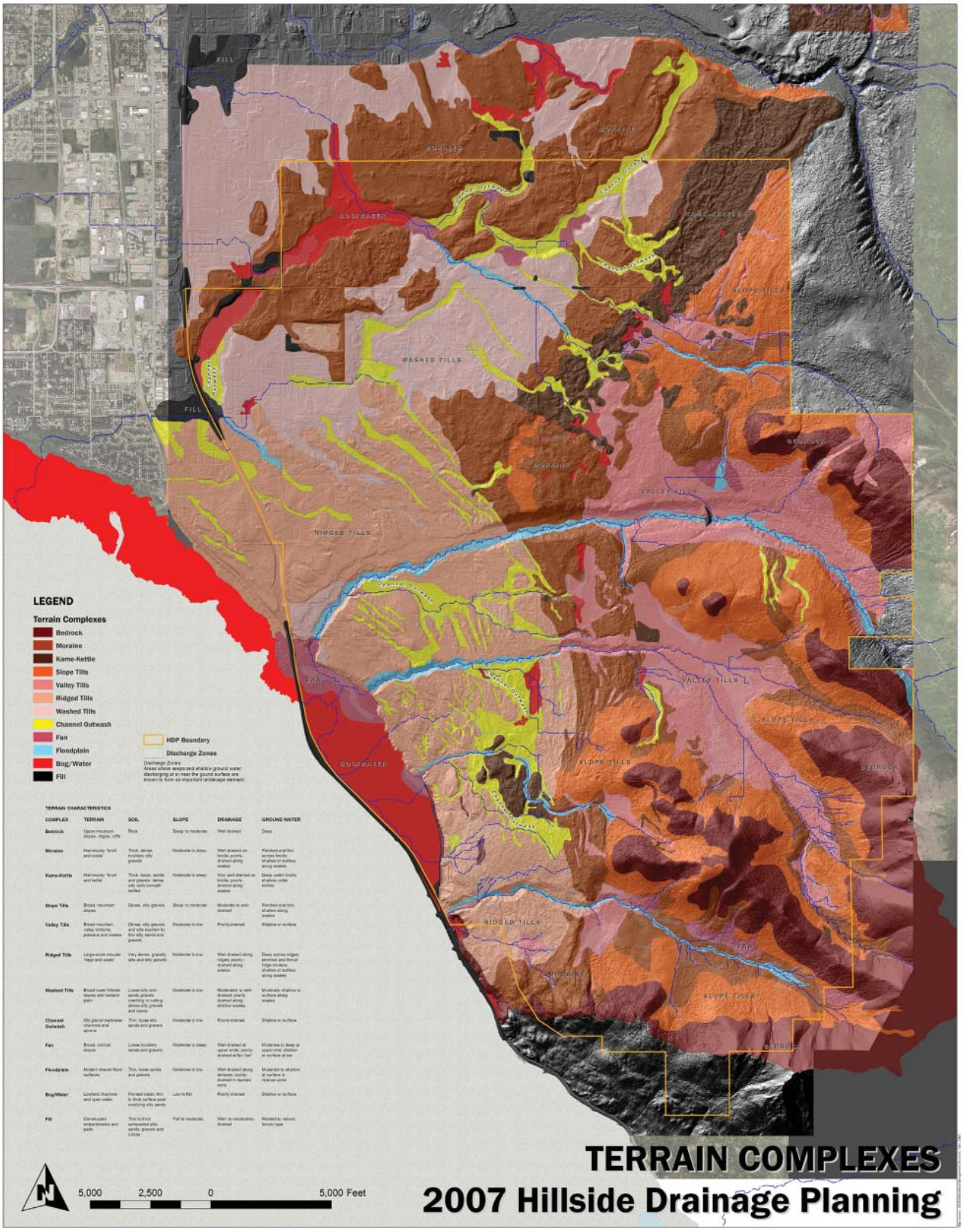
Landscape

Anchorage's varied terrain reflects a unique combination of marine coastal influences, glacial movement, northern climate and complex tectonics. Several rounds of glaciation have advanced down the Knik and Turnagain Arms, depositing clay and silt over much of the lower Anchorage area. Adding to this large scale glaciation are the cirque and valley glaciers of the Chugach Range, some of which still exist today. These glaciers and the materials they deposited are one of the main forces shaping Anchorage landscapes.

In simplest terms, the city can be divided into two areas, the flatter lowlands, and the mountains along the eastern portion of the city. The Hillside area includes both of these features, as reflected by Map I. 4A Terrain Complexes for Drainage Planning.

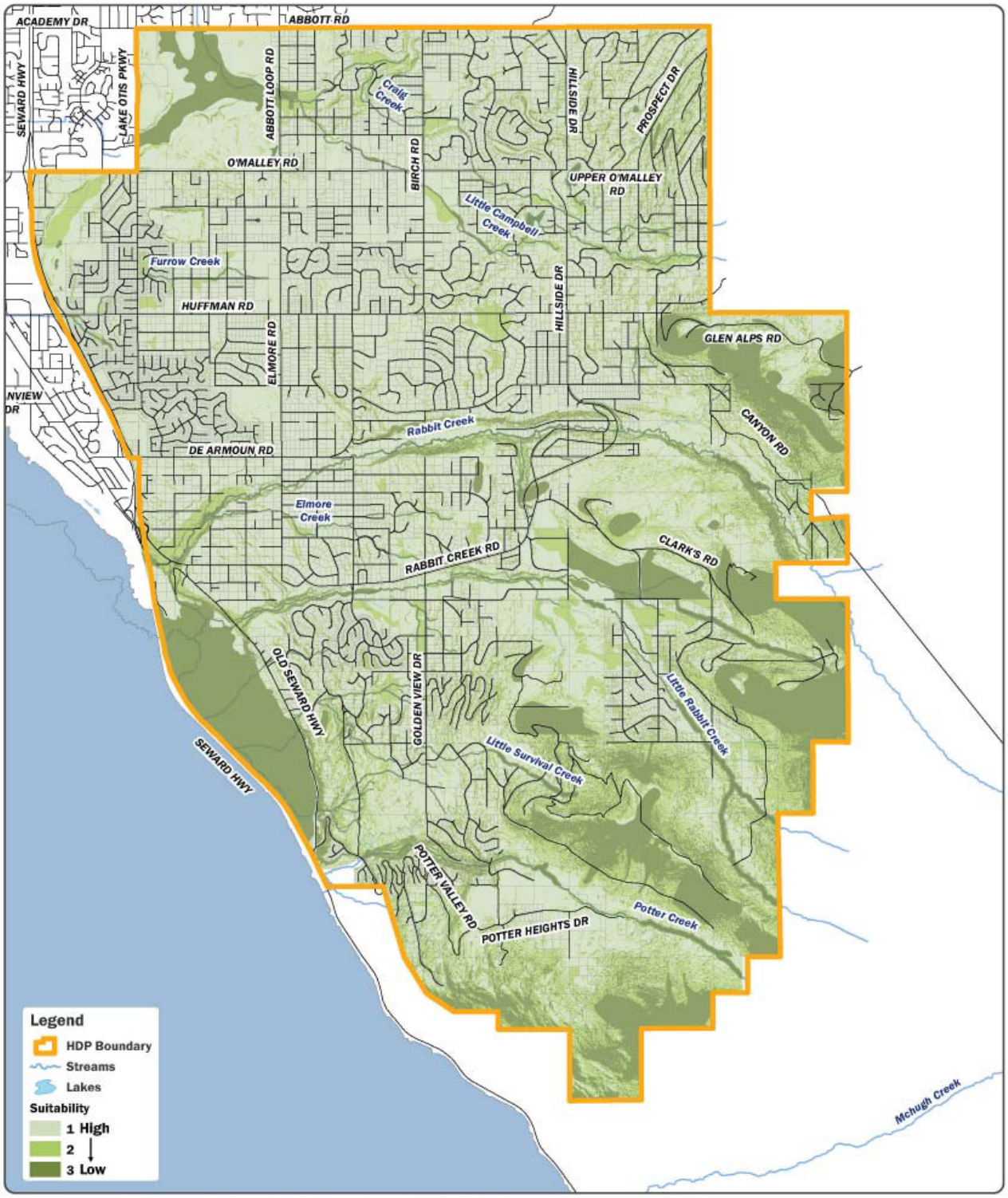
Tills (pink/peach on the map) are dense, gravely, silty sediment that have been pushed and deposited by glacial forces and washed along Anchorage's lowlands. Rising out of these lowlands, landscape features include slope tills, moraine and bedrock. The moraines (browns on the map) include ridges, pits and swales of coarse boulder-like sediment manipulated by glaciers. The lower reaches of Chugach Range ridges are mostly slope tills, giving way to bedrock near or at the surface.

Map I. 4A
Terrain Complexes for Drainage Planning



Map I. 4B

Development Suitability - Physical Constraints and Opportunities for Development



Implications for Development: Physical Opportunities and Constraints

The terrain of the Hillside is made up of wetlands and streams and rolling stands of boreal forest, leading into alpine tundra as the elevation climbs into the foothills and steeper slopes of the Chugach mountain range. These natural features challenge and influence development in the Hillside District.

The Municipality of Anchorage recognizes these physical constraints, summarizing the potential implications for development here in Map I. 4B Development Suitability. The map shows weighted and combined environmental constraints that have been divided into three categories:

1. Lands generally suitable for development
2. Marginally suitable lands
3. Lands generally unsuitable for development.

Generally suitable lands are considered minimally affected by any of the more significant environmental constraints of the other two categories Marginally suitable lands are those affected by moderate avalanche hazard, slopes between 25 and 45 percent, Class B and C wetlands and/or areas with high seismic activity. Generally unsuitable lands are high avalanche hazard areas, slopes greater than 45 percent, floodplains or flood ways, stream setbacks, Class A wetlands, bedrock and/or experience very high seismic activity.

The Human Factor

From the city's modest beginnings in the early 1900's, Anchorage's development has gradually spread outward from the original tent city at the mouth of Ship Creek.

As Anchorage has grown, development has reached into the Hillside area. These lands developed on a site-by-site or project-by-project basis, which tackled development issues as they arose. Previous development practices created many of the issues which surfaced in the Hillside District planning process.

The Hillside District Plan is designed to respond to the particular physical characteristics of the Hillside, which include the development that has occurred there during the past 50 years. The same qualities that attract people to the area, including scenic views, a mountain setting, and contact with the natural world, also present challenges for development. This plan looks at ways to lessen the impacts of past development and set high standards to minimize impacts from future development.

The "Hillside" is far from homogenous: the District encompasses a diversity of land forms and landscapes. Examples above show homes built in steeply sloping areas and in flatlands comparable to the rest of Anchorage.

5. Expectations for Growth

Located a 20-minute drive from downtown Anchorage, Hillside residents enjoy living in a low-density setting with access to well-paying jobs, a range of shops and services and the many amenities that urban environments provide. Maintaining these qualities while the area grows is the central challenge of the Hillside Plan.

As one CAC member noted, "If you go to community council meetings around Anchorage, you hear the same thing: "New growth should happen in some other part of Anchorage.'"

The Hillside is a special place. The qualities that residents most treasure (and those most often cited in public comments during this planning process) include large-lot living, "rural" atmosphere, a country road feeling, visual separation from neighbors, privacy, seclusion, and the sense of elbow room. These comments paint a picture of a low-density residential area with ample vegetation, owner-built homes, quiet streets, dark night skies, and easy access to undeveloped open space. Hillside residents also enjoy convenient access to the amenities of city life – good jobs, shops, services and entertainment, to name a few.

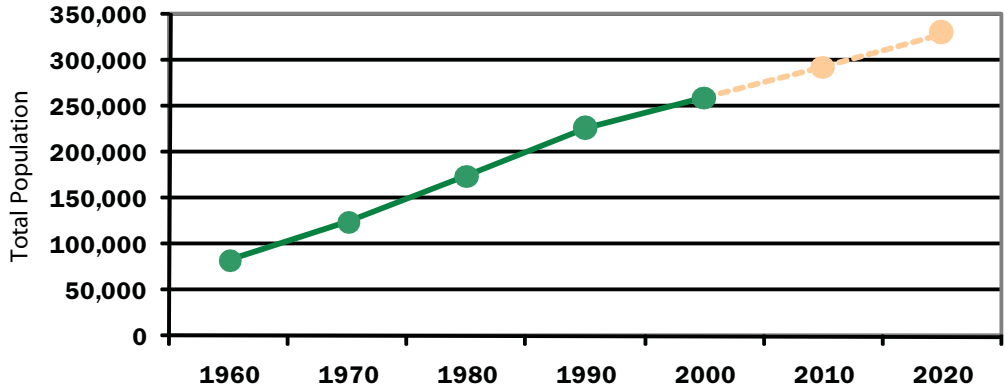
This proximity, however, also presents challenges. Anchorage is a young and growing city. As Figure I. 5A shows, the population of Anchorage has more than doubled during the past 50 years. Withing the past ten years, the Abbott Road area east of the New Seward Highway has developed into a major commercial center.

There are two main ways to think about the amount of growth expected on the Hillside. One view is offered by the Anchorage 2020 Comprehensive Plan; the other is to look at existing zoning. Both lead to the same general conclusion.

The Anchorage 2020 plan establishes general allocations for estimated city-wide growth across five major districts of the Anchorage Bowl (Anchorage 2020 Comprehensive Plan, p58-59). As the sidebar on the following page explains, 13 to 20 percent of the Municipality's growth has been allocated to the Hillside District. This Anchorage 2020 Plan allocation aims to balance the city-wide growth between the Hillside and the other portions of the municipality.

The second way to estimate the amount of future Hillside growth is to look at existing zoning. The Hillside District contains almost two-

Figure I. 5A
Municipality of Anchorage Population, 1960-2020



Source: Historical data from Alaska Department of Commerce, Community and Economic Development (Alaska DCCED). Projections from Economic Projections for Alaska and the Southern Railbelt 2004-2030 (ISER, 2004).

thirds of the Anchorage Bowl's vacant residential land. (Map I. 1A shows vacant lands in pink.) The Municipal Planning Department estimates that 5,030 additional dwelling units could be built in the Hillside under existing zoning and considering the phsyical constraints on development outlined by Map I. 1A. Figure I. 5B sets out the amount of growth possible under existing zoning. This includes the infill of existing subdivisions as well as new subdivisions in the process of being platted, approved and developed (3,040 homes). It also includes an estimate of the housing units that could be developed on vacant land not yet subdivided (1,990 homes). At an average of two to three people per household, this translates into an additional 10,000 to 15,000 Hillside residents.

While Figure I. 5B estimates the number of homes possible at complete build-out, it does not project the pace of this growth. Depending on market conditions, full build-out could occur in the next 15 years or the next 50 years. The fundamental challenge for the Hillside District Plan is to find ways to accommodate this growth while retaining the qualities that make the Hillside a special place.

Figure I. 5B
Estimated Build-Out in the Hillside District, Based on Existing Zoning

	Number of Housing Units	
	Built	Total
Existing homes as of 2000	7,730	
Total increase in homes since 2000+	862	
Existing homes as of March 2007	8,590	
Additional homes based on infill development, pending development and preliminary plats*	3,040	
Additional homes based on vacant land analysis adjusted for physical constraints	1,990	
Total additional homes	5,030	
Total homes possible at build-out		13,620

+ The information from 2000 is used to compare growth since the adoption of *Anchorage 2020*.

* This includes 400 units of the Legacy Point Development. Estimates updated by the Muncipality Planning Department Jan 2008.

The Municipality of Anchorage Planning Department projects that under existing zoning, 5,031 additional dwelling units could be built in the Hillside District. These estimates have been updated by the Planning Department as of January 25, 2008.

Where should the next 100,000 people live? How did the Anchorage 2020 Plan allocate 4,000-6,000 new dwelling units to the Hillside?

As part of the Anchorage 2020 Comprehensive Plan, the University of Alaska Anchorage's Institute of Social and Economic Research (ISER) projected that the Anchorage Bowl would increase by approximately 100,000 people or 31,600 households between 1998 and 2020. The Anchorage 2020 Plan allocated this growth projection across five sectors as shown below:

Central	5,000 – 7,000 (17-23%)
Northwest	7,000 – 9,000 (23-30%)
Northeast	5,000 – 7,000 (17-23%)
Southwest	4,000 – 6,000 (13-20%)
Southeast	4,000 – 6,000 (13-20%)

Overall, growth is allocated somewhat evenly among the five subareas. The Southeast planning sector, which corresponds to the Hillside District Plan area, has the largest land area of the five subareas, and by far the largest amount of vacant private land, but is one of the two subareas with the smallest growth allocations.

The market will determine the rate of growth. The most important aspect of the growth allocations outlined in Anchorage 2020 is that it sets a target of 13 to 20 percent of Anchorage's growth (4,000-6,000 units of 30,000 total) to occur on the Hillside.

The Hillside allocation assumes that most residential development will follow established settlement patterns and densities. However, Anchorage 2020 also assumes that within the "urban" portion of the proposed Urban/Rural Service Area Boundary, limited revisions to existing zoning will be allowed where and cost-effective to satisfy demand for small-lot home sites. Also according to the plan, some medium-density multi-family housing development will occur along the western portion of the Lower Hillside. (Source: Anchorage 2020 Comprehensive Plan, p26-28 and p58-61).

Residents from all parts of Anchorage, as well as visitors to the city, access the Chugach State Park through trailheads located in the Hillside District. The infrastructure to meet this demand including trails, trailheads, and parking areas is not adequate to support the current and growing level of use.

Depending on market conditions, full build-out could occur in the next 15 years or the next 50 years. The fundamental challenge for the Hillside District Plan is to find ways to accommodate this growth, while retaining the qualities that make the Hillside a special place.

The Hillside is also experiencing significant growth in demand for recreational access. Residents from all parts of Anchorage as well as visitors to the city reach Chugach State Park through trailheads located in the Hillside District. The infrastructure to meet this demand (including trails, trailheads and on-street parking areas) is not adequate to support the current and growing level of use. Developed trailheads such as Glenn Alps are frequently overflowing. Traditional, but undeveloped, trailheads are experiencing many more cars and people than they can accommodate. Newly established trailheads are also experiencing demands well beyond their capacity. Many landowners are frustrated by the issues sometimes associated with trail use, including maintenance of private roads, trash, traffic and other problems.

6. Overview of Hillside Alternatives – The Big Picture

The large majority of the Hillside District has low-density lots of 1.25 acres to 2.5 acres and larger, with ample vegetation, access to trails, the presence of wildlife, privacy and other amenities associated with low-density residential development. While sharing many of these characteristics, different portions of the Hillside are also different in important ways. To evaluate planning options which best address these differences, the district is divided into three general areas: Lower Hillside, Central Hillside and Southeast Hillside. The map on the following page identifies the general location of these areas; the following sections present land use and infrastructure alternatives for each.

Lower Hillside includes the western most portion of the district, roughly bounded by O'Malley Road to the north, Elmore Road to the east, Rabbit Creek to the south and New Seward Highway to the west. Much of this portion of the district has the same low residential densities found in most of the Hillside. However, in some cases, the area includes higher-density residential development and "urban" services such as commercial centers, roads and public water and sewer.

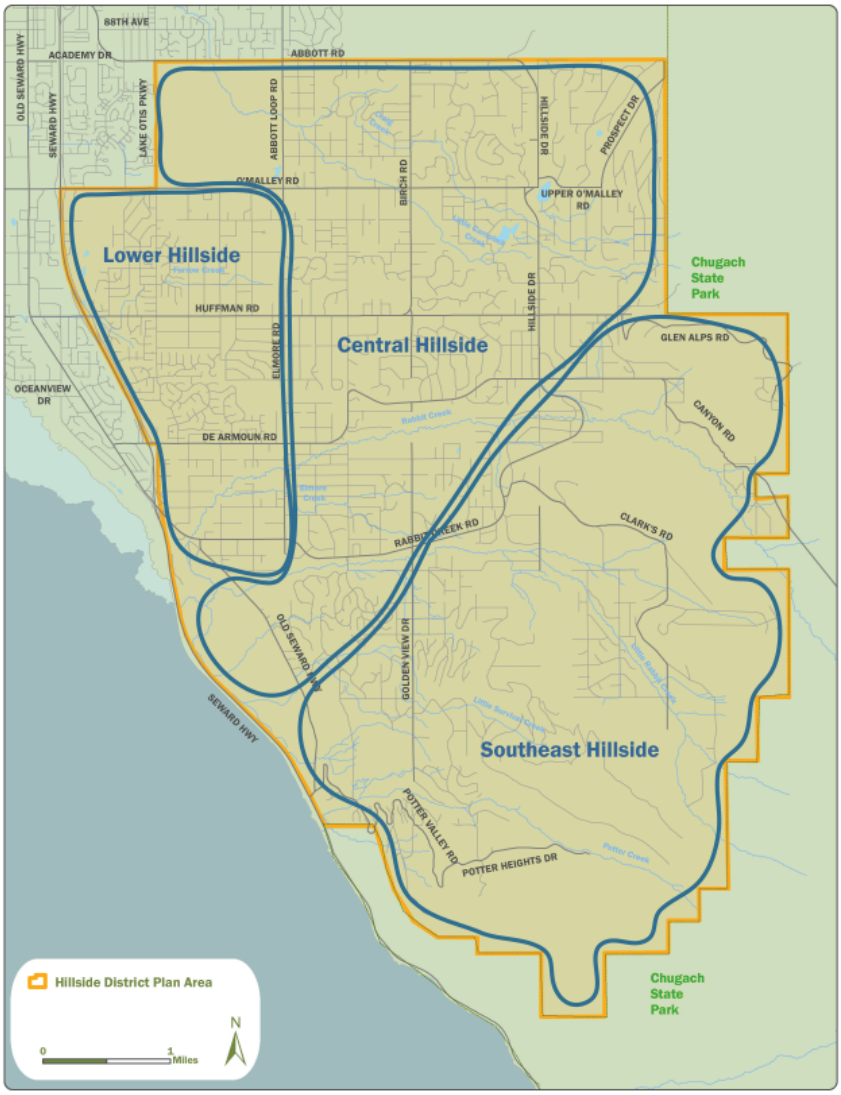
Central Hillside includes the northern and central portions of the district and is roughly bounded by Abbott Road to the north, Chugach State Park to the east, Rabbit Creek Road to the south and Elmore Road to the west. The land use pattern of Central Hillside is likely to remain stable into the foreseeable future because much of the area has already been subdivided. Also, the creation of smaller lots in this more distant, low-density area would likely require the extension of public water and sewer, which would be very costly.

Southeast Hillside includes Bear Valley, Little Rabbit Creek, Little Survival Creek and Potter Valley drainages. This area is roughly bounded by Rabbit Creek Road on the north, Chugach State Park to the east, and the New Seward Highway to the south and west. This portion of the Hillside includes the largest area of vacant, privately owned land in Anchorage, approximately 1700 acres. This is also the Hillside area with the greatest environmental challenges to new development.

As described above, within the Hillside District there is substantial undeveloped private land, enough to support approximately 5,030 additional homes. Private landowners have clear rights to develop this land within the limits of Municipal code and State law.

Growth will occur with or without a Hillside District Plan. The policies agreed upon through this process will guide the character of this growth, ultimately helping to define what kind of community this will become in future decades.

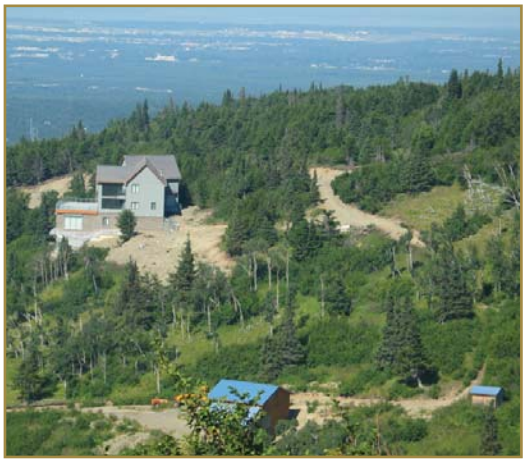
Map I. 6A
Hillside District Regions



The qualities Hillside residents value include open space, vegetation, quietude, dark night skies, access to trails, the presence of wildlife, privacy and other qualities associated with living in a less urban environment. While sharing these characteristics, different portions of the Hillside also have some important differences.

Lower Hillside

Central Hillside



Southeast Hillside

These photos provide a sense of the diverse character of different parts of the Hillside.

Starting Point – Community Input and the Anchorage 2020 Plan

The alternatives presented in rest of this draft plan respond to community concerns and the guidance provided by the Anchorage 2020 Comprehensive Plan.

Anchorage 2020 directs the policy development of the Hillside District Plan as follows:

- Traditional low-density development continues on the Southeast Hillside.
- Strategic and limited revisions to zoning and public water/sewer extensions permit additional small-lot subdivisions on the Lower Hillside.
- Significant environmental features are protected and integrated into new subdivisions and public facilities.
- Transportation and other land use decisions reduce traffic congestion and trip generation.
- Hillside wildfire dangers are addressed through an active management program.

The following pages suggest alternative approaches to the challenges and opportunities identified by this planning process and through the Anchorage 2020 comprehensive planning process. The Community Advisory Committee and the consultants who helped form this Alternatives Plan invite everyone with a stake in the future of the Hillside to review this information, and let us know your views. The area is destined to grow. What are the best strategies to shape this growth and to preserve the best aspects of life in the Hillside District? We welcome your questions and ideas.

Have Comments or Questions?

Let us know what you think. There are many ways to be invovled in the planning process and to help shape the future of the Hillside District.

Visit **www.hillsidedistrictplan.com**

Find out about upcoming public workshops on the website and attend.

Complete the online comment form on the website or e-mail outreach@agnewbeck.com.

Hillside District Plan Goals

Overall Goal for the Hillside District Plan

Take active steps to retain the qualities of the Hillside most enjoyed by Hillside residents and Hillside users — including quality residential neighborhoods, a sense of "elbow room," natural vegetation, views, trails and access to open space — while accommodating the Hillside District's share of Anchorage's growth, as allocated by the Anchorage 2020 Comprehensive Plan.

Land Use Goals

1. Recognize and maintain the quality and diversity of the Hillside District as a place to live, ranging from low-density rural areas, to single-family suburban neighborhoods, to areas with duplexes and townhouses. Throughout the Hillside, maintain assets such as quietude, trees and other natural vegetation, wildlife habitat, good views, access to open space, access to clean water, and dark night skies.
2. Guide the character of future development in the Hillside District. The Anchorage 2020 Comprehensive Plan growth allocation for the Hillside is 4,000-6,000 new dwelling units for the years between 2001 and 2020.
3. Provide a range of housing types and values within the Hillside District, compatible with the characteristics of individual neighborhoods, and consistent with the Anchorage 2020 plan.
4. Plan land use, transportation and other infrastructure to be efficient in terms of public expense, energy use and other resources.
5. Protect a system of "green infrastructure" that serves community needs such as providing corridors for drainage, protecting natural systems (such as aquifer recharge areas, stream and wildlife corridors), and providing open space for views and recreation.
6. Retain land for public purposes such as schools, drainage-related facilities, and fire stations. Provide gathering places for neighborhoods such as parks and recreation facilities, taking advantage of existing public facilities such as schools.
7. Maintain and improve a system of parks, trails, open spaces and other active and passive recreation areas.
8. Protect views, both looking out from the Hillside, and views of the Southeast Hillside as seen from the rest of the Anchorage Bowl (for example, by maintaining vegetation, limiting cut and fill, and guiding the location and character of new residential development).

Overall Goals for Public Infrastructure

1. Provide public services and facilities for the Hillside in a manner that minimizes construction and operating costs, meets resident needs, and maintains environmental quality.
2. Solve deficiencies in existing infrastructure and plan and develop adequate infrastructure for new development.

Transportation Goals (Road System)

1. Improve the system of Hillside roads to respond to current use and expected growth.
2. Improve road safety through, for example, physical changes in roads and intersections, speed limits, improving sight distance, minimizing cresting over roads, and improving strategies for providing road access in steep areas.
3. Improve road connectivity while maintaining neighborhood character, particularly in areas where new development is likely to occur. Define and improve collector and arterial roads to avoid excessive traffic in residential neighborhoods.
4. Provide improved emergency access and egress.

Transportation Goals (Trails)

1. Develop a Hillside trails system that links neighborhoods and connects to schools, parks, shopping areas, as well as accesses points to the Chugach State Park and the city-wide trail system.
2. Design the trail system to benefit visitors to the area as well as Hillside residents.
3. Develop trails that serve a variety of uses and users, including trails that serve as transportation and recreation.

Drainage Goals

1. Develop a functional drainage system for the Hillside District that protects existing landowners when new development occurs, and that mitigates hazards and impacts of inadequate water management.

Water and Wastewater Management Goals

1. Provide a combination of onsite, neighborhood and public water and wastewater services in a manner that protects public health, ensures environmental quality, provides cost-effective installation and operation, and meets resident and landowner needs.
2. Preserve the viability of onsite water and wastewater systems.

Emergency Services Goals

1. Plan for public safety and fire prevention.
2. Plan for emergency evacuation by ensuring that all residents have adequate egress from their neighborhood.
3. Minimize risks of wildfire (for example, through incorporating fire management guidelines into site planning and development standards).

II. Summary of Alternatives by Plan Element

The role of community planning and land-use planning is to take into account current issues and projected growth in order to plan future development, anticipate and prevent adverse impacts, and to enhance the quality of Hillside life. Growth will occur with or without the Hillside District Plan. The policies agreed upon through this process will shape and guide the character of that growth, ultimately defining what kind of community this area will be for decades to come.

1. Land Use

Summary of this section

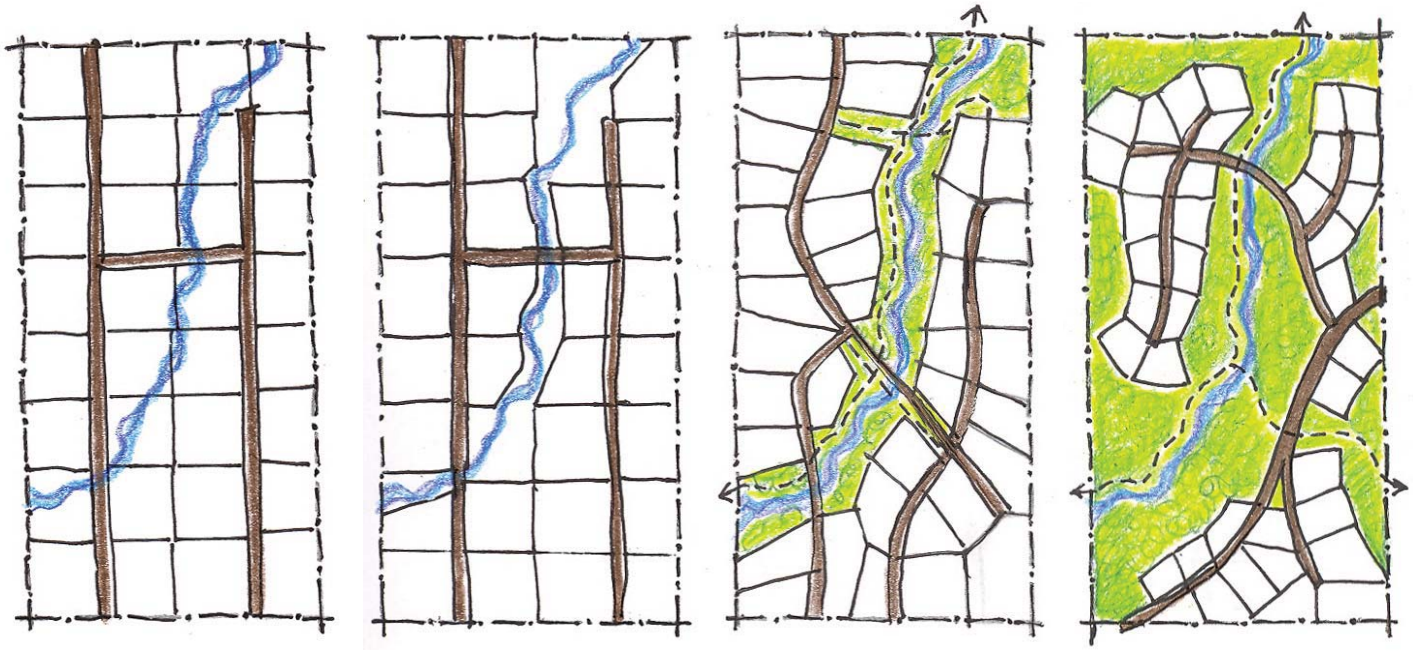
- Current Hillside zoning allows the area to grow from 8,500 units today, to almost 14,000 units in the future, an increase of more than 5,000 units. This Land Use section aims to consider options for guiding this growth to maintain the character of the Hillside District.
- The Hillside is a unique natural environment with opportunities and constraints that will define future development. This reality needs to shape the character of future Hillside land uses and infrastructure.
- Lower Hillside – Evaluate options for moderate increases in residential density, using a conservation subdivision approach; consider the option to extend the current Maximum Perimeter of Public Sewerage to Elmore Road.
- Southeast (Upper) Hillside – Evaluate the option of establishing an overlay of "built/green infrastructure" – an integrated system of corridors for drainage, wildlife and open space, and a backbone road system. This overlay would function as a starting point for future subdivisions. Evaluate the option of reducing allowed residential densities in the R1-A area of Potter Valley (see Map II. 1E Southeast Hillside Rezone Area); consider contracting the current Maximum Perimeter of Public Sewerage.
- Development Processes and Standards – Evaluate the option for changes to better tailor development to fit Hillside character.
- Commercial Uses – Evaluate the option of allowing two carefully planned, limited neighborhood commercial projects – a "country store" in the vicinity of the Bear Valley fire station and school, and recreation-oriented commercial area near the junction of Rabbit Creek Road and the Old Seward Highway.

Planning Issues Summary

- **Location for New Growth:** Anchorage is a growing city, and a portion of that growth will occur in the Hillside. The full build-out of existing private land, under current zoning, would allow the area to grow from 8,500 units today, to just under 14,000 units in the future. Consistent with Anchorage 2020 recommendations, this draft plan explores alternatives to guide this growth.
- **Options for Water and Wastewater:** While Hillside residents have expressed strong support for maintaining the viability of onsite well and septic systems across the district, there are particular areas where these systems are not performing well. The Water and Wastewater section of this plan evaluates options to maintain Hillside water quality and addresses problem areas. This Land Use section evaluates options for addressing areas with poorly performing wastewater systems in the lower Hillside.
- **Subdivision Standards:** Concerns about new development on the Hillside are very much linked to concerns about retaining the area's natural vegetation. The plan sets out proposals for improved vegetation retention standards. Vegetation makes a difference (see Figure II. 1A Subdivision Styles).
- **Environmental Quality/Efficient Infrastructure:** New approaches are needed so future development maintains the environmental quality and character of existing neighborhoods. One option is to use a "built/green infrastructure" approach. This allows for growth while retaining an integrated system of open space for drainage, wildlife, stream protection and trails. The "built" component of this system refers to an efficient road system shared among subdivisions. A shared road system can lower development costs and impacts. (Traditionally developed internal subdivision road systems often dead-end at neighboring subdivisions.) The built/green infrastructure approach is most easily applied when land is subdivided. But these measures can also be implemented in existing developed areas as they are redeveloped over time (for example, through acquisition of conservation easements).

Option for New Subdivision Standards: Trees have a significant impact on neighborhood character. These shots show two areas of the same subdivision; where even a limited number of original trees were kept (lower photo) the character of the neighborhood is different from the area where all vegetation was removed.

Figure II. 1A Subdivision Styles



A. Old-style “aliquot part” Subdivision (all land is evenly subdivided, regardless of topographic features)

B. Traditional Subdivision (excludes land that is difficult to develop)

C. Conservation Subdivision #1 (creates access to usable open space)

D. Conservation Subdivision #2 (smaller lots, more open space)

These four drawings illustrate four different approaches to subdivision design, all with approximately the same number of lots. The “aliquot part” subdivision is the lowest-cost approach to dividing land. This method was used in the “BLM” lots between lower Rabbit Creek Road and lower DeArmoun. The other three options show a spectrum of approaches, each stepping toward a higher percentage of land retained in an undeveloped state. Reserving more undeveloped land in the platting phase, for example, as shown in options C or D above, creates smaller lot sizes, while providing for greater protection of waterways and other natural systems. By providing access to amenities such as a stream corridors, conservation subdivisions can also increase the value of back lots that otherwise can not access features like open space. Conservation subdivisions require a more complex development-approval process than simple subdivisions. Consequently developers need a financial incentive (such as reduced infrastructure costs, a modest increase in number of units, or increased lot values) to use the conservation subdivision approach. Development setbacks, conservation easements and other tools can be used in existing subdivisions to approximate conservation subdivisions.

- **Conservation Subdivisions:** In addition to establishing a connected system of infrastructure across multiple subdivisions, another option for protecting Hillside character is to use conservation subdivisions (see Figure II. 1A Subdivision Styles).
- **Development Review Process:** Another land issue involves the option to improve the development review, approval, and enforcement process. This process determines the character of development that can occur on the Hillside. The process is much improved over what it was in decades past, and the ongoing process to update Title 21, the municipal land use ordinance, is making additional strides in this direction. Further improvements may be possible, such as a better process for coordinating project reviews by different municipal departments, and greater incentives to use the conservation subdivision process.
- **Home-based Businesses:** There are many home-based businesses on the Hillside. Home occupations are allowed on residential lots with restrictions. The size of the enterprise is limited to 500 square feet or 25 percent of the dwelling, or 200 square feet of an accessory building. No more than one nonresident employee is allowed. Only one unlit wall sign no bigger than one square-foot in area is allowed. Traffic and delivery vehicles cannot be more "than would normally be expected in a residential neighborhood." Equipment can't produce noise, vibration, glare, fumes, odors, power fluctuations or radio frequency interference. Hours of operation are prohibited between 10 p.m. and 7 a.m. The new large animal ordinance also allows the boarding of horses for a fee. These home-based businesses are generally accepted on the Hillside with these restrictions.
- **Existing Private Nonresidential Use:** Existing commercial development on the Hillside includes the Alaska Zoo, garden nurseries, and construction equipment storage and repair. Other nonresidential uses include numerous churches, private schools, and a spiritual retreat center. Within the Hillside District today, 20 parcels are used for commercial purposes, totaling approximately 271 acres. Only one of these parcels is zoned for nonresidential use; the majority is zoned residential or public lands and institutions. An additional 25 parcels are used for industrial purposes, totaling approximately 52 acres. Only seven of these industrial parcels are zoned for nonresidential uses totaling approximately twelve acres. Standards may be needed to better regulate the nonresidential uses that already exist on the Hillside, or that may exist in the future on parcels zoned for nonresidential uses.

What is Title 21?

The Framework Plan includes many references to Title 21. This is the land use section of the Municipality regulatory code, and includes rules on zoning, subdivision, platting, and project review and approval processes.

T-21 is in the process of a major revision. For more information, view the Municipality of Anchorage's Planning Department website:

www.muni.org/planning/prj_Title21.cfm

Development standards can guide the form and character of housing and provide incentives for features like open space, protection of wetlands and "tot lots," (above).

New residential development in the Lower Hillside, with water and sewer on approximately 8,500 square-foot lots. This meets a demand for growth in Anchorage. However, the style and density is very different than much of the rest of the Hillside.

Two neighborhoods with similar densities (Paradise Valley and Prominence Pointe) have a very different character. This difference is explained by the differences in grading, retention of natural vegetation, house size, and importantly, the fact that Paradise Valley is only 50 percent developed, whereas Prominence Pointe is largely built-out.

- **Option for New Commercial Use:** Responses from the Hillside resident survey, and much of the public comment during this planning process, revealed strong opposition to new commercial development on the Hillside. However, as this district grows from the current 20,000 residents to the 30,000 to 35,000 allowed under existing zoning, it may benefit neighborhoods to allow for limited commercial centers to serve these areas. This development would aim to reduce the number of car-trips to and from the District, reduce the emission of greenhouse gases, reduce traffic congestion, create neighborhood gathering places, and increase convenience for residents.

Summary of Land Use Alternatives

Lower Hillside

The Lower Hillside area is located west of Elmore Road (see Map I. 6A Hillside District Regions). Map II. 1B, shows more detail in this area; brown letters show existing zoning; black letters show allowed residential density proposed in each alternative.

While labeled as one area, the Lower Hillside is made up of two different districts, each roughly a square mile in size. The northern district is roughly bracketed by Huffman and O'Malley (but includes one subdivision south of Huffman). This area is referred to as the "Furrow Creek" area, referencing the small stream that drains this area. (At the risk of confusing everyone, the area labeled Furrow Creek excludes the Furrow Creek and Kempton Hills subdivisions, which are already served by public water and sewer.) The Furrow Creek area includes a diverse range of lot sizes and several relatively dense residential areas. It's located within the Anchorage Road and Drainage Service area and the AWWU certificated water service boundary. As discussed later in the onsite Water and Wastewater section, this region of the Hillside includes several places with a history of poorly performing septic systems, largely due to poor soil conditions.

The southern portion of the Lower Hillside, located south of DeArmoun Road is sometimes referred to as the "BLM lots." This area has a lower average lot size overall than the Furrow Creek area, including many 2.5-acre lots – the size of this area's original subdivision. The defining natural feature of the BLM lot area is the large canyon of Rabbit Creek that slices through from northeast to southwest.

The Lower Hillside maintains a mix of residential densities: Most of the western portions are currently zoned R-1 Single-Family Residential; or R-1 SL Single-Family Residential with Special Limitation; portions farther east are zoned R-6 Suburban Residential, with one small area that zoned R-7 Intermediate Rural Residential. The residential zoning

categories require a minimum lot size of 6,000 square feet for R-1, 1.25 acres for R-6, and 20,000 square feet for R-7. There are currently an estimated 1,237 residential units in this area. All the R-6 and R-7 areas lie outside the municipally defined Maximum Perimeter of Public Sewerage. There are also two small areas that zoned PLI and PLI SL, Public Lands and Institutions; and several commercial areas zoned B 1A and B 1A SL. Regardless of the zoning, lots with onsite water and wastewater must be at least 40,000 square feet.

Lower Hillside Base Case:

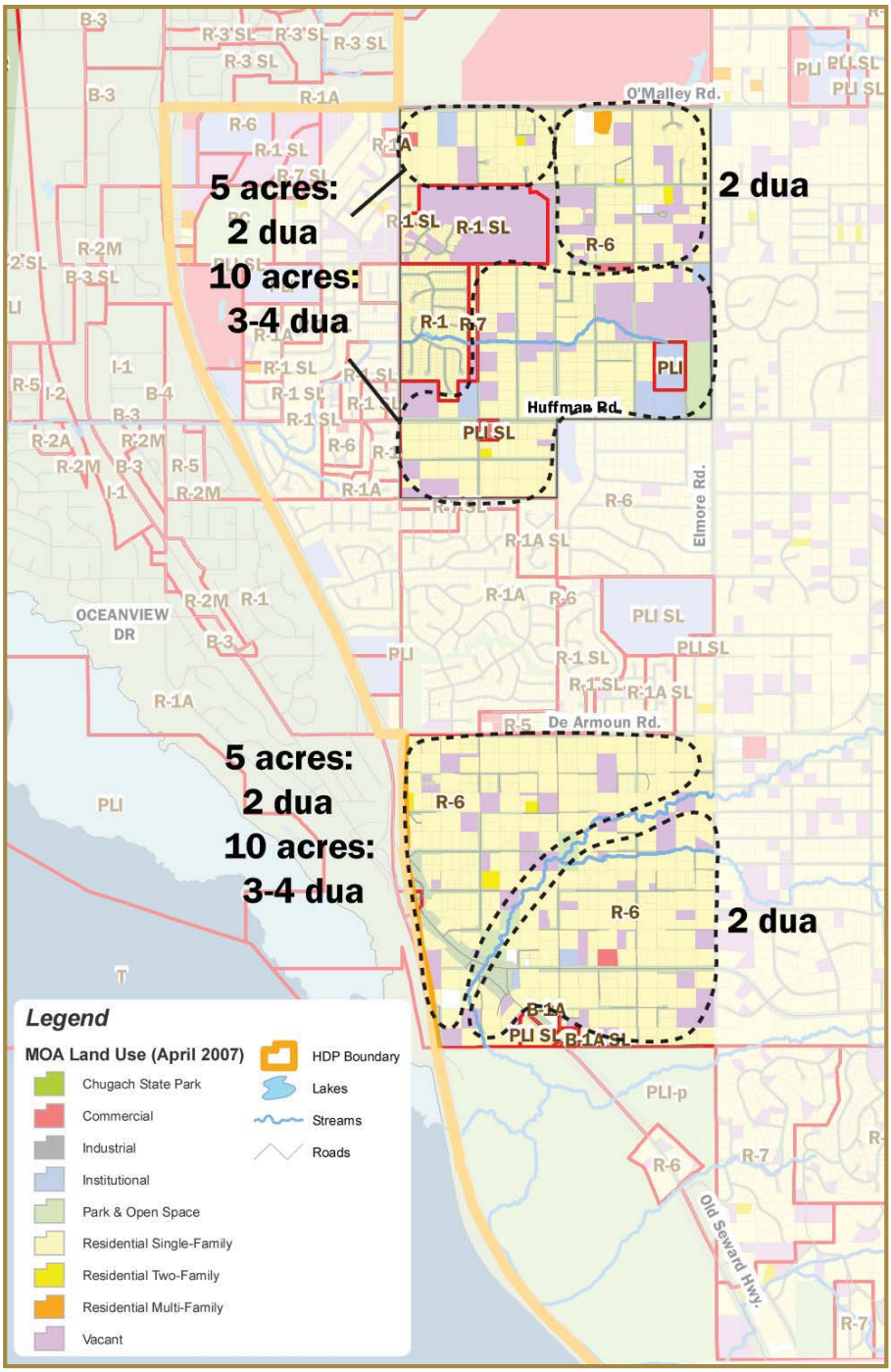
This alternative proposes no near-term change in zoning. Under current zoning, an estimated 100 units would be added to the area as it's developed to its zoned capacity. While the base case alternative keeps existing zoning, this does not mean this area will remain forever as it is today. Development on existing private, vacant land would still occur. Petitions to the Assembly for changes in zoning are likely to occur on an ongoing, incremental basis.

Lower Hillside Controlled Growth:

This alternative proposes that the allowed density of development be changed in the Furrow Creek and BLM lot portions of the Lower Hillside. These locations are considered for such changes because they're near major transportation corridors; they're near (or include) areas of higher-density residential and commercial areas, and they adjoin areas with public water and sewer.

Under this alternative, densities in the Furrow Creek and the BLM lots could only increase if development occurred according a process similar to the existing Municipality of Anchorage conservation

Map II. 1B
Lower Hillside "Controlled Growth" Alternative Average Densities



The Controlled Growth Alternative for the Lower Hillside proposes a zoning overlay that would allow increased density within the areas of the black dashed line. These areas could be subdivided (under a conservation subdivision process) into smaller areas housing two to four units per acre as long as neighborhood character is protected. Existing zoning is shown in smaller typeface.

Lower Hillside Controlled Growth Alternative

Parcels five acres or larger would be allowed to subdivide into an average of two dwelling units per acre (an average of 20,000 square feet per parcel).

Parcels of ten acres or larger would be subdivided to allow an average of three to four dwelling units per acre (an average of 10,000 to 14,000 square feet per parcel). Up to four dwelling units per acre may be permitted where the subdivision provides a higher level of environmental protection, better connectivity for roads, trails and open space, etc. (See Figure I. 1C Subdivision Design and Connectivity.)

subdivision model. With this approach, a maximum average density is established for the subdivision as a whole but individual lots can be smaller than the average size. This allows greater flexibility in the location of lots in order to preserve neighborhood character, reserve open space and provide green buffers, etc. This process requires a conditional use permit, issued by the Planning and Zoning Commission.

This way, residential densities can increase in certain areas if the proposed development meets the standards below:

- Rezoning to higher densities requires assembling existing lots to produce a single parcel of at least five acres.
- The total number of residential units allowed within the assembled parcel is based on parcel size – bigger parcels allow for higher average densities (as explained in the sidebar).
- The maximum potential average density under this alternative differs in various areas of the Lower Hillside. As Map II. 1B shows, potential density is higher in areas that adjoin neighborhoods with public water and sewer (western and southern portions of Furrow Creek) and in the northern part of the BLM lots.
- The size of individual lots can be smaller than the average lot size for the subdivision as a whole. The sidebar explains how this might work on a hypothetical 10-acre project, as does Figure II. 1C Subdivision Design and Connectivity.
- No commercial uses are permitted (other than home-based businesses).

A master plan for the Furrow Creek and BLM lots area will be needed to determine how to best ensure connectivity for roads, drainage-ways, creeks and trails between adjoining subdivisions. A particular goal is connectivity of pedestrian pathways and roads, to avoid "dead worm" cul-de-sac subdivisions (the name given to subdivisions served by a single, short, unconnected road).

One additional "sub-alternative" is being considered in the BLM lots area – to only extend the option for higher-density residential

development to areas north of Rabbit Creek.

Because this land use alternative allows for lots smaller than 40,000 square feet, it would require changes in how water and wastewater needs are met. Two options are being considered. One involves moving the Anchorage Water and Wastewater Utility's Maximum Perimeter of Public Sewerage east to Elmore Road, to match the current boundary of the certificated water service line. This change allows the possibility to extend public water and sewer into the area. If a group of homeowners within the area petitioned to connect to public water and sewer, and if the majority of those homeowners voted for the new connection, public water and sewer would be extended into the area. Then, all homeowners in the improvement district would be required to pay an assessment for their allocated portion of the capital costs.

The other option for meeting water and wastewater needs allows for use of neighborhood wastewater treatment systems. Anchorage Water and Wastwater Utility's board of directors is currently recommending that neighborhood wastewater systems *not* be permitted within the utility's certificated sewer service area. If that policy is adopted, and this area was intended the ability to use neighborhood wastewater systems, the area would need to be removed from the utility's certificated service area. (See the Water and Wastewater section of this report for more on these issues.)

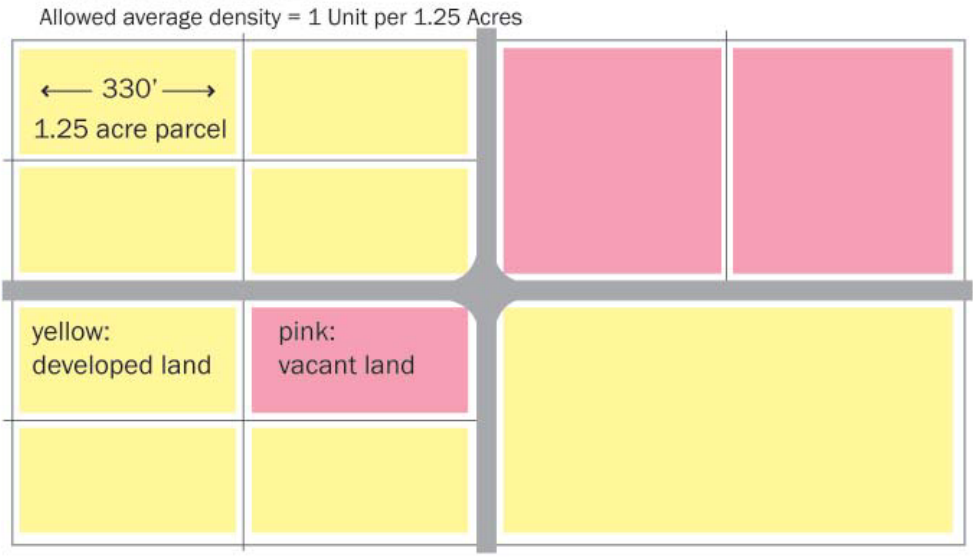
Subdivision Design

If a proposed conservation subdivision on a 10-acre parcel provides an exceptional level of open space and other design amenities, it would be allowed to have an average of up to four dwelling units per acre. The hypothetical parcel could have up to 40 total homes. The example in Figure II. 1C shows how this might be laid out, with 35 units on 8,500 and 10,000 square foot lots, totaling a approximately eight acres, plus two acres of open space.

One reason this area is considered for increased density is its proximity to existing services.

Figure II. 1C
Subdivision Design and Connectivity

EXISTING LOT PATTERN

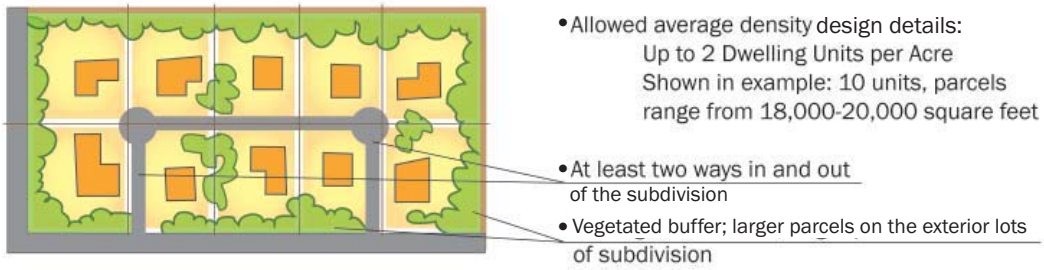


Plan new residential areas to include:

(The drawings at right show how new development could be possible under the Controlled Growth alternative.)

- Retention and/or replanting of natural vegetation within the new subdivision.
- The perimeter of the project must maintain a landscaped buffer along the parcel boundary. Retention of natural vegetation is the preferred form of vegetation. This area may include trails and can count towards open space requirements.
- Lots on the periphery of the new subdivision should be sized to provide a transition between lower and higher residential densities.

CONTROLLED GROWTH, FIVE-ACRE PARCEL ILLUSTRATIVE EXAMPLE



CONTROLLED GROWTH, 10-ACRE PARCEL ILLUSTRATIVE EXAMPLE

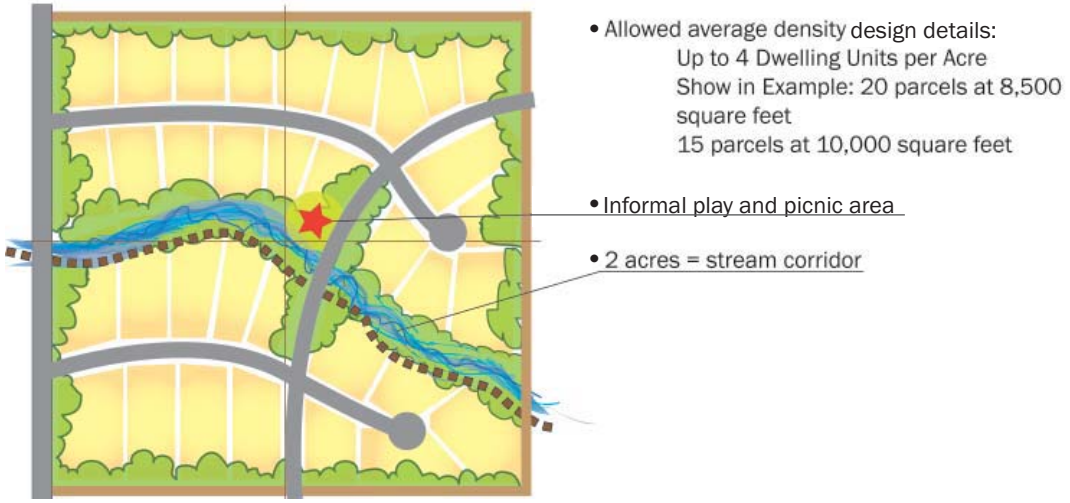


Figure II. 1D
Evaluation of Lower Hillside Land Use Alternatives

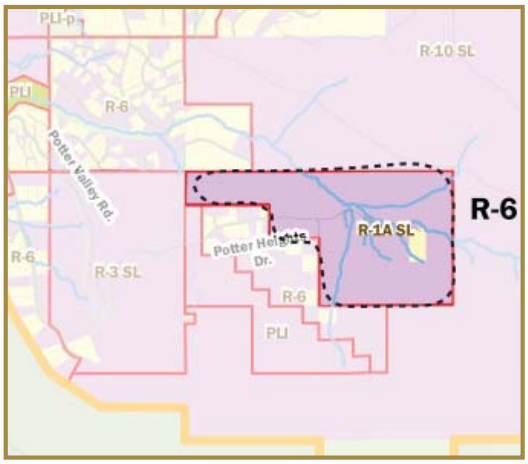
Evaluation of Alternative		
Issue	Base Case	Controlled Growth
Response to municipal-wide growth pressures	Currently the area houses 1,237 units; under existing zoning the area could support about 100 additional units at full build-out.	Provides for significant additional residential growth (*1,500 to 2,000 units*). Directs this growth to the portion of the Hillside best suited for increased density due to proximity to existing infrastructure and other urban services.
Water Quality	Does not address the issue of existing areas where some units have poorly performing onsite wastewater systems, or schools and churches relying on holding tanks. Ultimately, this could negatively affect water quality.	Provides option for extension of public water and sewer service, with resulting benefits (and costs) to homeowners. Provides the means to reduce risks of impacts to groundwater quality.
Impact on Neighborhood Character	No near-term change in zoning for existing low-density residential neighborhoods. Therefore, this alternative has no impact on neighborhood character (changes will still occur, but in a less planned manner).	The existing character of this area (which in some places is quite rural) would, over time, shift from low to moderate densities. Following the required "conservation subdivision" standards would minimize impacts but the character of portions of the area would be different than they are today.
Impact on roads, drainage, open space, trails	Existing substandard roads (particularly in the BLM lots) would be upgraded very slowly, if at all.	New development and redevelopment increases the odds for improved road conditions and connectivity. It also improves the chance to establish protected corridors for streams, drainage, open space and trails.
Property Assessments	Because there is no change in zoning, propertyowners will see no immediate affect on property assessments. Over time, with or without this plan, property values in the area are likely continue to grow.	The option for increased density will cause property values to grow more rapidly than with the in the Base Case alternative. Major spikes in assessments are unlikely, however, due to the fact that overall zoning will not change.*
Development opportunities for individual owners	No change in existing development opportunities.	Provides new opportunities for individual landowners to develop vacant lands or redevelop currently developed properties to a higher density, providing development standards are met.

* More research is needed to determine exactly when the development process would trigger an increase in assessment. Current judgement is that assessed values would not change until such time as the steps required to change density have occurred in a specific location (that is, lots assembled to produce a 5-10 acre parcel, water and sewer are extended and the zoning is therefore able to be changed).

Central Hillside

The large majority of private property in the Central Hillside area is already subdivided. Most residents in the area are satisfied with the onsite well and septic systems that serve their homes. Extending public water and sewer services into this area would be very costly and is not likely in the foreseeable future. This is due to the area's location and distance from existing public water and sewer, and because it's largely already been subdivided at low densities. As a result, no changes in zoning are proposed. Infill development is likely to continue at a market-driven pace, ultimately adding about another 300 units in the area. While not considered for land use changes, this central area would still be included in possible district-wide improvements in roads, trails, drainage, and associated service districts (see Drainage and Transportation sections for details).

Map II. 1E
Southeast Hillside Rezone Area



The Southeast Hillside Rezone Alternative proposes revising the existing zoning so the existing area that is zoned R1-A SL would be down-zoned to R-6.

Southeast Hillside

This portion of the Hillside includes more than 1,700 acres of vacant private land that is suitable for development. These properties offer the potential for home sites with beautiful views but they also face significant development challenges related to steep slopes, shallow water tables, high winds and other environmental constraints.

A base case and an alternative have been developed for future land use in the Southeast Hillside. These two options do not vary significantly in the amount of proposed development but are different in the character of development.

The Southeast Hillside alternatives focus on future development. Before describing these options, it is important to note that past development has created a range of problems in the Southeast portion of the Hillside, including problems with drainage, traffic, and (in some areas) groundwater quality. The burden of solving these past problems cannot be placed solely on the shoulders of future development. See the Infrastructure Management and Fincancing Mechanisms Section for a discussion of strategies to address the infrastructure deficiencies of past development.

Southeast Hillside Base Case: This alternative proposes no near-term change in zoning. Development on private, vacant land would still occur as regulated by Title 21 and other Municipal polices. The standards required under these regulations are stringent, and represent a major step forward from the early days of Hillside development, when, as one landowner explained: "You could bury an old Volkswagen and use it for your septic system." These policies are being further updated and improved.

Southeast Hillside Green Infrastructure Alternative: This alternative would maintain existing zoning in the Southeast Hillside area, with the exception of reducing the allowed density in one area of Potter Valley, from R-1A to R-6. This alternative would also remove that same Potter Valley R1-A area from the Maximum Perimeter of Public Sewerage.

The primary difference between this alternative and the Base Case option rests in the proposal to identify and reserve an integrated system of green and built infrastructure. "Infrastructure" usually describes utilities like roads and storm drains that channel and manage runoff. "Green infrastructure" describes a similar system but one that takes advantage of natural systems. If maintained, this natural, green infrastructure can serve the function of more costly manufactured infrastructure. For example, instead of managing runoff with storm water pipes, runoff can be directed to a system of streams and wetlands.

The defining feature of the green infrastructure approach is the creation of a *system* of natural features, so, for example, a stream corridor in one subdivision connects to a continuation of that same corridor in an adjoining parcel. This approach differs from current regulatory structure by defining the general locations of this system of infrastructure "up front," and using this as a reference for planning future subdivisions. With this approach, each proposed subdivision is viewed as part of a larger system, rather that a separate entity where infrastructure issues must be addressed within the parcel/onsite.

More detail on the specific locations of proposed drainage and transportation elements can be found in the Drainage and Transportation sections.

"Green infrastructure" refers to an integrated system of open spaces that serve as drainage ways, wildlife corridors, floodwater storage and recreational areas.

Figure II. 1F
Evaluation of Southeast Hillside Land Use Alternatives

Evaluation of Alternatives		
Issue	Base Case	"Built/Green" Infrastructure
Response to municipal-wide growth pressures	No change in existing zoning. At build-out, under existing zoning, the area could support about 1,500 additional units.	Reduces the total amount of potential development in one area (Potter Valley zoned R-1A), and withdraws the same area from the Maximum Perimeter of Public Sewerage. This reduces the potential development of this specific area, from approximately 540 to 150 units, based on down-zoning to R-6.
Impact on Water Quality, on Natural Environment	No change from other Municipal standards under existing regulatory system.	Potential to further reduce environmental impacts from new development that have been problems in the past (such as drainage and glaciation) through integrated infrastructure planning, and through reduction in the quantity of development.
Impact on Neighborhood Character	No change in zoning or development standards. (New Municipal policies require more stringent standards than were in place for recent Hillside developments.)	Green infrastructure approach would reduce environmental impacts uphill of existing neighborhoods, helping to retain Hillside character. Potter Valley down-zoning would reduce density that would otherwise be possible near existing neighborhoods.
Impact on Development standards	Municipal policy applies. Revised Title 21 and Design Criteria Manual (DCM) impose more stringent development standards than those in the past.	This establishes an integrated system of infrastructure, to allow better coordination between future subdivisions. And, provides alternative approaches to meet drainage objectives that can reduce impacts and save money relative to existing standards. This also provides for alternative road standards
Roads and trails	Municipality of Anchorage Long Range Transportation Plan and Trails Plan addressed road and trail issues. However, neither addresses Southeast Hillside in detail. This results in road and trail issues being addressed subdivision by subdivision.	Identifies routes for major roads and trails in Southeast Hillside, which reduces road development costs and increases road connectivity. This in turn eases traffic congestion and improves emergency access. Identifying a starting framework of trail routes can increase trail connectivity, trail value and open space value.
Development opportunities for landowners	No change in most of the area; R1A in Potter Valley down-zoned to R-6.	Reduces density and therefore possible number of new units allowed under existing R1A zoning in Potter Valley.

New Development Standards and Processes

Many people suggest the need for different development processes, and for development standards better suited to Hillside conditions. Some have argued for stronger standards, others for less stringent, more flexible standards. Adding complexity is the revision of existing Municipal standards. Title 21 is near the end of a multi-year revision process; the Design Criteria Manual (DCM) is also being revised.

Consequently this Framework Plan outlines several promising, but still general, directions for improvement in development standards and processes. After discussion with the public and Municipal staff, these will be refined prior to release of the draft Hillside District Plan. Options for the ideas listed below include adding standards to existing Title 21 policies, or as part of an overlay specifically for the Hillside District. These policies could be approved as required standards, advisory guidelines or dropped entirely.

- Land Use
    - Requirements for retention of natural vegetation (to reduce visual impacts, protect environmental quality)
    - "Firewise" requirements
    - Incentives for the use of conservation subdivisions
- Development Processes
    - General goal: The general goal is a process that has less uncertainty, and more frequently results in a satisfied public and a satisfied developer. The development process has been improved in recent years to include new procedures encoded in Chapter 8 of the revised Title 21; new requirements for developer performance guarantees; requirements for identification of stream channels prior to issuance of preliminary plats; and new staff and new procedures in the Municpality's Development Services Division.
    - Coordination: Revisit and, where possible, further improve the process with a focus on coordination among different Municipal departments responsible for review and issuance of development approvals.
    - Better up-front information: To assess the impact of future development, reviewers need more specific information on lots (with building pads and developed areas defined) and plans for driveways, trails, utilities, drainage ways and other infrastructure components for each lot.

Terracing yards and building foundations reduces disruption of natural drainage patterns, which reduces the need for off-site drainage infrastructure. Examples - yard above, terraced foundation below - are from an extensive Hillside residential development in Silverton Oregon.

- Road and Trail standards
    - Allow for alternative paving and narrower rights-of-way.
    - Develop new standards regarding driveways and building setbacks (for example, minimizing driveway length on in steeply sloping areas, to reduce visual and drainage impacts).
    - Develop new standards to address extent of cut-and-fill in steeply sloping areas.
    - Develop new standards for trail widths and surfaces (the Municipality is currently in the process of reviewing and refining trail standards).
    - Clarify policy regarding ownership and management of trails and open space dedicated as part of conservation subdivisions.
- Drainage
    - Develop standards to reduce runoff, including requiring rain gardens and reductions in allowed impervious surface coverage such as driveways and buildings.
    - Develop standards to control cut-and-fill for building foundation (for example, stepped foundations versus cut pads).
    - Clarify link between drainage standards in the Design Criteria Manual and use of green infrastructure (for example, provide alternatives to certain Title 21 and DCM standards where drainage corridors are reserved).
    - See Drainage section, beginning on page 44 for further elaboration.

Commercial Development

The Land Use Policy map included in the Anchorage 2020 Comprehensive Plan doesn't designate any neighborhood commercial centers in the Hillside District. The map's legend includes a note on page 50: "Potential sites for Neighborhood Commercial Centers on the Hillside will be determined through the Hillside District Plan." While much of the public comment on this subject expresses concern about new commercial areas on the Hillside, Anchorage 2020 directs the Hillside District Plan process to consider this option. The Anchorage 2020 plan defines Neighborhood Commercial Centers as follows:

Want to learn more about the Anchorage 2020 Comprehensive Plan?

Visit the project website: www.hillsidedistrictplan.com or the Municipality's website www.muni.org, to review the plan.

This land use concept comprises neighborhood-level commercial/retail facilities that serve smaller clusters of residential neighborhoods than town centers. This designation allows neighborhood-oriented commercial uses in and adjacent to residential areas. It has been created in response to increased urbanization, the need to reduce the number and length of auto trips, and a desire to improve quality of life in all neighborhoods. These commercial areas are intended to provide small-scale, attractive, and convenient services for residential area … their scale and appearance should be compatible with adjacent residential development; and they should be highly responsive to the needs and character of nearby residential areas and traffic patterns. Some centers will be more auto-dependent due to the character of their location. The approved uses, site design, and building design should produce attractive, friendly, quiet, non-obtrusive, neighborhood-compatible developments. The actual locations of neighborhood commercial centers are to be determined through a neighborhood or district planning process. Site and architectural design, as well as operational aspects, will be critical to acceptance of these centers into existing residential areas (Anchorage 2020 Comprehensive Plan, p54).

The Land Use Planning Issues portion of this Framework Plan gives an overview of the existing "nonresidential" uses on the Hillside. These uses include churches, greenhouses, the Alaska Zoo, and a miscellaneous collection of other commercial activities. Map II. 2B illustrates the character and extent of these existing uses in the district.

A base case and three alternatives are presented on the following pages to address commercial development issues on the Hillside.

Commercial Development Base Case: The base case option would not change any existing zoning, allowing existing legal commercial uses to continue, including legal non-conforming uses, without making provision for new commercial areas. It would not establish any new standards for commercial activities in the Hillside District. Portions of the Rabbit Creek commercial development discussed in the following Lower Rabbit Creek Mercantile option build on areas already zoned for commercial development; this alternative would shape the options for development of these areas and allow several adjacent parcels to be used for commercial development.

Apply Standards to Existing Nonresidential Uses: Some people are concerned that existing nonresidential uses should better managed. Commercial, and other nonresidential activities taking place on the Hillside, generally fall into three categories: Some activities are allowed under current zoning. Some are "grand-fathered." And some stretch or exceed the limits of legal use.

Existing code enforcement regulations can address illegal commercial activities taking place on the Hillside; however grand-fathered nonresidential uses and existing allowable uses may need some additional controls. Options for addressing these issues (with the goal of ensuring that nonresidential uses fit with the character of Hillside neighborhoods) include new standards for signage (size, type and style); lighting; parking lot size and street overflow parking; outdoor storage of equipment; and landscaping guidelines.

Figure II. 1G
Evaluation of Commercial Land Use Alternatives

Evaluation of Alternative		
Issue	Base Case	New Standards
Impact on community character	No additional restrictions where zoning already allows these uses. Parcels currently zoned for commercial activities could be developed in conformance to the requirements of Title 21.	Continues to allow existing nonresidential and commercial uses with new standards for signage, lighting, parking, storage, and landscaping. Helps uses better fit with neighborhood character.
Cost to comply with standards	No additional costs to propertyowners engaged in nonresidential/commercial activities on the Hillside.	Propertyowners would be required to take on the expense of improvements to their nonresidential activities in order to conform to new standards.

Options for New Commercial Development

The following two alternatives examine options to allow two new neighborhood commercial developments in the Hillside, one in the vicinity of Bear Valley Fire Station, another at the bottom of Rabbit Creek Road in the general vicinity of the Old Rabbit Hutch (see Map II. 1H Proposed and Existing Commercial Districts). These alternatives are being considered with an expectation of changes in future conditions on the Hillside. These include a continued population increase, higher gas prices and growing concern with greenhouse-gas emmissions. These factors warrant a need to at least evaluate options for limited, new commercial use. These issues are also reasons that the Anchorage 2020 plan requires the Hillside District Plan to consider commercial uses on the Hillside.

These general locations for future commercial uses are identified in the plan. However, neither could come to fruition until a landowner or business chooses to act. It's possible that prospective businessowner operators will never decide the market warrants neighborhood commercial development.

The following rationale has been used to identify the two locations for possible, additional neighborhood commercial development:

- Proximity to existing public services and facilities, such as a school, fire station, or water and sewer service
- The possibility of serving a significant number of local residents from a place where no commercial areas exist and none are nearby
- Close proximity to existing neighborhoods which facilitate pedestrian links and quick, easy access for automobile commuters
- Frontage on at least one collector street (ideally at the intersection of two primary streets)
- A need for special services or a need for support to an existing area used in a complementary way (such as a civic or recreational anchor, a school or popular trailhead)

Instead of selecting a particular location, the plan could identify a general area (for example, the parcels fronting on Hillside Drive from O'Malley to Rabbit Creek) and allow one "country store" along this area. This way, the guidelines lend the private market more latitude in defining the particular location that best responds to market opportunities. It's also an approach followed by many local governments on this topic. The downside is the risk that an even larger area is seen as open for commercial development. At this point, the Framework Plan commercial alternative identifies a particular location.

An example of the type and scale of commercial development most Hillside residents do not want to see on the Hillside.

Map II 1.H
Proposed and Existing Commercial Districts

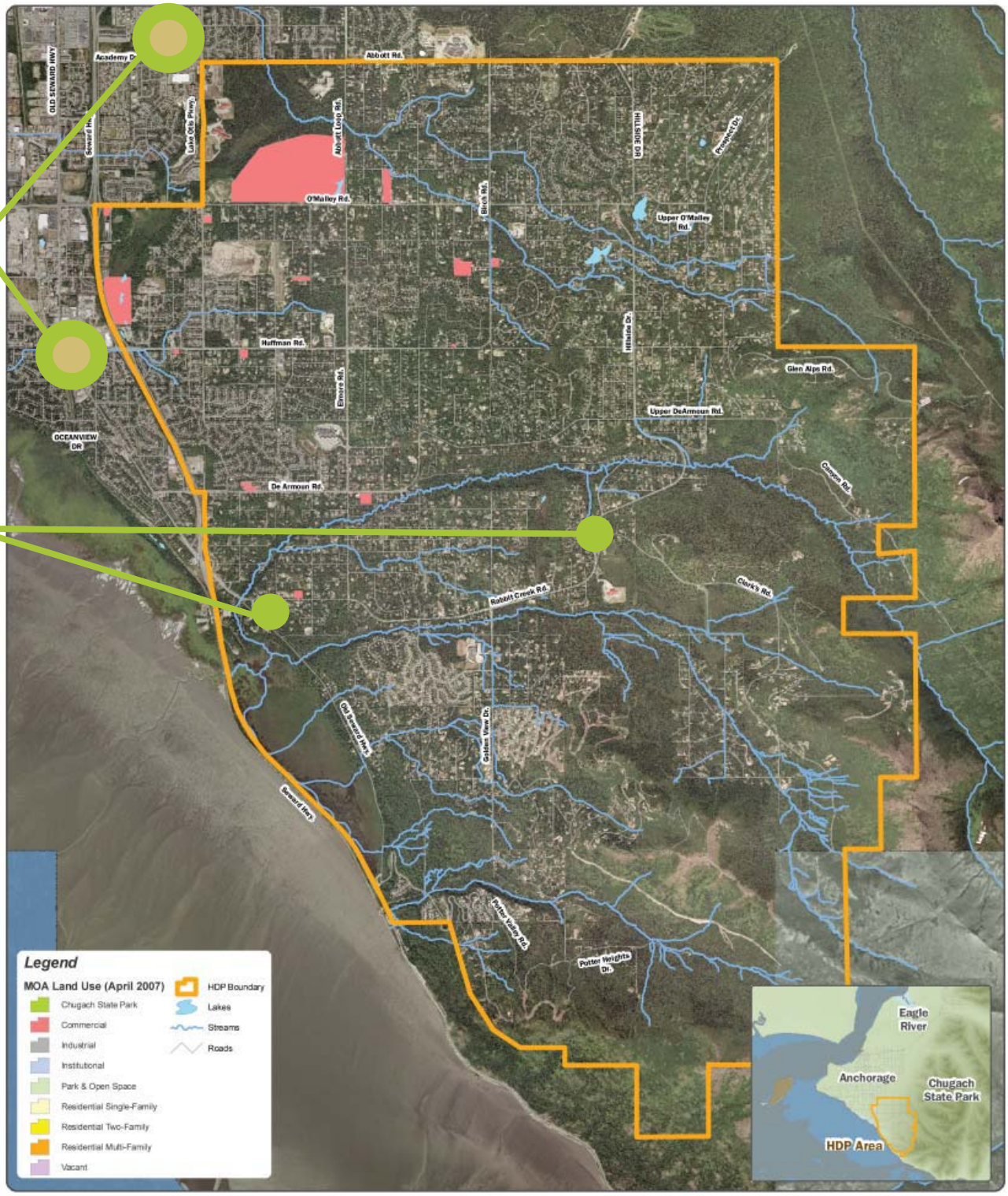
Hillside Commercial Districts

Existing Town Center Districts

1. Abbott Town Center
2. Huffman Town Center

Proposed Neighborhood Commercial Centers

1. Rabbit Creek "Mercantile District"
2. Bear Valley "Rural Country Store"



As this graphic shows, a variety of nonresidential uses currently exist on the Hillside, ranging from large, established businesses on commercially zoned property to home-based commercial operations allowed under residential zoning. The Anchorage 2020 plan specifies two Town Center commercial nodes on the periphery of the Hillside District, and charges the HDP with determining potential sites for Neighborhood Commercial Centers within the Hillside District. Two potential Neighborhood Commercial Centers have been identified through the Hillside District Plan planning process: a Bear Valley "Rural Country Store" and a Rabbit Creek "Mercantile District."

Figure II. 1l
Overview of Commercial Alternatives

TOWN CENTERS

Town Centers are intended to include a concentrated mix of retail shopping and services, public facilities and medium- to high-density residential. Though located outside the District, these two centers would serve Hillside residents.

NEIGHBORHOOD COMMERCIAL CENTERS

Neighborhood Commercial Centers are less intense neighborhood-oriented commercial nodes, designed to fill the gaps between the town centers.

Option 1: Rabbit Creek Mercantile District to serve residents and visitors to Potter Marsh recreational areas. Businesses might include small grocery, restaurant, small office, bike rental.

Option 2: Bear Valley Rural Country Store to serve residents and visitors with basic provisions and to serve as a local gathering place.

OTHER HILLSIDE COMMERCIAL & NONRESIDENTIAL USES

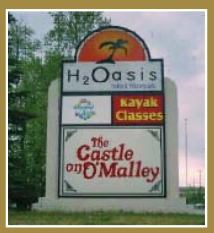
A variety of other types of commercial and nonresidential uses exist in the Hillside District, along with institutional and civic uses that are compatible with neighborhood and town centers.

Greenhouses

Home-based services

Equestrian operations

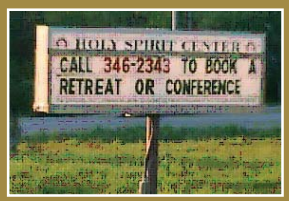
Highway commercial development



Commercial Recreation

Bed and breakfasts

Religious institutional

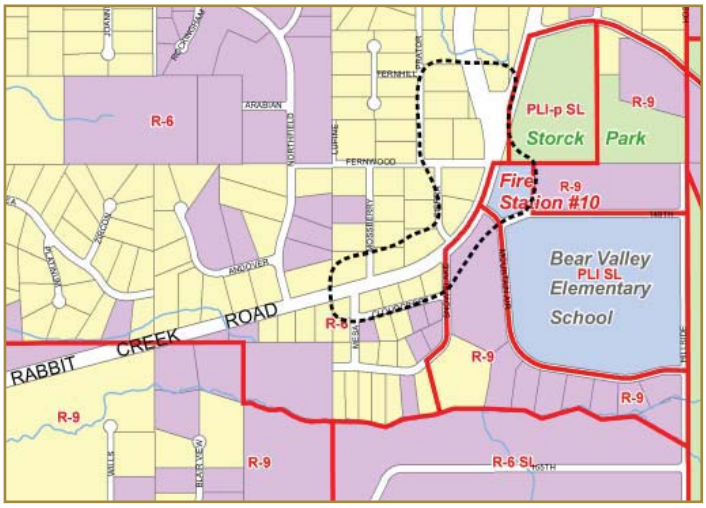


Neighborhood Commercial Development, Bear Valley Rural Country Store: This alternative would allow for the development of a "rural country store" in the vicinity of the Bear Valley Fire Station, the Elementary School and Storck Park. This new use would comply with a set of design standards including a design review process. The standards and process would consider building appearance, site design, parking, landscaping, screening of dumpsters and other service or mechanical equipment, trail and road connections and onsite water and wastewater requirements. See the full Land Use Background Report for a list of proposed design standards.

The rural country store option would establish an overlay district located adjacent to the existing Bear Valley Elementary School and Fire Station (see Map II. 1J Bear Valley Rural Country Store Option). Within the overlay district, only one rural country store would be permitted through a Conditional Use Permit process. The permit would be used to control the extent and character of neighborhood commercial development and would allow for development only in a carefully selected, appropriate location. Development proposals could be brought forth by an individual, a neighborhood, or a developer with access to property located in the overlay district.

A "rural country store" is defined as a small facility, not to exceed 3,500 square feet in size, offering neighborhood-serving goods and facilities such as groceries, baked goods, gifts, books and magazines, and domestic convenience supplies. The store could also sell prepared foods, offer restaurant or coffee services and business services such as a notary, package services or internet access. Auto repair and gasoline sales would not be permitted. The country store parcel could include a residence, either as an attached or detached housing unit.

Map II. 1J
Bear Valley Rural Country Store Option



Possible location of the country store, a place where residents or visitors could buy a sandwich, a cup of coffee, the ingredient they forgot for tonight's dinner, or just linger and talk to a friend (and discuss the next hot Hillside issue).

Figure II. 1K
Evaluation of Alternative: Bear Valley Rural Country Store

Evaluation of Alternative		
Issue	Base Case	Country Store
Impact on Neighborhood Character	None: no new commercial development	If the project proceeds as envisioned, it would result in a small, single commercial structure built in compliance with design standards to conform to existing rural residential neighborhood character. Standards can limit impacts and control character of development but ultimately, the private sector is responsible for producing the store. The project would nonetheless bring a new commercial use into an area which currently has none.
Enforcement of Standards	Not applicable	Many people are apprehensive that adopted standards will not be rigorously enforced. This could set the stage for an unsightly structure that degrades neighborhood character.
Potential for Expansion	Not applicable	Many people are apprehensive that once any additional commercial zoning is allowed, it will lead to a much larger commercial center, degrading neighborhood character.
Potential for Business Failure	Not applicable	Several people have expressed concern that the country store may be built and then fail, leaving an eyesore and/or setting the stage for a switch to an undesirable commercial use.
Convenience/Use of Auto	Residents would continue to make trips to in-town commercial areas.*	A convenient retail outlet on the Hillside would reduce auto use and traffic congestion by reducing the number of times residents make the 10-mile (or more) round trip "off the hill" for supplies. The store would be one way to fulfill the Anchorage 2020 directive to reduce auto trips and traffic congestion on the Hillside and to use the location and design of land use to encourage "the reduction of future vehicle miles traveled per capita."
Gathering Places	Some have said people within the Hillside District do not want and wouldn't use a country store as a gathering place.	The country store would provide a possible informal neighborhood gathering place for the Bear Valley area.

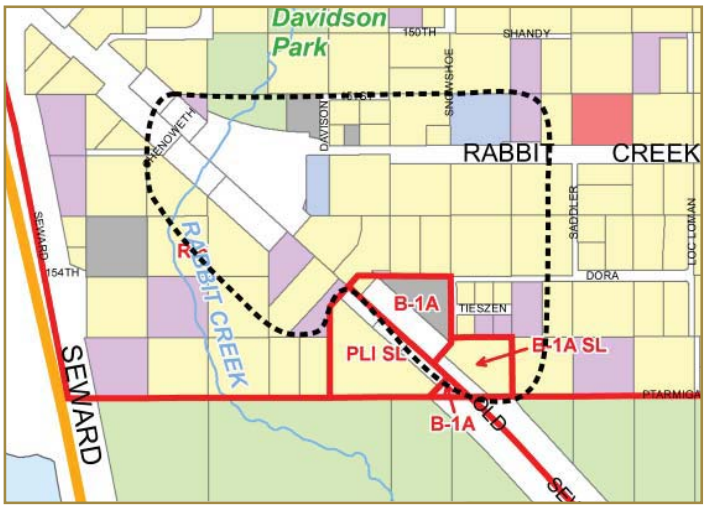
* Some people have pointed out that rural residents always plan their shopping well in advance, and rarely if ever need to make unexpected trips back to town to purchase forgotten items.

Neighborhood Commercial Development, Lower Rabbit Creek Mercantile District: This alternative expands the existing opportunity for a small commercial development at the lower end of Rabbit Creek Road, near the location of the old Rabbit Hutch restaurant. Currently there are four small parcels zoned B 1A and PLI in this area (see Map II. 1L Lower Rabbit Creek Mercantile District Option). This alternative establishes a clearer intent for commercial uses of these and adjoining properties. Possible commercial uses could include businesses that cater to the surrounding area's residents and to visitors of Potter Marsh recreational area. Such businesses might include a gift store, a book and natural history product store, a small restaurant, a small office center serving local home-based businesses, or a grocery store. Facilitating a mercantile district's development would require new mixed-use neighborhood commercial zone with associated development standards. The total square feet of commercial development allowed in this district be restricted to 25,000 square feet. (For reference, New Sagaya's City Market on I Street in downtown Anchorage is a 16,304 square-foot structure on a 42,000 square-foot lot.)

This development would be required to comply with a set of design standards including a design review process. Design standards would address the same general topics as outlined for the country store above (see the Land Use Background Report for a list of these standards). Commercial development would be permitted only through a Conditional Use Permit (CUP) process.

This alternative generally raises the same issues outlined above for the country store alternative. Those unique to this location are outlined on the following page.

Map II. 1L
Lower Rabbit Creek Mercantile District Option



The Lower Rabbit Creek area already includes land zoned for commercial use. Limited additional commercial development may be allowed if it meets design standards and helps create a small commercial area serving surrounding neighborhoods and Potter Marsh recreation users.

Figure II. 1M
Evaluation of Alternative: Lower Rabbit Creek Mercantile District

Evaluation of Alternative		
Issue	Base Case	Mercantile District
Convenience/Use of Auto	Residents would continue to make trips to in-town commercial areas.	In addition to creating a convenient location for neighborhoods to access goods and services, the mercantile district offers convenience to different users, notably commuters on the Seward Highway.
Gathering Places	No new commercial development: Some people have said the Hillside does not want and would not use such a mercantile district.	The mercantile district would provide a more substantial set of services than the country store and might be used by Hillside residents and visitors to the area (for example, recreational users of Potter Marsh and the Johnson Trailhead to the south or folks making a last purchase before heading out of town on the Seward Highway). It may become a gathering place for people from outside the Hillside district, building on the tradition of the Rabbit Hutch.
Traffic Safety and Congestion	Rabbit Creek Road serves as a relatively high-speed arterial.	This option would lead to more traffic in the area of the Rabbit Creek Road and Old Seward Highway intersection, improvements would likely be needed to ensure safe passage within and through the area for pedestrians and vehicles.

2. Drainage

Unless a new management and maintenance approach to Hillside drainage is adopted, development will increase runoff to systems that already have problems and are not designed to convey increased flow. Existing drainage-related problems will worsen and new problems will be created, particularly in the steeper, higher-elevation areas of the Hillside.

Summary of this section

Drainage-related issues – including glaciation, erosion and flooding – are a chronic and growing problem, particularly in the southeastern, steeper portions of the Hillside District.

A better approach to drainage is needed, both to address the impacts of past development and to anticipate future growth. This plan recommends a "built and green infrastructure" approach. Four main elements apply to drainage:

- Create a new Hillside drainage service district (or districts)
- Establish standards to reduce on-site runoff (for example, retention of native vegetation)
- Manage runoff on a watershed basis, using an integrated system of natural and built runoff features
- Perform rate studies to set the stage for generating funds to better manage drainage as part of the creation of a service district

Runoff on the Hillside is typically conveyed in roadside ditches, culverts, and small natural streams. Most of these drainage systems were constructed to serve a single project and few, if any, are sized to convey runoff from adjoining development. In some established areas of the Hillside, these systems work well. In others, particularly those with new subdivisions, inadequate drainage causes significant problems.

Right now, no single entity is responsible for managing drainage from throughout each watershed, top to bottom. The majority of roads and associated drainage ditches are located in, and maintained by, Limited Road Service Areas, homeowners associations, or ad hoc maintenance groups. These entities don't have the capabilities or mechanisms to identify and construct major drainage system upgrades.[3] They therefore have little control over solutions to persistent drainage-related problems caused by poorly designed or inadequate drainage facilities and cannot construct new or upgraded systems to control increased runoff from upstream development. Drainage is currently dealt with in a piecemeal fashion, with subdivisions, homeowners and service area managers each attempting to convey runoff through or around their properties. This uncoordinated approach has resulted in numerous drainage-related problems. A new management and maintenance approach to Hillside drainage is adopted, particularly in the steeper, higher elevation areas.

3 The Glen Alps Service Area and the Goldenview Rural Road Service Area can collect fees to construct capital improvement projects.

Planning Issues Summary

- A number of areas within the Hillside have been identified where runoff is causing problems including icing, flooding, erosion, and degradation of water quality and aquatic habitat. Development is increasing runoff and has caused an associated increase in drainage-related problems.
- Drainage conveyance systems are currently planned in a piecemeal fashion. This approach has resulted in undersized conveyances that lack connectivity.
- Some natural drainage ways and wetlands have been damaged or diverted by land developement. Remaining wetlands, streams, and natural drainage ways provide vital storm water management functions and should be protected.
- Existing regulations and drainage-design criteria don't adequately address the unique conditions of the Hillside and are not always adequately enforced. Revisions to Title 21, Anchorage's land use code, strengthen development regulations but do not address some of these unique Hillside issues.
- Roadside drainage is maintained by numerous entities with most of these lacking the ability to plan, design, fund, and construct major system upgrades. This has resulted in inefficient use of funds being spent on repeat maintenance efforts.

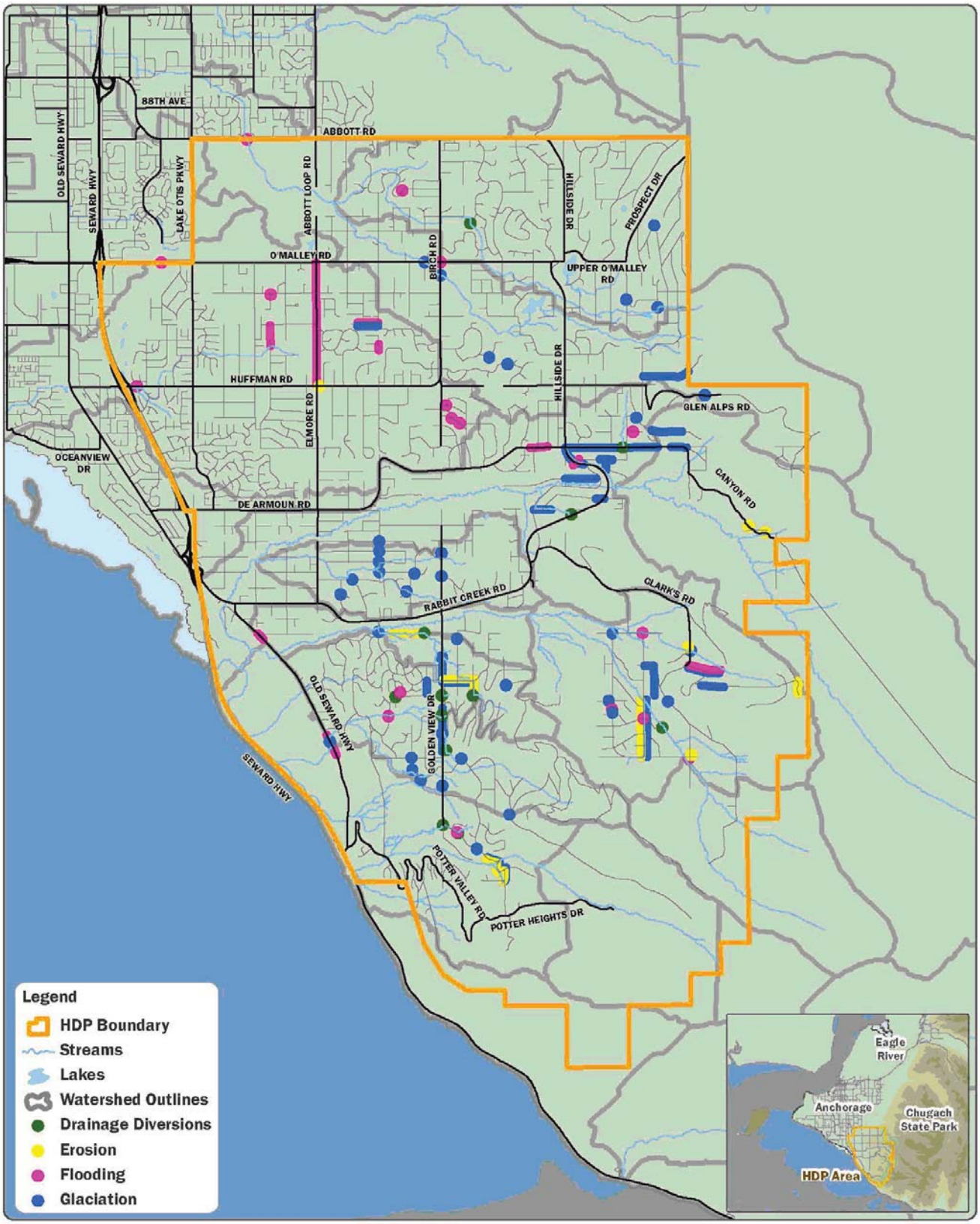
To manage drainage, new developments could be required to include control measures to reduce runoff. Adequate drainage systems coud be designed and installed up front, to greatly reduce ongoing operations costs.

Summary of Alternatives

A new approach to managing and maintaining drainage on the Hillside is proposed for community discussion. It includes four components

- Create a new service area or district utility to manage drainage on the Hillside.
- Reduce runoff by requiring all new development to include control measures.
- Develop watershed drainage plans for all Hillside watersheds. These plans would identify regional systems tio fix existing drainage-related problems, plan for adequate conveyance of future flows and protect valuable resources such as streams and high-quality wetlands.
- Fourth, develop rate studies that would develop watershed-specific fee structures to pay for drainage improvements on the Hillside.

Map II. 2A
Drainage Issues on the Hillside



1. New Service Area or Utility

The current set of local road service areas and ad hoc maintenance areas has resulted in an inability to develop solutions to drainage-related problems. It is therefore proposed that a Hillside-wide authority be created to manage drainage. This entity would enforce drainage policies, implement construction of watershed-based drainage solutions and maintain drainage systems on the Hillside. The authority would be overseen by a board of Hillside residents.

Also proposed for discussion: Two alternative methods for establishing a management authority for drainage on the Hillside. One alternative establishes a District-wide Service Area for management of both drainage and roads. Under the second alternative, roads and drainage would be managed separately. Under either approach, drainage plans for each of the Hillside watersheds would inform drainage managment. Combining drainage and road management would afford administrative and implementation economies of scale but may be more difficult to adopt than a drainage-only utility. (The Infrastructure Management and Financing Mechanisms section of this Framework Plan presents more detail regarding these proposals.)

2. Runoff Controls

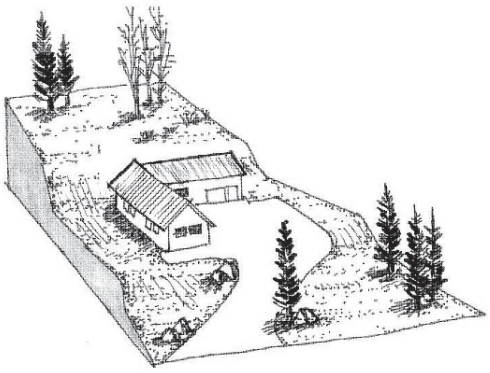
Development of the natural landscape affects runoff by replacing permeable land with cut-slopes, homes, streets, driveways and landscaping. The character of residential development on the Hillside is changing, resulting in larger homes, larger areas of impervious surfaces and larger areas cleared for landscaping. As natural land is developed and replaced by impermeable surfaces, the potential for runoff increases. In addition, removal of vegetation and excavation that intercepts groundwater has the potential to cause icing problems throughout the winter.

Reducing the amount of runoff resulting from new development will also decreases the cost of downstream conveyance systems. Less runoff will also help protect the quality of water. Runoff and icing controls are proposed for all new development on the Hillside including:

- Retention of native vegetation based on lot size
- Capture of roof runoff (for example, by using "rain gardens")
- Disconnection of driveway runoff mechanisms (so water infiltrates land on-site rather than being directed to an adjoining road)
- Adherence to watershed drainage plans
- Special road design for areas with a high potential for icing

Figure II. 2B
Runoff Controls

ADEQUATE RUNOFF CONTROLS



INADEQUATE RUNOFF CONTROLS

Minimizing impervious surfaces and retaining natural vegetation reduces the amount of runoff from new development. This can decreasing the cost of downstream water conveyance systems and help to protect water quality too.

3. Watershed-based Drainage Planning

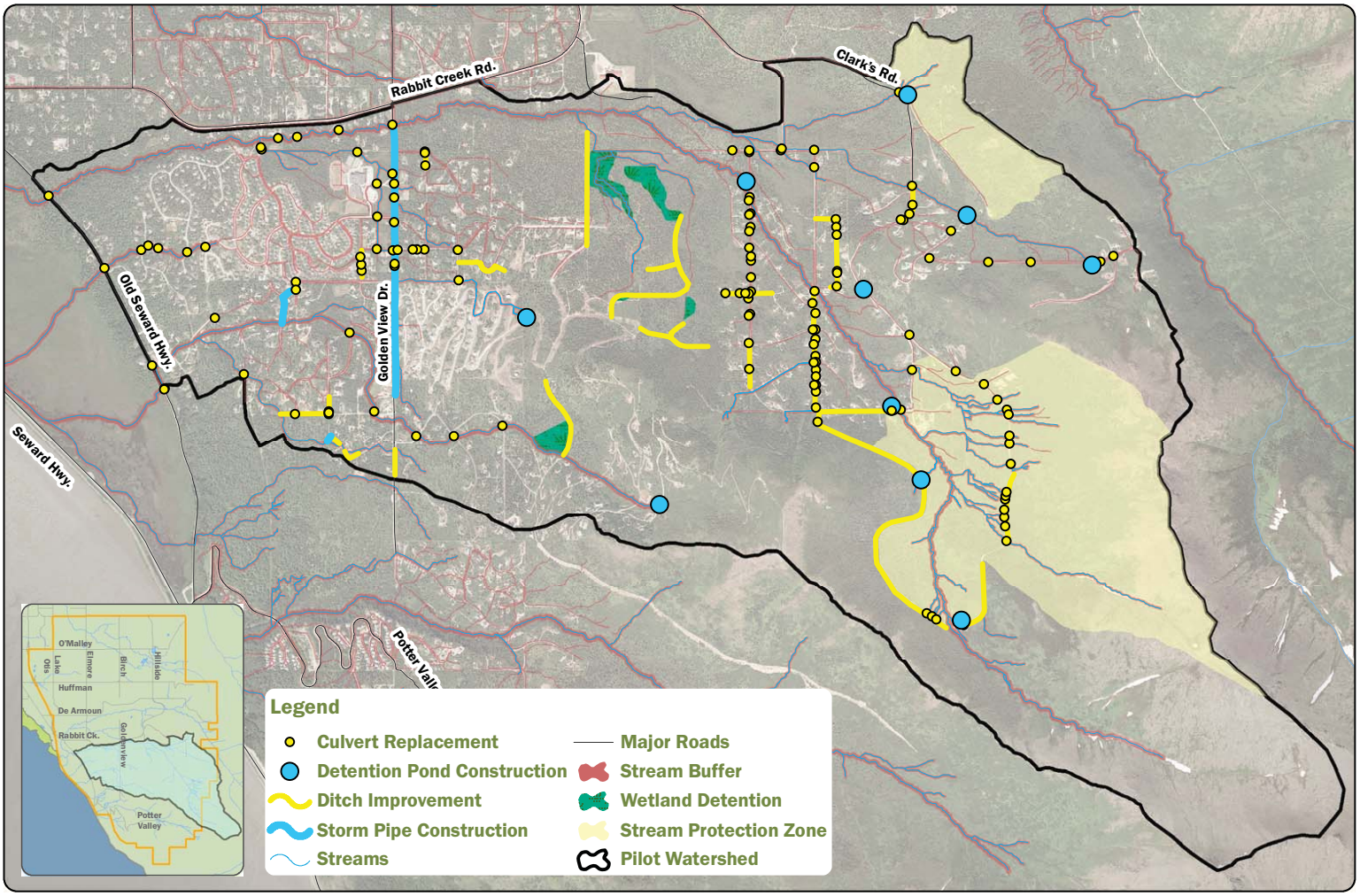
It is proposed that watershed drainage plans be prepared for all watersheds within the Hillside Planning District. These plans will identify watershed-wide systems that would solve existing drainage-related problems, plan for adequate conveyance of future flows, and protect valuable resources such as streams and high-quality wetlands.

To demonstrate this watershed drainage planning process in a practical way, a pilot watershed drainage plan is being developed for the Little Survival Creek and Little Rabbit Creek watersheds (an approximately 7.5 square-mile area). A rainfall-runoff model was developed which identified deficiencies under future land use conditions. Preliminary drainage solutions have been ranked and assigned concept-level costs. Solutions include requirements for runoff controls from all new development, as well as existing system upgrades and controls to mitigate runoff from all new development. Map II. 2C graphically displays the following system upgrades and mitigation measures.

Most Hillside drainage ends up in roadside ditches which often are not up to the challenge.

- **Culverts:** Replace existing culverts that are either undersized, severely damaged, or contribute to glaciation with appropriate structures. Construct new culverts to provide adequate conveyance for future flows.
- **Ditches:** Rehabilitate existing ditches that are undersized (not capable of conveying future runoff) or that contribute to glaciation in order to increase capacity or incorporate anti-glaciation features. Construct new ditches to provide adequate conveyance for future flows.
- **Storm Pipes:** Construct storm pipe systems to convey peak runoff, including a system located along Golden View Road and a system located along 164th Avenue.
- **Detention Ponds:** Construct storm water detention ponds to detain the difference in peak flows between existing and future land use conditions for minor rainfall events (likely two year and 10-year events at minimum) and provide water quality improvement functions.
- **Wetlands:** Protect areas identified as wetlands or potential wetlands that are strategically located to provide storm water detention and water quality enhancement. The sites will likely require some modification such as construction of containment berms and provision of runoff dispersal and collection systems.
- **Stream Protection Zones:** These are areas not suitable for regional controls. Development located in these areas would be required to provide on-site controls to limit runoff to existing peak flows for up to the 10-year event.
- **Setbacks and Drainage Easments:** The plan also recommends:
  - Stream setbacks 50 feet, both sides of ordinary high water along main stem streams based on current Municipality of Anchorage stream mapping.
  - Stream setbacks 25 feet both sides of centerline along perennial streams as defined by current Municipal of Anchorage stream mapping.
  - Drainage easements ten feet both sides of ephemeral drainage ways and drainage ditches.

Map II. 2C
Pilot Watershed Drainage Plan



Hillside District Plan

Pilot Watershed Drainage Plan:
Existing System Upgrades and Future Development Structures

0 0.5 1 Miles

1 inch = 0.5 miles

N

All data courtesy of the Municipality of Anchorage.

This map was compiled for the Municipality of Anchorage, with assistance from HDR Alaska Inc.

Alaska State Plane, Zone 4, NAD 1983

A pilot watershed drainage plan is currently being developed for the Little Survival Creek and Little Rabbit Creek watersheds. A rainfall-runoff model has been developed, and deficiencies under future land use conditions have been identified. Drainage solutions are currently being developed. Watershed drainage plans could likewise be developed for other Hillside watersheds in order to identify regional systems capable of fixing existing drainage-related problems, planning for adequate conveyance of future flows, and protecting valuable resources, such as streams and high-quality wetlands.

Evidence of the challenges of maintaining drainage infrastructure: culvert and drainage ditch along Clarks Road.

4. Rate Studies

Adoption of the new drainage management approach will require collection of fees from Hillside residents and landowners. It is proposed that rate studies help determine a fee structure for each of the Hillside watersheds. The studies would determine household rates based on drainage-related costs for each watershed. The costs would include administrative, construction, and maintenance components. Homeowners would likely pay for administrative costs for the entire Hillside but only pay for construction and maintenance of drainage facilities located within the watershed in which they live. Alternative methods of equitably allocating program costs would be evaluated including new development impact fees. It is anticipated that each watershed rate study would take six to nine months to complete after the watershed drainage plan is accepted.

Conclusion

Unlike today, this alternative approach would allow Hillside residents full control over runoff within their watersheds – from the very top of the watershed to the very bottom. The four-part approach would fix existing drainage-related problems and ensure that increased runoff from new development would not cause future problems. The following presents a comparison of the existing approach to the alternative approach.

Base Case – Existing Approach

- Most road service areas and all of the ad hoc areas will continue to lack the ability to fund and construct drainage improvements.
- Existing drainage-related problems would likely remain unresolved.
- Existing landowners and new homeowners are not assured that their property will be protected from upstream runoff.
- Streams and high-value wetlands would likely be lost or degraded.
- Residents would still fund ongoing maintenance, such as removal of ice, which could otherwise be resolved by drainage improvements.
- New development would likely continue in the current development style of higher densities, less native vegetation, and expansive impervious surfaces. This style doesn't provide adequate runoff controls, exacerbates existing drainage problems and creates new ones.
- If the Municipality's revised Design Criteria Manual is adopted and enforced, all developers would need to retain on-site the difference between existing and future flows. This approach of controlling drainage on a lot-by-lot or subdivision-by-subdivision basis would result in many small privately owned retention ponds. This has proven unsuccessful over the long term because these ponds are often poorly designed, poorly constructed, and not maintained.

New Watershed-Based Approach

- Runoff from new development is reduced using required control measures.
- Regional controls within each watershed are presented in watershed drainage plans, providing developers with a clear understanding of the requirements.
- Regional controls are adequately maintained by the management authority, ensuring efficacy.
- Natural drainage systems and high-quality wetlands are protected.
- Implementation of the watershed drainage plans ensures that existing drainage-related problems are solved and future problems are avoided.
- Rates are collected equitably on a watershed basis: Residents living in watersheds containing more drainage-related problems pay more than those living in watersheds containing fewer problems.
- The regional watershed approach to managing drainage results in economies of scale and therefore overall lower costs to residents compared to the lot-by-lot or subdivision-by-subdivision approach.

See the Transportation section and Onsite Water and Wastewater section for a more detailed discussion of options, costs and benefits of establishing an area-wide drainage service area.

3. Transportation

Transportation includes circulation by roads, trails and by transit. Most of the Hillside enjoys a decent road system that's not too crowded and is generally safe. Many Hillside residents and visitors to the area value recreational trails. Some of these are established, managed public trails; many others are "traditional trails" that cross private land.

Many Hillside residents commented on their love of the "country road atmosphere" that they enjoy on the Hillside. These images show the variety of country roads currently existing on the Hillside. A set of rural road standards is proposed for the Hillside, in order to address road quality concerns while at the same time protecting the character of the area.

Summary of this section

The Hillside road system is generally able to handle current demands, but in some areas problems are developing as the Hillside continues to grow. These issues – congested intersections, concerns with emergency access on substandard roads, and unsafe stretches of highway (like O'Malley Road in front of the Alaska Zoo) – will intensify as the area expands from 8,500 residences today to just under 14,000 residences at build-out.

The Hillside faces a related set of challenges regarding trails. Demand for trails is continuing to grow; traditional routes across private land are being lost as development occurs; trailheads are absent or overcrowded; and few options exist to construct and maintain needed trails.

New approaches are necessary to address the impacts of past development and to anticipate likely growth. This section investigates options outlined below:

- Identify a new set of primary and secondary roads to relieve congestion and improve emergency access
- Find ways to improve "connectivity" – to provide more than one way to move through the area – while protecting neighborhood quality and character
- Identify a system of high-priority trails and access points to Chugach State Park
- Identify future trails and roads as part of an integrated "built/green infrastructure" approach
- Establish new standards for roads and trails, so they integrate well with the unique conditions on the Hillside
- Investigate options for new mechanisms to fund needed capital improvements and to maintain roads and trails

Planning Issues Summary

- A limited number of problem areas and intersections were identified where congestion and safety are concerns, at least at certain times of the day. Most of these problems areas are tied to daily school traffic.
- Road development standards for the rest of Anchorage are not always considered suitable for roads on the Hillside. Some residents desire a rural road standard that would allow for less removal of vegetation and different surfacing options to fit better with the area's character.
- Some areas will require new or improved roads to serve existing and future growth projections, particularly to provide for emergency access and egress. This would also help relieve congestion in problem areas.
- Often, as subdivisions develop adjacent to (or up-slope from) one another, roads that previously functioned (or were designed) as residential roads begin to function more like a collectors. This leads to maintenance and safety issues and traffic on quiet residential streets. Establishing a clearer hierarchy of primary and secondary roads can help.
- The Hillside District contains a patchwork of road ownership and responsibilities for road maintenance. Some roads were built below current standards necessitating increased maintenance. The Limited Road Service Areas (LRSAs) generally provide very satisfactory road maintenance services in many areas but by law, they can't provide for capital improvements.
- Substandard roads, multiple homes on private "driveways" and roads that are poorly maintained and poorly signed create serious problems for emergency vehicles. Local fire crews report that fire engines and ambulances often have trouble finding and reaching homes to provide critical emergency services.
- Some areas on the Hillside lack adequate routes for emergency access. In the public survey, the only concern which the majority of Hillside residents consistently reported as at least "a problem" was the issue of wildfire safety.
- Hillside residents enjoy getting out to walk, bike and ski, and regularly use the area's trails and pathways. Roadside pedestrian pathways are lacking in most parts of the district. These routes provide important transportation links, connecting neighborhoods to schools, for example. Many traditional trails located away from the road system cross vacant private land, and may be lost as development occurs. Mechanisms are not currently in place to provide funding to build, maintain and manage a trail network to serve the Hillside District.

Roads double as pedestrian paths. Golden View Drive appears in the top photo. Below, out for a stroll on Potter Valley Road.

Whether or not many of the road and trail routes in this plan are eventually built will depend on development and growth pressures.

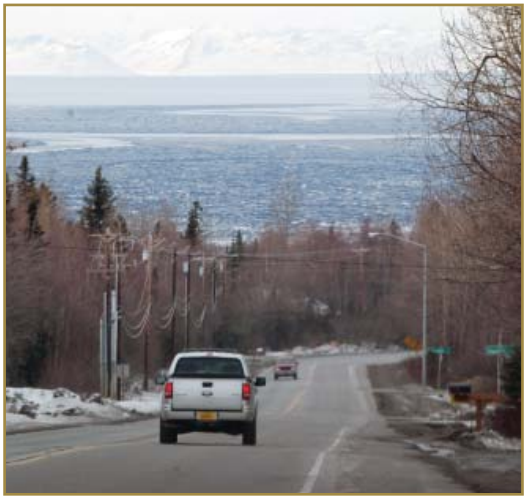
Summary of Alternatives

The roads and trails background report presents possible alternative development and management options for pedestrian and vehicle transportation in the Hillside study area. The full report can be found at www.hillsidedistrictplan.com. Proposed alternatives are based on the issues and goals identified in the first phase of the plan's development. Upgrades and new connections proposed as part of the roadway and trail network are discussed below.

Roads

Road upgrades and connections are being evaluated to meet the existing and future growth and safety needs in the study area. (See Map II. 3A Proposed Roadway Connections.) A functional classification map which correlates the intended use of the road network with design standards was also developed. A functional classification establishes a hierarchy of roads, so they work as a system – from small roads which focus on land access, to highways which move people longer distances at higher speeds. Roadway design standards are influenced by the way roads function within the system. Standards ensure adequate capacity and a safe operating environment.

Rabbit Creek Road, between DeArmoun and Clarks Road is a Hillside arterial known for difficult winter driving conditions.



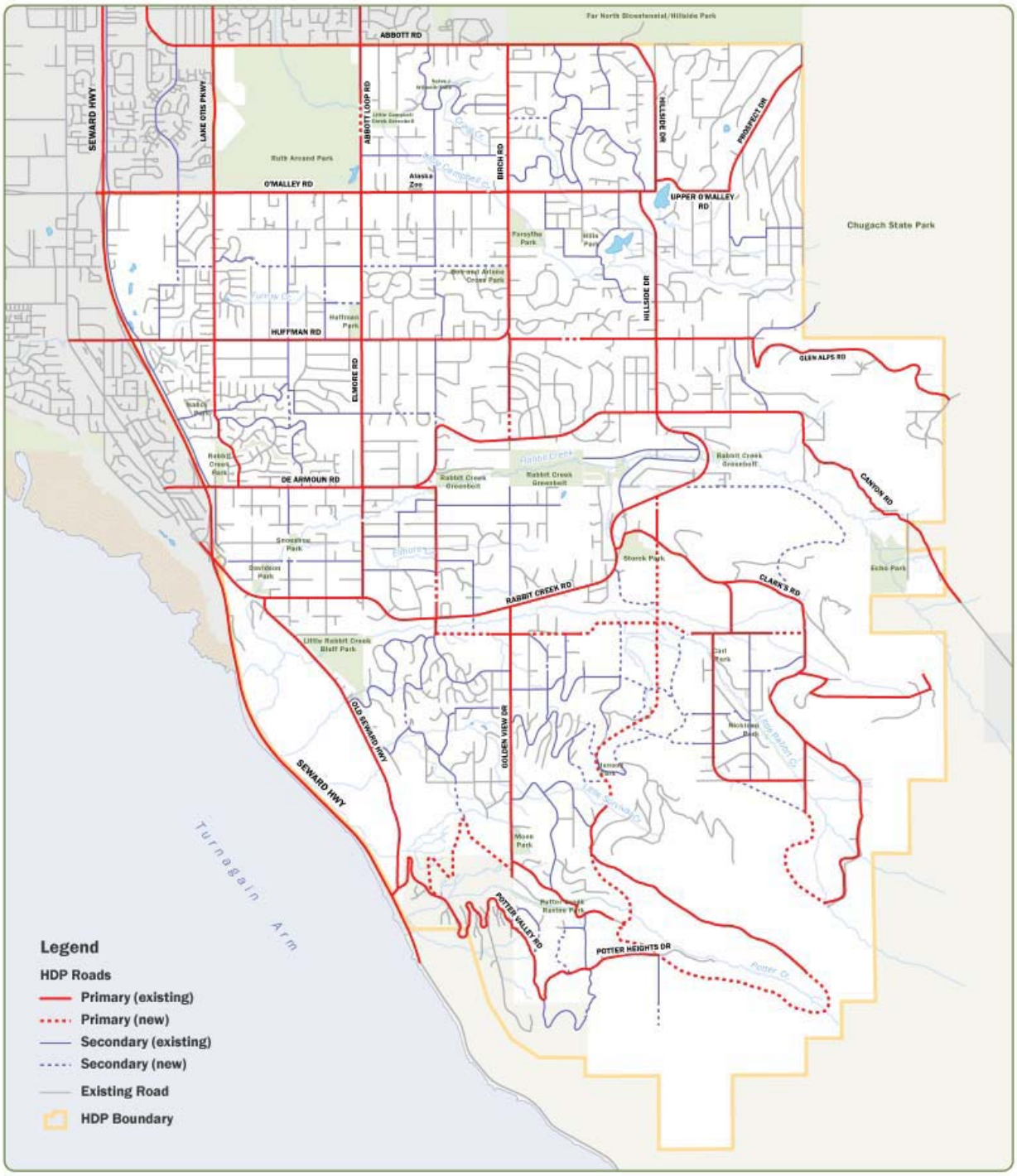
The transportation element of the Framework Plan aims to plan for connectivity so that when the road network is completed, it will allow for emergency access and evacuations. To this end, key links are recommended.

The proposed road network addresses three main points. First, the actual creation of many of these road and trail routes hinges upon development and growth pressures. These proposed transportation networks are designed to provide a framework to allay the effects of unplanned growth patterns experienced in the past. The road plan aims to ensure that growth and development occur in an orderly manner with respect to roads that cultivate planned connectivity and continuity.

Second, not all new roads are necessarily depicted. For instance, not all possible subdivided areas have fully planned for secondary road networks. Moreover, the subdivision process may require additional secondary or local connections depending on the location, lot layout, and density of the proposed development.

Third, routes are not necessarily in the exact locations and alignments that they may ultimately be constructed. The routes were drawn on a planning level and attempt to avoid major impacts and to consider constructability. But, design and permitting requirements, however, are likely to change the route of some alternatives.

Map II. 3A
Proposed Roadway Connections



Hillside District Plan

HDP Roads

0 1,500 3,000 6,000 Feet

N

Data Sources: Municipality of Anchorage, AKDNR, HDR.

Alaska State Plane, Zone 4, NAD 1983

File: HDP_Roads.mxd
04/09/08

The proposed road network takes into account an increased traffic capacity in some areas, as well as emergency access and impact on the character of the area's neighborhoods.

Evaluation of Proposed Road Network

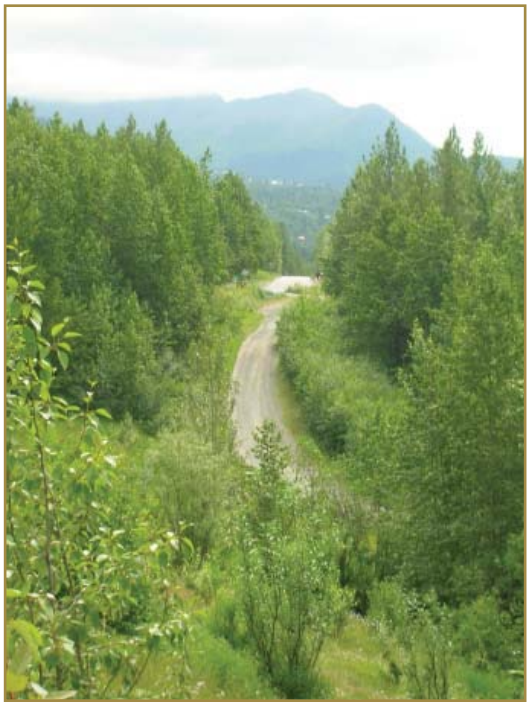
- **Traffic Projected with the Base Case Build-out Land Use Scenario:** The project team ran a traffic model based on the build-out land use scenario and which evaluated the performance of the road system and without the proposed HDP road network of primary and secondary roads. Without the proposed roads, Golden View Drive is projected to be over capacity. If the proposed roadway connections in place, all roadways are anticipated to function without unacceptable congestion. The critical improvements needed to eliminate the congestion along Golden View Drive were the additional connections to Rabbit Creek Road from Jamie/Ricky Road and the south end connection down to Potter Valley Road.
- **Traffic Projected with the Lower Hillside Controlled Growth Land Use Scenario:** The team examined the traffic levels if additional housing density were allowed on the Lower Hillside, with the proposed roadway improvements in place. The results of the added density would increase traffic on the Lower Hillside but none of the roadways would be anticipated to be over capacity. The roadways that would be affected by additional trips are Elmore Road, Lower O'Malley Road, and Lower DeArmoun Road.
- **Transit:** Land use changes under consideration for the Hillside District Plan do not warrant changes to the public transit service area map. The build-out scenario does not change land use densities to a degree that would warrant expanding the service area coverage (the anticipated low-density land use would not make service economical). The land use alternative that increases housing density on the Lower Hillside would be within the existing transit service area. The greater density would benefit the opportunity to make the transition to fixed-route service and improve the economic viability of providing service there. With the proposed road network, and the recent improvements at the north end of Elmore Road, direct transit from the Lower Hillside into the University/Medical area would be possible. Future routed structuring by People Mover should consider such service.
- **Emergency Access:** The proposed road network was designed to address fire risk and existing limited emergency and evacuation routes for moving equipment and fire fighting personnel. First, urban wildland fire-risk for some areas of the Hillside is of great concern and second, a number of areas lack road network connectivity. Map II. 3A Proposed Roadway Connections, shows the highest risk areas for wildfires and the proposed roadway network. Key connections have been added to the existing road network to increase connectivity and provide more alternatives for emergency accessibility.

- **Impact on Neighborhood Character:** On the negative side, possible roadway connections will affect the residential quality of some neighborhoods. This is, to some extent, already occurring but in an unplanned manner. Cut-through traffic happens in multiple locations on roads not designed for this purpose. Under the expanded road program, adequate connectivity with road design that correlates with the planned functions of the roads would help minimize and mitigate impacts.

Paying for Roads (and Drainage) – Capital and Maintenance Costs

A number of ideas were explored to fund and manage roads and drainage services. The options range from expanding the Anchorage Roads and Drainage Service Area across the Hillside, to converting Limited Road Service Areas to Rural Road Service Areas (expanding them to provide complete coverage). Converting the Hillside district to one road and drainage service area was also considered.

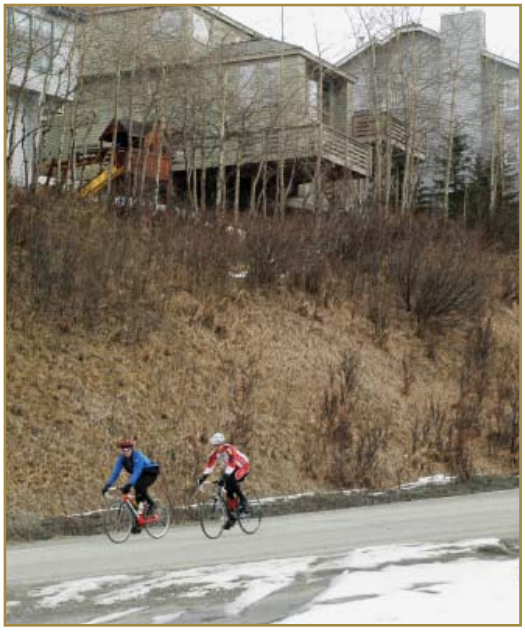
Two alternative methods for establishing a management authority for roads and drainage on the Hillside are proposed for further consideration. One alternative establishes a district-wide service area for management of drainage and roads. Under the second alternative, roads and drainage would be managed separately. (See the Infrastructure Management and Fincancing Mechanisms section of this Framework Plan for a discussion and evaluation of funding options.)



One of many Hillside roads that does not meet Municipality of Anchorage standards.

Trails

The Hillside area provides a wide range of trails including roadside pedestrian paths, popular road-bike and mountain-bike routes and walking trails on public (and private) land.



Trails are an important form of community infrastructure and serve a wide array functions in the Hillside District. Multi-use trails and sidewalks – in and around neighborhoods, near schools, and along key arterials – are an integral part of the total transportation system providing mobility and accessibility. Within parks and open spaces, trails and footpaths provide healthy recreation opportunities, enhance community life, raise nearby property values and provide access to some of Anchorage's notable outdoor attractions, including Chugach State Park (CSP). Trails are also an important economic resource, providing one of the reasons out-of-state visitors spend time and money each year in Anchorage.

Trails and open spaces in the Hillside District are popular with local residents and visitors. At least 200,000 users a year come to the Chugach through the Hillside area each year – from all across Anchorage and beyond – usually seeking a parking spot first, and then some form of access to open land. Most of these visitors want to reach the scenic alpine country and ridges found in the state park; some end up walking through land that might look like state park open space but in fact is private property.

In addition to this "destination" demand, many Hillside residents enjoy walking on the (mostly) quiet roads in their neighborhoods. Regardless of any actions of this plan, the eventual build-out of currently undeveloped lots in the area will tend to reduce opportunities for walking through neighborhoods.

In many places on the Hillside, trails infrastructure – parking areas, trash services, signage and general management of trails use – has not kept pace with demand. Evidence of these problems include overflowing parking areas, parking in places not intended as trailheads, and on occasion, problems with trespass, trash and vandalism.

Given this strong demand – and a historical lack of services, access and management – a range of conflicts and user-pressures have mounted over the years, often intensifying with new development. Looking ahead, as the remaining +/-2,500 acres of undeveloped private land are "built-out" on the Southeast Hillside, these issues will escalate unless progress is made on answering two major questions:

- What trails, trailheads, and infrastructure are needed now, and into the future, to adequately serve demand?
- Who funds and is responsible for acquisition, development, management and maintenance of this system? What institutional arrangement would be most fair and efficient in funding and managing trail construction, maintenance and management?

Figure II. 3B
Proposed Trails Framework

Proposed HDP Trails Framework

Trail & Trailhead Classifications

Regional:

 # Primary Trails: *New HDP links that interface with existing and planned Areawide Trail Plan/LRTP facilities to make a "Primary" network of east-west and north-south corridors at regular intervals:*

1 - Chugach Rim Trail/CSP
2 - Moen Park/Potter Valley Trail
3 - Little Rabbit Creek/Sectionline
4 - Goldenview /Birch Road
5 - Hillside Drive

P Chugach State Park Access Trailheads: *New HDP sites based on Chugach Access Inventory that are located on: 1) HDP Primary Roads; and 2) Public Lands (except Brewster Homestead desired acquisition). Note that these potential sites will be considered in greater detail and refined by two citywide projects that are beginning:*

1) Revision of the Chugach State Park Master Plan and Trail Plan; and

2) A joint DNR—Municipality of Anchorage Chugach Access Plan.

Neighborhood & Close-to-Home Facilities

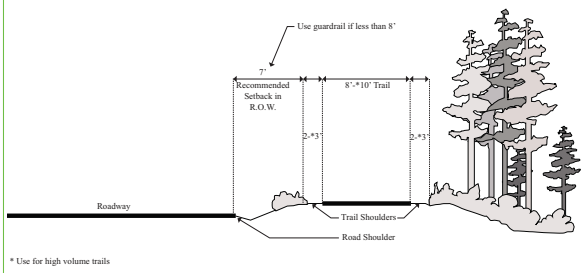
Secondary Trails: *Pathways, sidewalks, and recreational trails with links to the regional network but primarily serving local and area use.*

Private Subdivision Trails (not on map)**:** *Recreational trails on private common land (not within the public road right-of-way) that serve local use only and provide access from subdivisions to secondary trails.*

Typical Trail Sections

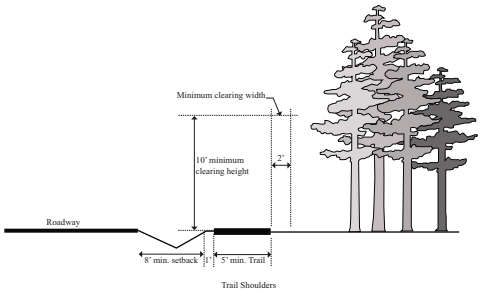
Trails are characterized as "roadside" or "natural setting" facilities. Development guidelines are provided to help trail development best match the surroundings and serve user preferences and expectations. The guidelines are based on existing design standards for the Municipality of Anchorage, and the U.S. Forest Service Recreational Opportunity Spectrum (ROS) with "urban," "rural," and "semi-primitive" standards. Following are typical sections:

Roadside Pathways



Urban Typical Section

Description: ADA Accessible separated path, sidewalk, or paved trail using Areawide Trail Plan Chapter 7 standards, MOA Design Criteria Manual, and Title 21; 21.08.030.H.6; 21.85.090; 21.85.100, Table E.

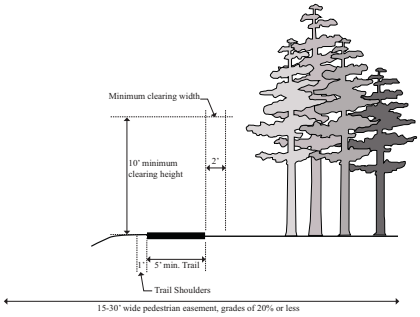


Rural Typical Section

Description: Transportation pathways associated with the road network, recommended to be on one side of the roadway and separated "where possible and appropriate to increase pedestrian safety and comfort and provide space for snow storage" (Anchorage Pedestrian Plan, Policy 2.2.4).

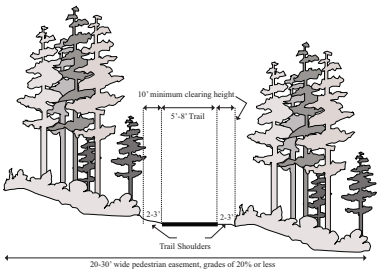
Natural Setting Trails

Note: The Anchorage Parks and Recreation department is currently developing a soft-surface trail classification system along with trail maintenance and development standards which will apply citywide once completed.



Rural Typical Section

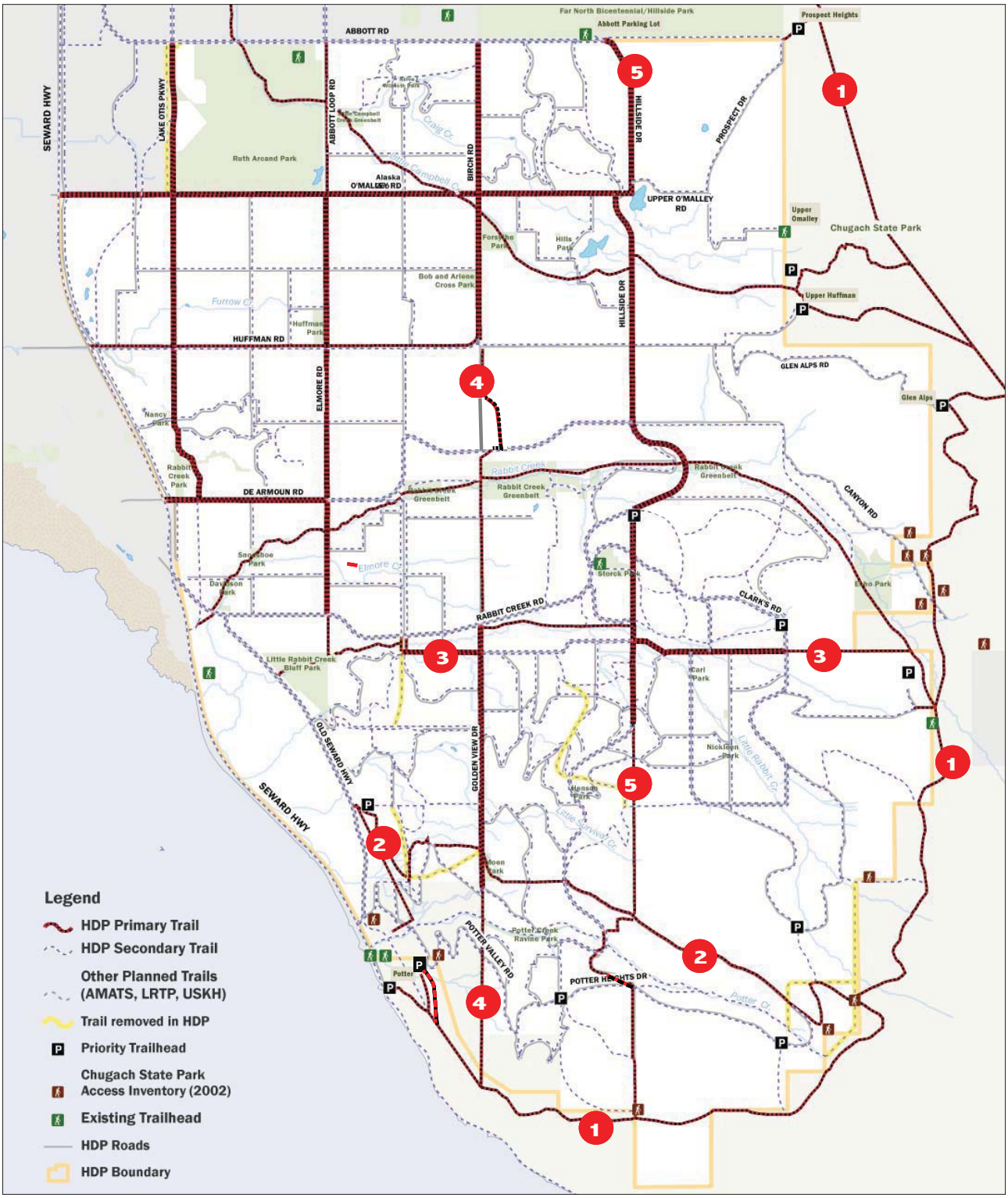
Description: Recommended to be a 5-8 foot wide gravel or paved foot path within a 15-30 foot easement at grades of 20% or less in locations "complementary to development . . . in open spaces between subdivisions to allow connectivity in a natural setting" (Hillside Sub-Area Plan recommendation).



Semi-Primitive Typical Section

Description: A 5-8' wide footpath within a 20-30' wide pedestrian easement (or wider if possible to allow a more natural experience) at grades of 20% or less, located to take best advantage of views, scenery, and the natural setting. Develop to a minimal level to retain semi-primitive experience.

Map II. 3C
Existing and Proposed Trail Routes



Possible Future Trails Network

In terms of answering the first question, this planning effort has identified a possible Hillside-wide network of trails. Most of these possible routes run east-west, with a lesser number of north-south trails. Trails are located at regular intervals, linked with larger trailheads about every mile on public lands along the border with the Chugach State Park. This system could serve local and regional needs well into the future. The possible trail system recognizes the desire for both roadside and "natural setting" trails. Similar to the roadway plan it categorizes trails as primary (regional access) and secondary (local access), as illustrated in Map II 3C Existing and Proposed Trail Routes. Routes shown here are not necessarily in the exact locations and alignments that they may ultimately be constructed. The routes were drawn at a planning level and attempt to avoid major impacts and to consider constructability.

The possible trail and trailhead network was developed by analyzing previously adopted plans, natural land features, legal access issues, and by gaining input from the public, agencies and landowners. It's a compromise that seeks to balance the public desire for connectivity with private property concerns. Trail routes are focused to the extent possible on public lands, section lines, and where necessary along roadsides. Sometimes these trails follow straight lines and are therefore steep, or are located where they provide a less idyllic route than what may have existed prior to development.

On the other side of the balance, the map also shows some key trail links crossing private land. These routes, generally identified in the adopted Municipality of Anchorage trails plan, are not intended to assert the Municipality's intent to force landowners to give such trails to the public. Instead, the objective is to identify these important connections and routes, and open the door to discussing options (accepting that some traditional use trails will be lost, and alternative options for accommodating access should be explored until a "win-win" private/public arrangement can be made).

Points of access into Chugach State Park exist in several places on the Hillside. Some residents would like there to be more access points but selecting sites and paying for access improvements are challenging issues to address.

Powerline trail to Glen Alps, the best known and frequently over-crowded entry point to Flattop and Chugach State Park.

Funding and Oversight Options

As is the case with roads, the second and third questions, "Who will pay for and be responsible for implementing, managing and maintaining the network?" And "What institutional arrangement would be most fair and efficient in funding and managing trail construction, maintenance and management?" Are the more difficult questions to answer. A number of parties currently share some role on trail issues, but historically no single entity is responsible, and there has never been a clear or easy way to coordinate efforts. Obvious public entities include: Chugach State Park, the State of Alaska, the Municipality of Anchorage, and the "public at large" who want legal road and trail access, and adequate services such as parking, rest rooms, trash service, and a management presence to improve safety and prevent illegal activities. Private entities include developers ready to plat and subdivide, homeowners' associations, trail user groups, tourism businesses and tourism organizations who want better "day trip options", non-profits, foundations, and conservation organizations.

After gaining input from a number of these interests, this planning effort outlines three options for a lead entity to oversee trail implementation and management, and to secure needed resources. Each of these options assume a strong partnership between the Municipality and the State of Alaska. These options include:

- Municipal Parks and Recreation Department. This option reflects the Municipality's established role and resources on park and trail issues, and the fact that the majority of the State Park use is by Anchorage Bowl residents.
- Hillside-based Service Area. This option would be similar to the approach in Eagle River, where the community established a local park and trail service area. This option would provide Hillside residents with more direct control over trail and park issues. To enable this regional service area to address "intra-Hillside" trail issues – perhaps with roads and drainage – the existing park service area and a new service area boundary would need to be approved by voters and the Assembly.
- Anchorage Bowl New Service Area. This final option investigates the possible creation of a new bowl-wide service area, focused on improving access and management related to Chugach State Park. This option is based on the fact that the need for capital, operation and maintenance costs related to the state park go beyond the means and responsibilities of Hillside residents on their own. This option could provide for a better base of resources to provide facilities and services needed to meet the strong and growing demand.

A slight expansion of the existing current Parks and Recreation service area boundary may be needed as part of any of these options. Currently this boundary excludes most of the Bear Valley and Potter Valley areas. Ideally, the boundary of a future service area would extend into Chugach State Park to allow dual state and municipal jurisdiction where access points and trailheads create the greatest need for infrastructure and services. This extension could potentially extend a half-mile into Chugach State Park, or alternately up to the ridge line so that capital improvements related to the regional "Chugach Rim" trail in the Long Range Transportation Plan are possible via bonding. See more on this topic in the Infrastructure Management and Fincancing Mechanisms section of this report.

Factors Affecting Selection of Trail Alternatives:

- Trails and trailheads designed and managed can add value to property, protect privacy, and give landowners developing subdivisions an advantage over competition. When trails and trailheads are not well managed the result can be reduced privacy, vandalism, and reduced property values. Much of the opposition by land owners and developers to trails reflected the lack of management of trail activities, rather than intrinsic problems with trails.
- Developers and landowners believe they often are unfairly required to provide land for trails as a condition of subdivision approval, without compensation, and to the detriment of their developments. New approaches are needed to address landowner concerns, with the ideal objective of creating a system of trails in a way that generates real value for developers. The experience of subdividers in other parts of the United States, where trails are an increasingly expected subdivision amenity, suggests this may be possible.
- The Convention and Visitors Bureau recently adopted a slogan "Big Wild Life", and is now in a position of having to deliver on that promise. A well designed system of trails and Chugach State Park access points can attract visitors, and increase resident quality of life, helping to boost the Anchorage economy. Pressure for trail use will not go away; more proactive development and management of trails is needed to guide and manage this demand.

The options presented here offer different approaches, with the objective of creating a system of trails that benefit users, developers and landowners. More discussion is needed with the Hillside community and all Anchorage residents to determine the most appropriate course of action. More discussion implementation and funding issues is presented in the Infrastructure Management and Fincancing Mechanisms section of this report.

Much of the opposition by land owners and developers to trails reflected the lack of management of trail activities, rather than intrinsic problems with trails.

Potter-Steamboat winter trail

4. Water and Wastewater: Public and Onsite Systems

Summary of this section

The most important water and wastewater issue in the Hillside District is how to continue to protect public health while relying on onsite wastewater systems; these onsite wastewater systems lie above groundwater which Hillside residents drink. A few facts:

- The combination of onsite wells and wastewater systems represents a viable, practical, long-term water supply and treatment solution for Hillside residents – provided they are adequately located, designed, installed, maintained and managed, and if the soils and geology of the area are sufficient to treat the effluent to a degree which protects public health.
- Currently more than 80 percent of Hillside District residences produce wastewater treated by onsite wastewater systems. Additional wastewater is produced by many schools, churches and other community serving organizations (some on holding tanks, some on onsite systems), and livestock including more than 1,000 horses.
- Public comments received in the planning process make clear the majority of Hillside residents strongly prefer continued use of onsite wastewater systems. The community survey conducted as part of this planning process produced similar findings, with local residents stating they are satisfied with their onsite systems.
- Local support for continued reliance on onsite wastewater systems is driven by two considerations. First, extending public water and sewer into the area would be very costly (from tens to hundreds of thousands of dollars per home; see more in this section and the Public Water & Sewer Background report). Second, extending public water and sewer could create the opportunity for higher density residential development, a change few Hillside residents welcome.
- Evidence regarding the state of Hillside onsite wastewater systems and groundwater quality generally suggests that groundwater quality is good, that most onsite systems are well-managed, and at least for the near term, the continued reliance on onsite systems is a safe and effective method of waste treatment.

- Certain existing residential areas of the Hillside currently have a documented history of challenges with onsite systems, typically because lots were approved at a size below modern standards and/or site physical characteristics are marginal for use of onsite systems (see Map II. 5G Challenge Areas).
- Statistics from water quality data collected at almost 40 community wells on the Hillside indicate nitrate concentrations are well below federal drinking water standards. However, well-sampling data within some localized areas show nitrate concentrations above what is typically attributed to natural sources. Between one third and one half of community wells exhibit a gradual upward trend over time. Increased nitrate levels may be caused by natural sources, and/or human sources, including manure, use of nitrate-based fertilizers, surface contamination from improper well seals, and wastewater effluent leaching into the groundwater. The groundwater protection program presented in part D of this section would address this and other areas of interest to ensure the protection of Hillside drinking water.
- At build-out under existing zoning, the Hillside is projected to grow from 8,500 dwelling units today to approximately 14,000 units in the future. This represents a significant increase in water withdrawal from the ground for domestic use and return to the ground as treated wastewater from onsite systems.

Planning Issues Summary – Options in Response to Hillside Issues

This section presents issues and proposes options for discussion in response to the concerns listed above. These issues and options are summarized below and presented in more detail in the sections that follow. Two supporting reports (one addresssing onsite water and wastewater, the other addressing public water and sewer) provide more detail and are available on the website: hillsidedistrictplan.com

- A more complete and systematic database on wells and groundwater is needed. In particular, more up-to-date well data is required to better assess areas of known onsite issues, to identify Hillside area nitrate trends, and potentially to address other contaminants that are not monitored in existing public water systems.

The groundwater protection program presented in part D of this section outlines a research and monitoring program that could provide more complete, current and accurate information about Hillside water quality. A proactive program may be needed to encourage improvements in the installation and operation of onsite well and septic systems. This topic is addressed in parts D and E of this section.

- Action may be needed in specific areas of the Hillside where onsite systems are associated with a history of challenges. This is one motivation for evaluating the Lower Hillside Controlled Growth alternative presented in parts C and F of this section and in the previous Land Use section of this Framework Plan. Under this alternative, the Maximum Perimeter of Public Sewerage would be extended into the Furrow Creek area of the Hillside where several subdivisions have challenges with onsite systems.
- "Neighborhood wastewater treatment systems" offer a possible alternative to traditional onsite systems and to more costly public water and sewer services. Part B of this section looks at some of the physical and institutional benefits, and potential issues, associated with this alternative approach.

Background – Existing Water and Wastewater Systems on the Hillside

Onsite Water and Wastewater Systems

The combination of onsite wells and wastewater systems represents a viable, practical, long-term water supply and wastewater treatment solution for Hillside residents – provided they are adequately located, designed, installed, maintained and managed. As noted above, more than 80 percent of the Hillside homes rely on onsite wells and wastewater systems. In general, the systems are well designed, and installed, but maintenance of the systems is, for the most part, hampered by poor access to the septic tank. Current treatment standards in Anchorage are basic, compared to standards in many states in the United States. For example, deep trench drain fields, small diameter pipe septic tank access, and lack of outlet filtration inhibit optimal wastewater treatment and the ability of homeowners to adequately maintain their systems.

On balance, Hillside onsite wells and wastewater systems are working well, although in some areas there has been evidence of poor function due to small lots and/or physical site constraints such as poor soils, shallow bedrock, shallow groundwater, and steep slopes.

Public Water and Sewer Systems in the Hillside District

The Hillside area is served by several types of public water and sewer systems. Public systems serve larger numbers of people with water from a single source or collect and convey sewage to a central treatment location.

The front range of the Chugach include the Hillside is a major contributor to the Anchorage's groundwater system. Water percolating through Hillside aquifers moves down gradient, feeding wells, wetlands and streams within and beyond the study area.

Public Water Systems

Public water systems are classified into three categories:

1. community,
2. non-transient non-community,
3. transient non-community.

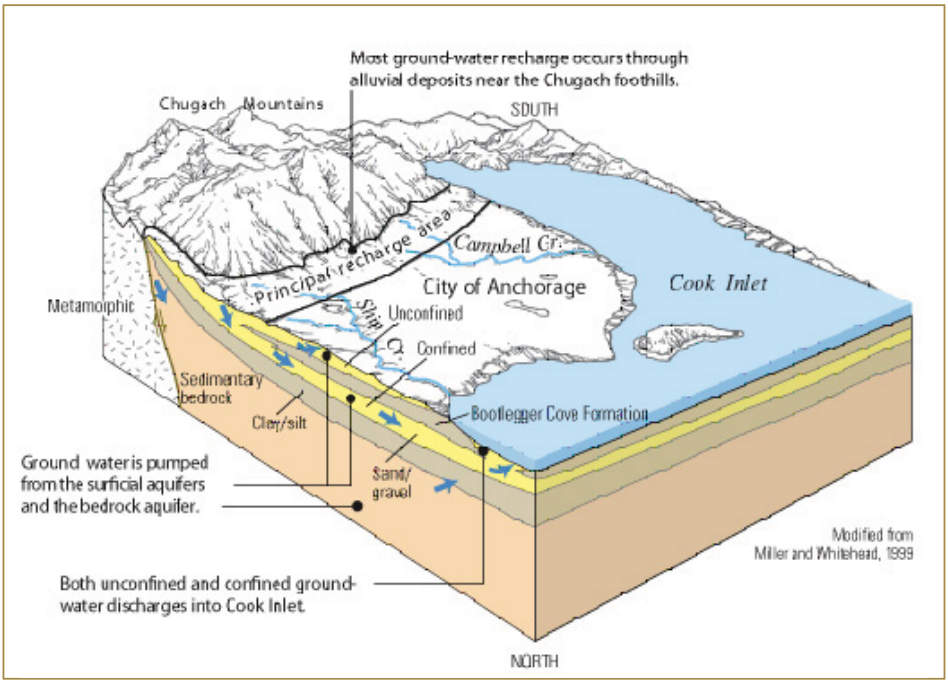
These match terms established by the US Environmental Protection Agency and the State of Alaska. The Anchorage Water and Wastewater Utility (AWWU) and Potter Creek Water Company, which serve the western edge of Hillside study area, are examples of community systems. Institutional and large nonresidential users like Huffman Elementary, Amazing Grace Church, the Alaska Zoo and Anchorage Golf Course are examples of two categories of non-community systems. There are 39 public water systems in the Hillside District: 19 community and 20 non-community.

AWWU is working on several projects identified in their water master plan for the Lower Hillside. Known collectively as South Anchorage Water Improvements, they include water transmission piping and water reservoirs designed to provide enhanced water volume and pressure for fire fighting and domestic use within the service area. The 2006-2007 Master Plan projects are shown in Map II. 4B on the following page.

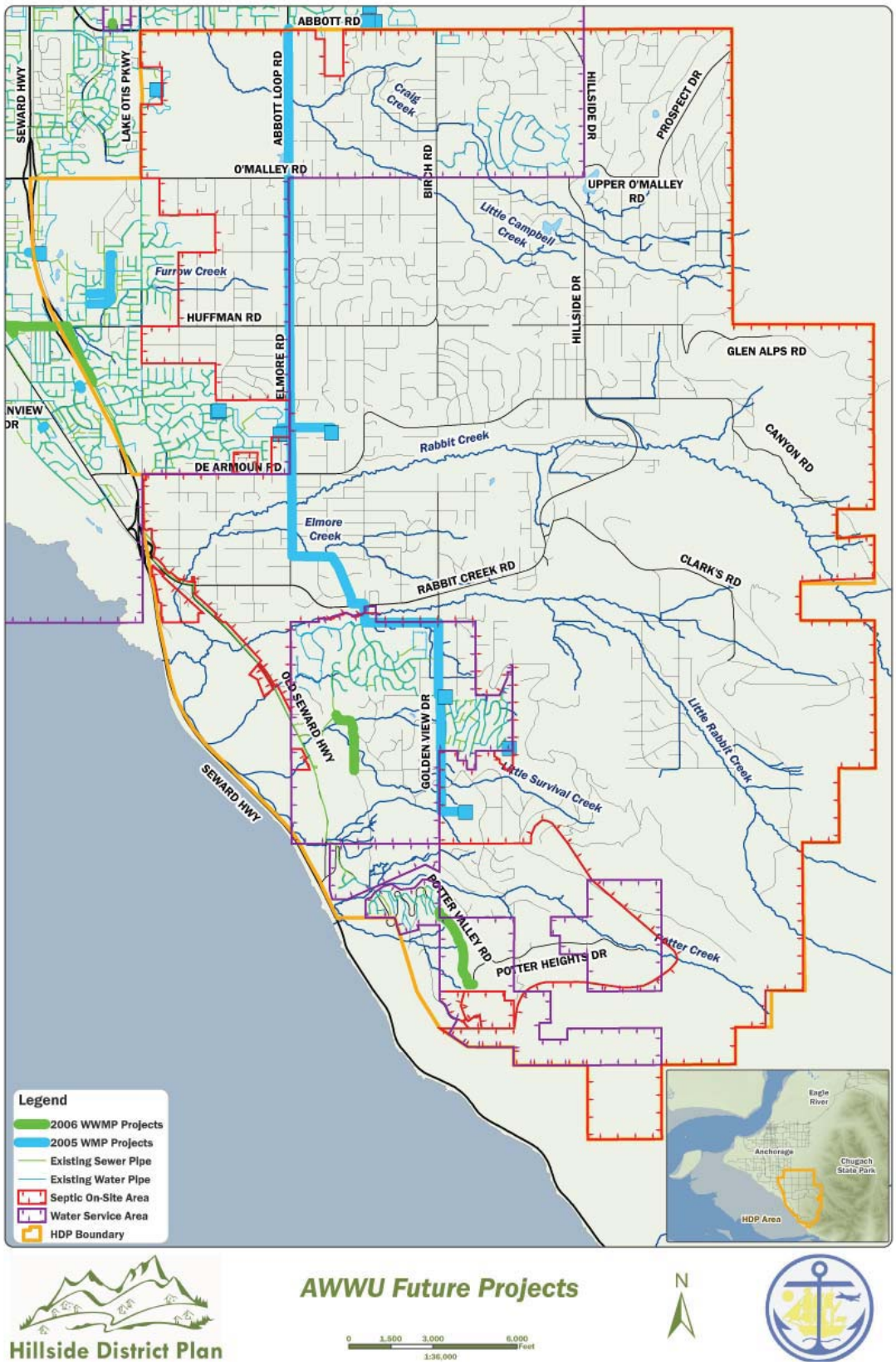
Public Sewer Systems

Sewer systems serving the pubic include utilities such as AWWU and non-utility systems that provide service to public gathering places. In general, the AWWU public sewer system serves the northwestern edge of the study area and some of Golden View and Potter Valley. The 20 non-utility public sewer systems serve churches, schools, or other public venues located north of Rabbit Creek Road and west of Hillside Drive. Non-utility public systems are not piped and use either holding tanks or onsite wastewater systems to dispose of wastewater.

Figure II. 4A
Hillside District and Anchorage Bowl Aquifers



Map II. 4B
AWWU Water and Wastewater Master Plans



Anchorage Water and Wastewater Utility Service Area

AWWU and other public utilities are regulated by the Regulatory Commission of Alaska. This State Commission has authorized the utility to provide water service to the area generally west of Elmore Road, north of DeArmoun Road and at the south end of Golden View Road.

AWWU has authorization from the commission to provide wastewater service to the entire Hillside District. However, the Municipality of Anchorage, through the 1982 Hillside Wastewater Management Plan, restricts AWWU piped sewer service to the area generally near and west of Lake Otis Blvd. and north of DeArmoun Road and portions of Goldenview and Potter Valley and the Golden View Road area. This area, labeled the "Maximum Perimeter of Public Sewerage" as well as the AWWU sewer collection system are shown on the Map II. 4B.

Costs and Obligations to Connect to Public Water and Sewer

AWWU is a rate based (user-funded) utility, meaning that its primary source of revenue comes from customers, not from property taxes. To minimize impacts to existing customer rates the utility operates under the business principal that the "cost causer is the cost payer." Propertyowners that wish to acquire AWWU services are expected to pay a fair share of the original costs of water and sanitary sewer main construction. Water and sanitary sewer mains can become available to a property within the AWWU service area by any one of the three following extension programs:

1. **Special Assessment Improvement District**
2. **Mainline Extension Agreement (Private Development)**
3. **Utility Capital Improvements**

A special assessment improvement district is initiated by a group of propertyowners who request that AWWU construct an extension project to serve their properties. Propertyowners within these districts pay 100 percent of project costs. A special assessment improvement district can only be approved with a majority vote of the propertyowners within the district boundary; the district also must be approved by the Anchorage Assembly. Although all propertyowners within the district are required to pay for construction of water and sewer mains, connection of any property to the water or sewer system is not required. So for, example, if you lived in an area where local voters approved an assessment district, AWWU would construct the sewer and water mains into the neighborhood, and each homeowner would be assessed for their share of the "backbone system" – the trunks, mains and lateral lines. Individual homeowners would be responsible for the relatively small additional cost (+/-$5,000) to extend a service line to their homes, and only if they chose to connect to the system.

AWWU is a rate based (user-funded) utility, meaning that AWWU's primary source of revenue comes from customers not property taxes. To minimize impacts to existing customer rates AWWU operates under the business principal that the "cost causer is the cost payer." Propertyowners that wish to acquire AWWU service are expected to pay a fair share of the original costs of water and sanitary sewer main construction.

Mainline Extension Agreement: Propertyowners and/or "developers" who wish to extend AWWU service to their properties may opt to fund and manage water and sanitary sewer extension projects. Once construction of a private development project is complete, the developer must contribute the public infrastructure to AWWU through a main line extension agreement. Other properties which front the constructed main are not required, but may elect to, connect to the developer's main. Propertyowners who wish to connect may be required to reimburse the developer a pro-rated share of the costs of construction, but only if the Anchorage Municipal Assembly approves reimbursement and the connection takes place within a three year period following construction.

Utility Capital Improvements: A utility capital improvement is a main extension project managed and funded by AWWU for the enhancement of existing water or sanitary sewer infrastructure. These projects are most often identified through master planning efforts to install large diameter pipelines, such as water transmission mains and sewer trunks, to strengthen service and system reliability. From these larger mains, smaller diameter distribution mains can be extended to provide service through the other methods.

If there are properties along the alignment of a new main that incidentally benefit from the availability of utility service resulting from a utility capital improvement, each property may connect in accordance with the levy-upon-connection assessment procedure.

Connection is not required by the utility. State law (AS 42.05.385) is very clear that when utility service is available to a propertyowner as a result of a water or sewer line extension, the utility offering the service through the extension shall notify the propertyowner of the charges and interest due the utility if the propertyowner elects to obtain the utility service through the extension. The propertyowner does not owe the charge for the extension, nor can a lien or encumbrance be levied against the property for the construction of the extension until the propertyowner connects to the extension.

Additional details on connection costs and processes can be found in the water and sewer and wastewater supplemental reports, including a helpful summary table of projects.

Many people have asked: if a property fronting on, but not using public water/sewer is offered for sale, will lenders require the parcel to connect to the public system? In an effort to answer this question several lenders including the Alaska Housing Finance Corporation, the Federal Housing Administration, the Veteran's Administration and USDA Rural Development (Farm Home) were surveyed.

Answers varied depending on the lender. Both the Federal Housing Administration and the Veteran's Administration require connection to public utilities if the cost to construct does not cause an unfair burden to the customer. The Alaska Housing Finance Corporation states that it's fair when the cost of connection is three percent or less of the estimated value of the property.

So, for example, if a typical service connection (a main to a home) costs about $10,000 to $15,000, the property sale would have to be above $333,333 to $500,000 for a connection to be required. The Veteran's Administration states it is required "whenever feasible." The Alaska Housing Finance Corporation and USDA Rural Development do not require connection to the public system as long as the private system is certified in conformance with the Alaska Department of Environmental Conservation. All four loan guarantee agencies require payoff of levied assessments, which are liens against the property. A summary of lending practices is shown below.

Figure II. 4C
Summary of Public Water and Sewer Lending Practices

Summary of Lending Practices Regarding Requirements for Connecting to Public Water and Sewer			
Insurer	Is Escrow or Payoff of Levied Assessments Required?	Is Escrow or Payoff of Pending Assessments Required?	Is Connection to Public Utilities Required When Adequate Well/ Septic is Available?
Alaska Housing Finance Corporation (AHFC)	yes	no	no
Federal Housing Administration (HUD)	yes	no	yes*
Veteran's Administration (VA)	yes	no	yes**
USDA Rural Development (Farm Home)	yes	no	no
Wells Fargo	yes	no	non-responsive

* If cost of connection is 3% or less of the estimated value of the property (AHFC Lenders Handbook).
**Whenever feasible (VA Pamphlet 26-7, Revised)

Future Challenges – Options and Alternatives for Discussion

A. Introduction and General Recommendation for Onsite versus Public Wastewater Treatment

As the Hillside grows, the overall water and wastewater objective is to attain an effective combination of onsite and public water and sewer service to protect public health, the environment, and the public interest, and to do all this at a cost that individuals and the community can afford. The remainder of this section looks at ways to meet this objective, considering existing conditions and anticipated Hillside growth.

Consistent with this broad objective, it is recommended that Anchorage Water and Wastewater Utility (AWWU) continue to provide water and sewer service generally as defined by its existing Maximum Perimeter of Public Sewerage (see Map II. 4B AWWU Water and Wastewater Master Plans). In two locations however, changes in allowed land densities are being evaluated and with this, possible changes in the Maximum Perimeter of Public Sewerage. One section of this chapter looks in more detail these two possible changes in the Maximum Perimeter of Public Sewerage.

B. Neighborhood Wastewater Systems

The concept of a neighborhood wastewater system is simply the collection of multiple onsite wastewater system discharges to be treated and discharged through a subsurface drainfield in a single location (or multiple locations), away from the source of the wastewater. Pressurized, gravity, or vacuum-assisted sewerage can be used to gather wastewater contributions from within a neighborhood for conveyance to the treatment and disposal site.

Neighborhood systems are an important option for the Hillside for several reasons. They offer the possibility of a relatively affordable wastewater option and a higher level of treatment than public water and sewer in areas where existing onsite systems face challenges. They also offer a means to cluster housing units and leave undeveloped open space. At the same time, many questions need to be answered before these systems can come into wide use on the Hillside.

Throughout the United States, and in other parts of the world, neighborhood systems have been in operation since the mid 1970's, and have proven to function well. The combination of selecting the most suitable land for the drainfield, incorporating higher design standards and requiring professional management has made local neighborhood wastewater systems a viable and economical alternative to regional wastewater systems.

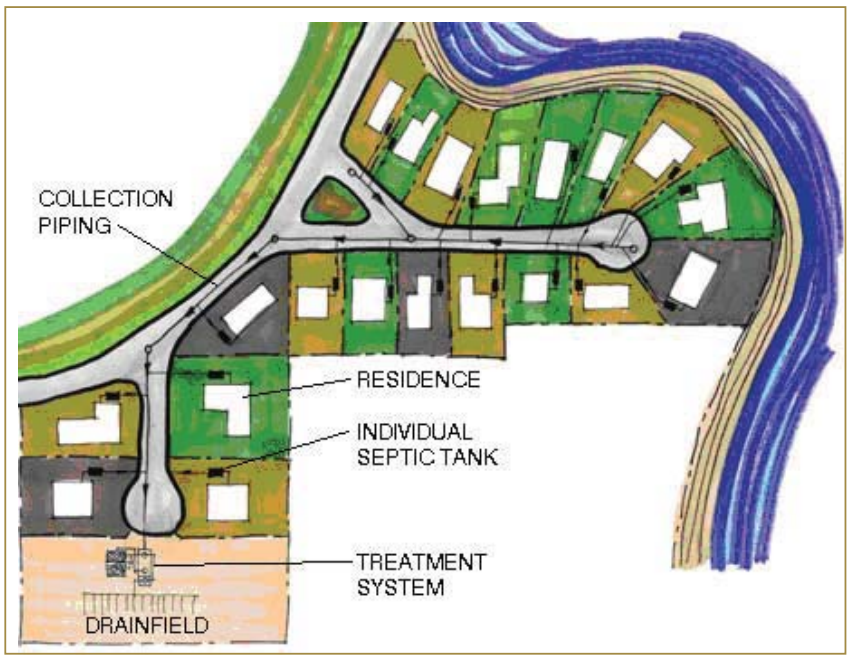
There are neighborhood wastewater systems in place and working in Alaska, including Werre Subdivision in Chugiak (nine units at full development). There are also new neighborhood systems gradually coming on-line, including a system on the Hillside within Grecian Hills Subdivision that could serve up to twelve units. A new 23-unit system on Big Lake, in the Call of the Wild Subdivision, is expected to be operating in 2008.

One early attempt to operate neighborhood systems in Alaska was less than successful. A 1985 development in Southwest Anchorage, at Country Lane Estates, was developed with a relatively rudimentary design, and not constructed in accordance with the design documents. It also wasn't properly maintained by the homeowner's association. The system failed in a short time and its owners subsequently opted to rebuild the wastewater collection system and petitioned AWWU to assume provision of wastewater service.

These systems have potential for use in any Hillside development where the propertyowner wishes to use this technology, as long as there is adequate land to locate drain fields, the site meets the conditions to be established by a future neighborhood wastewater systems regulatory authority, and the site has the physical characteristics that will support the subsurface disposal of treated effluent.

The Municipality of Anchorage Onsite Technical Advisory Board has considered the application of neighborhood wastewater systems in the Hillside District. The board recommended neighborhood systems as a potentially effective solution for wastewater disposal for small groups of residences for which neither Onsite soil absorption nor connection to existing municipal sewer infrastructure is technically practical or economically feasible.

Figure II. 4D
Illustrative Neighborhood Wastewater Treatment System
Wastewater flows to septic tanks at individual homes, effluent is then piped to a centralized secondary treatment point, treated effluent then goes into a neighborhood drainfield.



The AWWU Authority Board also considered the application of neighborhood wastewater systems in the Hillside District. They approved a Board Resolution that discourages neighborhood wastewater systems within the Municipality of Anchorage except where an extreme need has been demonstrated and adequate safeguards are in place to protect the public health and safety.

Such safeguards must include, at a minimum two things. A qualified regulatory and enforcement agency (other than AWWU) must be established at either the state or municipal level, with full authority, responsibility, and resources for oversight of neighborhood cluster systems. Also, technical and financial criteria for implementation (such as those indicated in the "Conditions for Implementation of Neighborhood Wastewater Systems," included in the appendix of the Onsite wastewater supplemental report) must be adopted through legislation.

The Board cautions that while neighborhood systems have been implemented successfully in regions of the Lower 48 with well-drained and uniform soil conditions, their broad application on the Anchorage Hillside is questionable because of the complex site conditions, including steep topography, variable soils, and often shallow groundwater and bedrock.

Neighborhood Systems – How are they managed?

A wide range of perspectives exists regarding application of neighborhood systems in the Hillside District, ranging from encouraging to discouraging their application. The Municipality is considering their potential application using different approaches to regulating, owning, operating, and maintaining them. The following definitions are provided to clarify the terminology used in describing neighborhood systems organization.

Regulation is the governmental control of the ownership, operation and maintenance of the system through laws and regulations. An authorized governmental agency normally performs the function of regulating and permitting the system. (If we use a car as an example, John can own a car, but it is licensed and regulated as a taxi, for example, by the Municipality of Anchorage.)

Ownership is the legal possession and responsibility for the system. A Responsible Management Entity (public or private, including a homeowners' association) could own the system. (John owns the taxi, but doesn't necessarily operate the taxi.)

Operation is the daily running of the system, both the administrative and technical practices involved in the proper function of the system, including meter reading, billing, enforcement, equipment inspection. A certified Operations and Maintenance company could provide the owner with expertise to operate the system. (Muncipality regulates, John owns, but Phil drives the taxi, gasses it up, picks up and drops off fares, etc.).

Maintenance is the daily monitoring, protection and preservation of the system physical plant including pumping, equipment repair and replacement, etc. A certified Operations and Maintenance company could provide the owner with expertise to maintain the system.

For example, John uses Ace Automotive to maintain his taxi, but Ace doesn't own or operate the car. A single Responsible Management Entity could own, operate and maintain the neighborhood system. It is possible, that John could own, operate and maintain the car himself, consolidating all the functions into a single entity and possibly saving money in the long run. This could be the most efficient method of handling ownership, operation and maintenance.

At present, only the Alaska Department of Environmental Conservation is organized to regulate the design, installation and governmental oversight of neighborhood wastewater systems. Governmental permitting and regulatory oversight should not be confused with ownership, operation and maintenance by a responsible party. The permitting agency will consider conceptual plans, review and permit engineered designs, issue permits and provide oversight of the party responsible for ownership, operation, and maintenance of the neighborhood wastewater system.

The Alaska Department of Environmental Conservation is resource-limited. They have indicated a desire to delegate the regulatory oversight of neighborhood systems to a Municipal agency should these systems proliferate in Anchorage. Many options exist to regulate, own, and operate neighborhood wastewater systems.

Regulatory Options

Alaska Department of Environmental Conservation for regulatory oversight is one option for regulatory oversight. However, this authority could be delegated to the Anchorage Water and Wastewater Utility, Municipality of Anchorage Onsite Service, Municipality of Anchorage Department of Health and Human Services, or a new Municipal agency. Regardless of which governmental agency might be tasked with oversight of neighborhood wastewater systems, ordinances are necessary to allow the overseeing agency to develop and enforce regulations. The pros and cons of each option are presented in Figure II. 4E.

Figure II. 4E
Options for Oversight of Neighborhood Wastewater Systems

Options For Permitting/Regulatory Oversight Of Neighborhood Wastewater Systems		
Agency	Pros	Cons
Muncipality Department of Health and Human Services	• Department's mission is to protect public health • Past experience with water quality sampling and monitoring	• No currently dedicated resources • No current authority • No neighborhood wastewater systems experience and knowledge • No groundwater experience and knowledge • Cost of initiating neighborhood system office
AWWU	• Knowledge of neighborhood wastewater systems technology • Currently oversees and permits secondary onsite wastewater systems • Understands groundwater issues related to public water • The Onsite Technical Advisory Board recommends the use of neighborhood wastewater systems where connection to the AWWU wastewater system is not practical or economical	• No currently dedicated resources • Lacks neighborhood wastewater system experience • Cost of initiating neighborhood system office
New Muncipality Agency	• Focused mission • Could start without perceived bias	• Does not exist at present • Would add more Municipal costs and bureaucracy
State of Alaska Department of Environmental Conservation	• Currently permits neighborhood wastewater systems throughout Alaska • Knowledge and experience with neighborhood wastewater systems • Mission is to protect the environment	• Limited resource capacity • Prefers to delegate regulatory oversight to the Municipality • Municipal code changes required • Focused on state not local issues

Options for Ownership

Neighborhood wastewater systems must be owned by a responsible party. This entity would be accountable by the regulatory authority for operating the wastewater system to comply with environmental and other requirements including compliance with the operating permit. Candidates for owning the neighborhood wastewater system include the Anchorage Water and Wastewater Utility or a new Municipal agency. However, a Municipal agency could not own the system and be delegated regulatory oversight by the Alaska Department of Environmental Conservation. Other options for ownership include private for-profit and private not-for-profit organizations, including homeowners' associations. In other locations, the latter frequently leads to problems because these groups typically lack the required expertise, interest and continuity.

Regardless of which option is implemented, the systemowner must maintain appropriate resources to service the entire system (through internal resources or external contracting). Other elements needing attention include management of individual septic tanks, maintaining transmission piping to the treatment and dispersal element, and servicing the equipment at the treatment and dispersal units. Other operational elements include billing, record keeping, user compliance and enforcement.

If the owner is not Anchorage Water and Wastewater Utility, and if the system serves more than ten dwelling units, then the ownership entity would be considered a public utility. This may require certification by the Regulatory Commission of Alaska (RCA) in accordance with state law. Currently, the Anchorage Water and Watewater Utility holds this certification for the entire Hillside District. Their Authority Board has resolved to seek Regulatory Commission approval to withdraw from its certificated service area where neighborhood wastewater systems are allowed to be put into service. Overlapping service areas of neighborhood systems and AWWU is to be discouraged. There exists potential for confusion regarding responsibilities for operations, maintenance, and emergency response to sewer backups or spills.

In many portions of the Lower 48, local officials are hearing recommendations that Rural Cooperatives (COOPs) be tasked to manage neighborhood systems, either after bringing a staff on board with the expertise to operate the system, or by contracting out the system's operation and managing financial and regulatory portions of the system with their own Rural Cooperative's expertise.

A private, for-profit owner is a private company that owns, operates and manages the neighborhood system under the regulatory guidance and enforcement of the regulating agency. This type of owner makes a profit in the management of the system, and encourages cost-effective

decision making. An example is onsite Systems, Inc, in Tennessee. The company is owned by the Pickney Brothers that currently manages 40 cluster systems across Tennessee, and is the third largest utility in the state.

There are currently more than 300 individual onsite secondary treatment systems in use on the Hillside, managed by private, for-profit companies. All companies have established a good record of providing guidance for the design and installation of the system, and have managed the existing active secondary treatment systems well. The pros and cons of ownership options are presented below.

Figure II. 4F
Options to Own, Operate and Maintain Neighborhood Wastewater Systems

(A Municipal Agency Is Not An Option If A Municipal Agency Is Delegated Regulatory Authority)		
Agency	Pros	Cons
AWWU	• Already a financially stable public utility • Experienced meeting federal and state environmental requirements • Fully operational customer service, billing, financial management, and information management systems and processes • Experienced at billing and collections • Strong customer service track record	• No currently dedicated resources • Limited neighborhood wastewater systems experience and knowledge • Perceived by Hillside residents as biased towards extending regional water and sewer • AWWU's board currently believes this to not be in the best business interest of the organization
New Municipal Agency	• Has no other oversight to conflict	• Cost to establish • Cost to operate • Additional bureaucracy
Private for-Profit	• Well-established format in Lower 48 States • Successful today in Alaska for individual secondary treatment • No perceived biases • Good Track record in Lower 48 States	• Perceived as more expensive • Requires State certification as public utility if serving over 10 homes • Potential overlapping with AWWU certified area
Private Not-for-Profit (COOP)	• Well established format in Lower 48 States • No perceived biases • Used in Lower 48 States	• Limited resource capacity • Prefers to delegate regulatory oversight to the Municipality • Municipal code changes required • Focused on state not local issues
Homeowner's Association	• Vested interest in success • Very local control	• Poor track record in Lower 48 States • More difficult to organize and maintain • Continuity problems when owners move • Lack of expertise • Weak track record of enforcement against fellow homeowners • Collection of dues or fees can be challenging

Contracting Options

Owners of neighborhood systems have the option of contracting aspects of their activities including design, construction, operation and maintenance, collection of fees, customer service, financial management, and legal services.

C. Onsite "Challenge Areas"

In several areas of the Hillside District, individual propertyowners have been challenged to economically operate their onsite wastewater system in an effective manner. Malfunctions have been attributed to a variety of causes – poor soils, shallow groundwater, shallow bedrock and steep slopes. These areas were also identified in the 1982 Hillside Wastewater Management Plan background reports, and in subsequent Municipal Onsite Department staff observations since 1982. Not all physical constraints are present within these areas, nor do all lots within these areas present challenges. These general areas presenting these issues are shown on Map II. 4G Wastewater System Challenge Areas.

Several options are available for these areas. These include: take no new actions; improve the operation of existing, individual onsite systems; install advanced, individual-lot, onsite systems; connect the areas to public water and sewer; or develop neighborhood wastewater systems.

To provide cost parameters to assist in evaluating options for serving challenged areas, the Hillside District Plan consulting team evaluated the differences in cost between two of these options: serving areas with neighborhood cluster systems versus extending public sewer.

The cost for neighborhood cluster systems (or advanced onsite systems) is typically well below costs for linking to public water and sewer. (See part B in this section for more information on options and requirements for neighborhood systems). Cost information comparing neighborhood cluster systems with the extension of public sewer is outlined in Figure II. 4H Wastewater System Cost Comparison. A map in the public water and sewer background report shows system locations on the Hillside used to estimate public sewerage costs.

Map II. 4G
Wastewater System Challenge Areas

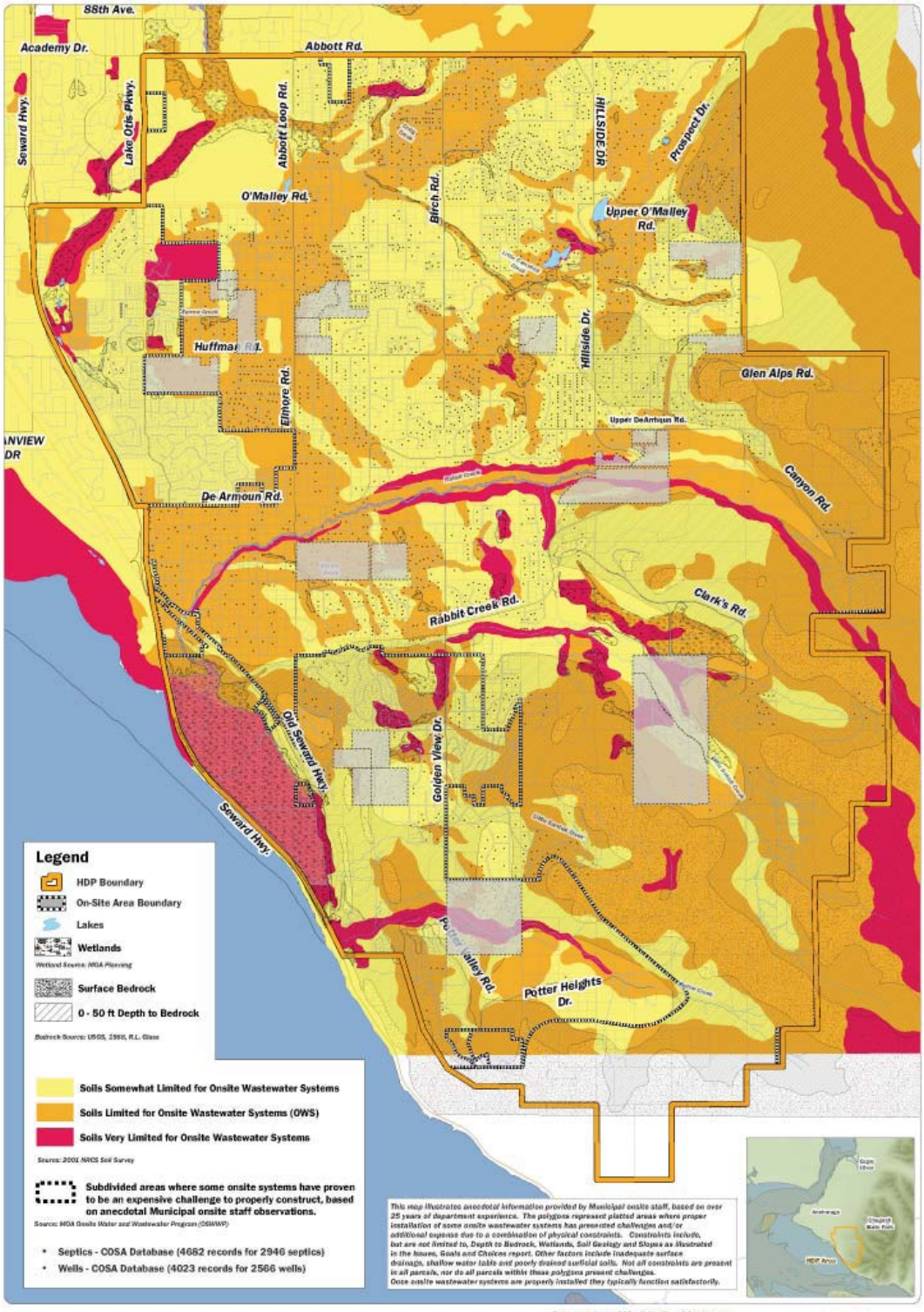


Figure II. 4H
Wastewater System Cost Comparison

Constructed Cost Comparison between Neighborhood Wastewater Systems and Public Sewerage Connection to AWWU's System								
		CLUSTER SYSTEM				PUBIC SEWERAGE[4]		
						SEWER COLLECTION SYSTEM[5,6]		DEVELOPABLE LOTS[9]
SUBDIVISION	NUMBER OF LOTS	DEVELOP-ABLE LOTS	PIPE COST[1]	TREATMENT[2]	COST/LOT[3]	COST/LOT[7]	PIPE COST/ LF[8]	
Audobon Hills	31	28	$111,840	$1,147,666	$44,982	$415,888	$1,069	31
Birch Tree Estates	50	46	$69,499	$1,370,009	$31,294	$152,358	$1,014	50
Denali View	21	21	$117,440	$765,568	$42,048	$601,746	$1,078	21
Drake[10]	45	43	$43,294	$1,630,497	$38,925	-	-	-
Elmore	69	67	$72,081	$1,715,224	$26,676	$152,358	$1,014	69
Fronius Forest	2					$230,991	$1,029	2
Grecian Hills	38	38	$26,024	$1,062,853	$28,655	$230,991	$1,029	38
Kimberly Manor	12	9	$21,808	$648,716	$74,503	$230,991	$1,029	12
Loma Estates[11]	26	24	$111,132	$943,211	$43,931	$169,724	$1,139	26
Mindyer Manors[11]	15	15	$56,790	$459,537	$34,422	$169,724	$1,139	15
Paradise Valley	212	195	$886,324	$5,865,953	$34,627	$139,356	$1,144	212
Rabbit Creek Heights	262	261	$1,156,563	$6,249,064	$28,374	$124,513	$1,033	262
Rabbit Creek View	72	71	$315,693	$2,518,358	$39,916	$124,513	$1,033	72
Shenandoah Hills	9	9	$6,640	$293,056	$33,300	$148,608	$1,081	9
Siefker[10]	32	32	$119,027	$1,222,332	$41,917	-	-	-
Sky Harbor Estates[10]	22	22	$34,307	$498,832	$24,234	-	-	-
South Hills	71	66	$363,350	$2,315,909	$40,595	$230,991	$1,029	71
Susitna View[11]	24	19	$106,838	$835,072	$49,574	$169,724	$1,139	24
Talus West	102	102	$476,400	$2,671,586	$30,863	$148,608	$1,081	102
Terrace Heights	19	19	$34,626	$532,306	$29,839	$230,991	$1,029	19
Trails End	82					$372,034	$999	82
Valhalla	36	36	$76,685	$948,430	$28,475	$148,608	$1,081	36
Woodridge[11]	26	26	$113,358	$743,276	$32,947	$169,724	$1,139	26

1 Pipe cost includes all costs including septic tanks, pumps, controls, piping as well as transmission pipe to the off lot treatment area.
2 Treatment costs include all tankage, buildings, treatment units, drainfields as well as the land cost the treatment system is on.
3 Cost per lot is the total cost for the Onsite and offsite components of the neighborhood system divided by the number of developable lots.
4 Unit costs are based on AWWU's 2006 Anchorage Wastewater Master Plan. Total costs are based in improvement district formation with costs levied by equal assessment methodology.
5 In some cases, multiple subdivisions are grouped together into one sewer collection system.
6 Sewer trunks are used to connect the sewer collection systems to AWWU's current infrastructure.
7 Cost per lot is the total cost of the sewer collection system and connecting sewer trunk divided by the number of developable lots.
8 Pipe cost/LF is the total cost of the sewer collection system and connecting sewer trunk divided by the total length of pipe.
9 Developable lots served by AWWU's sewer system is assumed to be the total number of lots within the subdivision.
10 Different assumptions are used for the two types of service; therefore, no public sewerage costs are provided.
11 A sewer trunk is not necessary to connect the sewer collection system to AWWU's current infrastructure.

Costs for neighborhood systems and public water and sewer are crude estimates only. These estimates may not be accurate for some of the areas; site conditions, regulatory conditions, availability and cost of land, and right-of-way issues could change these costs a great deal.

This evaluation does not reflect a decision to proceed with public water or sewer, or with neighborhood wastewater systems. The evaluation merely serves as a reference point for understanding the feasibility of these possible approaches. As the cost comparison indicates, connecting to neighborhood wastewater systems is costly, with typical costs per lot in the $30,000 to $40,000 range. Connecting to the public sewerage system is much more expensive, with typical costs per lot in the $120,000 to $250,000 range.

An assesssment should be conducted to identify specifiic site problems in order to properly address challenges posed by individual onsite wastewater systems in some Hillside District areas. Once the specific existing conditions are understood, an evaluation of options can be made to determine the best course of action. Each lot must be assessed individually, and in concert with neighboring lots and the local and regional groundwater systems. Then, an economical solution that addresses the public health and welfare must be determined.

D. Groundwater Protection Program

As stated above, in general, the present combination of wells and onsite wastewater systems is working on the Hillside. Most water samples collected from Hillside wells, except for a few naturally occurring contaminants, comply with state and federal standards for drinking water quality. There is no evidence of an area-wide threat to public health. Well sampling results, however, reveal nitrate concentrations in localized areas higher than what would be expected from natural sources. Additionally, nitrate levels in some wells are trending upward. Onsite wastewater system effluent, fertilizer, and manure are known human-related sources of groundwater nitrates. Consequently, nitrate

increases in a growing residential community raise the possibility that development is affecting ground water quality and suggest that other onsite wastewater system contaminants may also be on the increase.

Incumbent with the right to draw from, and discharge, into the aquifer is the responsibility to protect groundwater. It's recommended that the Municipality develop and implement a Groundwater Protection Program for the Hillside. This is intended as a proactive approach to reduce high-risk activities and to provide the Municipality with early detection capabilities to prevent a groundwater emergency. Prevention is much more cost-effective than cleaning up or replacing a contaminated aquifer. Specific recommendations for the Groundwater Protection Program (GPP) include:

1. Improved Understanding of Aquifer Conditions
2. Propertyowners' Groundwater Protection Measures
3. Community Groundwater Protection Measures

1. Improved Understanding of Aquifer Conditions

A viable groundwater protection program requires a means to gather, review, and deliver factual information. Accurate, real-time data and objective analysis of groundwater quality provides the ability to recognize trends at an early stage. This paves the way for timely action that may be necessary to avert a costly groundwater emergency.

There is no comprehensive program for directly monitoring water quality within Hillside aquifers. Nearly all of the water quality data assembled originates from well samples, under several different programs, without any systematic planning. Although the current system of well sampling has provided a sizeable amount of data, it has limitations. These limitations are listed below and described in more detail in the Onsite Water and Wastewater background report.

- Under-utilization of data
- Limited number of water quality parameters analyzed
- Uncertain source of problems (e.g. well contamination could occur at the wellhead)
- Distribution and frequency of sampling
- Lack of sampling/reporting quality control

Recommended Improvements to Data Collection

- Coordinate with state and federal agencies, the university, private consultants, local groups, and other interested parties in developing a common, internet-accessible, Hillside groundwater database. The database would include (but not be limited to) well drilling logs and pump test results for individual and public water system wells; historical and ongoing well water quality data; hydrologic and water quality studies; historical and ongoing surface flow and water quality data.
- Establish collection, processing, organization, and access protocols to facilitate efficient data utilization and analysis. Determine water quality parameters to be utilized.
- Supplement the existing well sampling program – required by the Certificate of Onsite Systems Approval (COSA) – with yearly testing of a select group of individual wells. Well group shall be selected to represent the Hillside aquifer system. Sampling to be accomplished by trained personnel with no vested interest in a specific outcome.
- Where a sample from an individual well exceeds 3.0 mg/L nitrate, conduct a contamination analysis of the wellhead to possibly include: site inspection; follow-up testing for other onsite water and wastewater systems associated contaminants; nitrate levels in neighboring wells; down-well videotaping; grouting evaluation; dye testing; follow-up water quality testing; or other measures. Evidence of wellhead contamination, including any remedial work, should be noted in the database for the well in question.
- Coordinate sampling schedules with public water suppliers on the Hillside to reduce seasonal variables in analysis results.
- Promote additional monitoring programs and studies most likely to improve the collective perception of aquifer conditions.
- Prepare an annual Hillside Groundwater Protection Program report of relevant findings, trends, and study results.
- Develop contingency work plans to address detection of elevated or increasing groundwater contaminant levels.

These recommendations are designed to best-utilize existing resources in striving for a data-based, proactive approach to preventing water quality degradation and to provide early warning of problems.

2. Propertyowners' Groundwater Protection Measures

Hillside propertyowners have a high degree of self-interest in maintaining local groundwater quality. At the same time, the cumulative activities of individual propertyowners create potential

for adverse impacts on a larger scale. Recommended actions affecting individual propertyowners ensure onsite systems are designed, constructed and managed well. Details of these actions are described in the onsite supplemental report and recommended actions are summarized below.

Household Activities Education: Some household activities and individual habits can adversely affect onsite wells and wastewater systems performance and/or the quality of effluent reaching the groundwater supply. Examples include certain patterns of water usage and discharge of high strength wastes or other deleterious substances. Although advisory information on this subject is presently available through Municipality's Onsite Water and Wastewater Program, it is recommended that more resources be devoted to education as part of the Groundwater Protection Program.

Onsite Location, Design, Operation, Management, and Maintenance: Onsite wastewater system siting and design are the responsibility of certified design professionals. Propertyowners, however, typically make significant decisions affecting onsite wastewater system including: selection of the designer and the level of treatment desired; choice of building size; site features and overall site layout and grading. Groundwater protection principles be emphasized to owners and builders as part of the platting and building permitting process. An additional option for discussion is for all onsite water and wastewater system be operated, managed, and maintained by trained and certified operators. Propertyowners opting to manage and maintain their own systems can be trained and certified to do so.

Property Management Practices: Public education is needed on best management practices related to fertilizer, management of animal wastes, and use herbicides/pesticides.

3. Community Groundwater Protection Measures

It is recommended that the Muncipality take the lead in organizing and implementing the GPP. This includes policy development, communications with stakeholders, information management, development-related standards, stakeholder incentives and funding. Recommended community actions are summarized below.

Municipal Policy Recommendations

- Create a viable ongoing Groundwater Protection Program, including designating an agency/department responsible for its implementation and management and committing necessary resources.

- Engage other key stakeholders for participation, including State of Alaska, Anchorage Water and Wastewater Utility, Community Councils, Alaska Horse Council, Home And Land Owners association for Hillside (HALO), Anchorage Waterways Council and Homeowners Associations.
- Use improved data collection to make sound policy decisions to protect public health, the environment and the public interest.

Recommended Public Awareness and Communication

- Press releases and interviews with local media
- A Groundwater Protection Program website link (in concert with the Municipality's onsite webpage)
- Public addresses by Municipal officials
- Billing stuffers and flyers
- Outreach programs in schools and with neighborhood groups
- Annual Monitoring: Supplement existing COSA well sampling, required at time of sale, with annual testing every two years (to coincide with septic tank pumping) of select groups of individual wells to improve sample distribution throughout the Hillside. Coordinate sampling schedules with public water system operators to reduce seasonal variables in sample results.

Information Collection and Dissemination Recommendation: It is recommended that the groundwater protection program lead agency coordinate with USGS, USEPA, the local academic community, State ADEC, and private interests to develop a process to improve the quality and relevance of groundwater-related information and to facilitate its availability for use by interested parties.

Recommended Development Standards: As the Hillside population continues to grow, updated development standards prominently featuring groundwater protection improve infrastructure quality and raise consciousness within the community. It is recommended that the Municipality adopt and enforce updated development standards to accomplish the following objectives.

- Allow advanced technologies and/or neighborhood wastewater systems to improve treatment of household wastewater
- Require trained onsite water and wastewater system personnel for system management and maintenance.
- Require local retention/detention of storm runoff to onsite or local containment areas that will not affect onsite water and wastewater system drainfield operation.

- Discourage application of fertilizers, pesticides, herbicides, other chemicals.
- Avoid concentration of animal wastes and reduce manure-contaminated runoff.
- Grade individual lots and common areas to ensure surface drainage away from wellheads; reduce velocity of surface runoff; increase flowpath lengths and promote percolation in vegetated areas.
- Reduce the footprint of disturbed areas and impacts from construction activity (sediment, spills, waste disposal).
- Encourage preservation of natural areas and buffer zones, particularly along drainage ways and steep slopes.
- Consider amending Municipality of Anchorage Wastewater Disposal Regulations (chapter 15.65, as recommended in the Onsite Wastewater Supplemental Report).
- Consider designating "Areas of Special Concern" particularly sensitive to onsite water and wastewater system nutrients and contaminants. Require secondary treatment or other appropriate measures to protect such areas.
- Consider requiring individuals operating and maintaining onsite systems to be trained and certified through the Municipality. Furnish training, certification, monitoring and maintenance guidelines, and checklists for propertyowners who monitor and maintain their own systems.

Funding Recommendations: A rough order-of-magnitude estimate places the ongoing cost of an effective Groundwater Protection Program at $300,000 annually (less than $35 per year for each of the area's residences). The benefits of Hillside groundwater protection, however, extend beyond the local area. In consideration of the potential contamination risks posed by the limitations of available data and the tangible long-term benefits of a protected groundwater supply, it is recommended that the following stakeholders share Hillside Groundwater Protection Program costs.

- Hillside residents and propertyowners
- Greater Anchorage community
- Municipal and State Agencies

It is recognized that numerous subgroups are contained within these broad categories and that each subgroup represents its own set of groundwater risks and protection benefits. Therefore, it is suggested that Municipality work with the Hillside community, its own constituents, and participating agencies to establish a fair, risk/benefit-based allocation of financial responsibility.

E. Revisions to Onsite Wastewater System Standards

Chapter 15.65 of the Municipal Code, Wastewater Disposal, was reviewed in detail, compared to existing onsite water and wastewater system regulations in other states and countries. Recommendations have been formatted and presented in the Onsite Supplementary report.

Recommendations have been made to change current onsite system regulations to incorporate methods and equipment that enhance the the system's performance, allow monitoring and maintenance access to tanks and drainfields and still protect the public health and welfare. Examples of new standards include better access to pumps and siphons and effluent filters by using full diameter manhole-style risers, Recommendations have also been made for drainfield changes to incorporate shallow trenches, less soil cover, alternation and resting of the field.

These changes could add $3,000-5,000 to the cost of a typical system, but the benefits should far outweigh the added costs. A few measures will enhance the overall function of systems installed if proposed regulation changes are adopted. These measure include: Easier access to tanks; verification of pumping and tank integrity; filtration of effluent to prevent soil pore clogging; dosing to increase drainfield treatment efficiency; and alternation/resting of drainfields to extend drainfield life.

The trade-off for extending drainfield life lies in higher initial system capital costs and lower annual monitoring. While these improvements seem less glamorous than initial costs would suppose, they can more than pay for the higher installation costs over the life of the system.

F. Possible Changes in "Maximum Perimeter of Public Sewerage"

In 1982, the Municipal Assembly approved and adopted the Hillside Wastewater Management Program as an element of the Municipality of Anchorage Comprehensive Plan (Anchorage Ordinance NO. 82-52). This and other elements of the Comprehensive Plan can be found under Title 21 of the Anchorage Municipal Code. This plan established areas where public wastewater services may be extended, and where they may not.

The boundary of these service areas is identified as the "Recommended Maximum Perimeter of Public Sewerage." Since its adoption, the Recommended Maximum Perimeter has been amended by ordinance thirteen times as a result of propertyowner petition and approval by the Municipal Assembly. In general, these amendments resulted in slight changes to the boundary, encompassing or removing areas abutting the perimeter.

The Hillside District Plan will replace the 1982 Hillside Wastewater Management Plan and its associated amendments. As part of this process the Recommended Maximum Perimeter of Public Sewerage is being re-evaluated. Once the Hillside District Plan is adopted by Municipal Code, the Anchorage Water and Wastewater Utility will be required to abide by the new Recommended Maximum Perimeter of Public Sewerage.

Currently, if a Hillside propertyowner residing in an area outside the Recommended Maximum Perimeter of Public Sewerage desires to acquire public sanitary sewer, the owner must request an amendment to the maximum perimeter. Amendments are considered by the Municipality of Anchorage Planning Department through a formal amendment process that involves the propertyowner, the Muncipal Onsite Services Department, Anchorage Water and Wastewater Utility, and the Planning and Zoning Commission. The process includes public hearings and concludes with the Municipal Assembly voting on the proposed amendment. This lengthy and time-consuming process is defined in more detail in the Public Water and Sewer Supplemental Report.

As outlined in the Land Use section, public sanitary sewer offers one solution where onsite systems are a challenge to building and operating in a cost-effective manner. Public sewer can also support greater housing densities than Onsite wastewater disposal systems. As a result this, the possible expansion of the Recommended Maximum Perimeter of Public Sewerage in certain areas of the Hillside is being evaluated as part of the Hillside District Plan process.

Furrow Creek Assessment

Currently the Maximum Perimeter of Public Sewerage as defined in the Hillside Wastewater Management Plan (referred to after this as the public sewerage boundary) includes approximately the western half of the area between O'Malley Road and DeArmoun Road and Lake Otis Parkway and Elmore Road. This area is the headwaters of Furrow Creek. For this plan, the area under discussion has been named the Furrow Creek area.

The area west of the boundary is served by both public sewer and water through Anchorage Water and Wastewater Utility. Churches and schools are connected to these public systems.

The area east of the public sewerage boundary uses onsite water and wastewater systems. Schools and churches use onsite wells and wastewater systems. However, because of poor soil conditions, some of these institutions employ holding tanks which are periodically pumped and taken to the public sewerage system.

BLM Area Assessment

The public sewerage boundary excludes the area south of DeArmoun Road and north of the Old Seward Highway. The area bounded by DeArmoun, Elmore, and Rabbit Creek Roads and the Seward Highway area was subdivided into 2.5-acre lots by the Bureau of Land Management (BLM) around the time Alaska became a state. For the purposes of this plan, it's referred to as the "BLM area." The area uses onsite water and wastewater systems and includes a church using a well.

While not served by public sewerage, a force main carrying sewage parallels the Old Seward Highway from the Potter pump station to DeArmoun Road. If public sewerage were extended into the BLM area, the sewage collection system would drain to, and be injected into, this force main. The Rabbit Creek gorge bisects the BLM area and creates a distinct north-south division. This division would require two independent sewage collection systems to serve the area.

South Potter Valley Assessment

The public sewerage boundary includes the area on the south side of Potter Creek. This area is referred to as the South Potter Creek area. It uses onsite water and wastewater systems. Although allowed by the public sewerage boundary, it's not served by public sewerage. However, a sewer trunk could be extended from the existing public sewerage system at Potter Creek Subdivision up the valley parallel to the creek to the eastern extents of the public sewerage boundary. If public sewerage were extended into the South Potter Valley area, the sewage collection system would drain to this gravity trunk and into the public sewerage system. Four alternatives are being considered for the public sewerage boundary:

1. Furrow Creek, and BLM areas: Leave the boundary in its current location and allow onsite or neighborhood wastewater systems (Onsite or Neighborhood System)
2. Furrow Creek and BLM areas: Expand the public sewerage boundary east to Elmore Road and allow onsite wastewater systems or sewer service by piped systems connected to Anchorage Water and Wastewater Utility with no provision for neighborhood wastewater systems (Onsite or Piped System);
3. Furrow Creek and BLM areas: Expand the public sewerage boundary east to Elmore Road and allow Onsite wastewater systems or sewer service by either piped systems connected to AWWU or neighborhood wastewater systems (Onsite, Piped or Neighborhood System)
4. South Potter Valley Area: Contract the public sewerage boundary west to Finland Road and allow sewer service by Onsite wastewater systems or neighborhood wastewater systems (Onsite or Neighborhood System)

Figure II. 4l
Summary of Consequences of Each Water and Wastewater Alternative

The Hillside Water and Wastewater Alternatives and Consequences	
Alternative	Consequences
1. No Change in boundary, Onsite or Neighborhood Wastewater Systems (Furrow Creek and BLM areas).	1. Areas with marginally operating onsite wastewater systems in poor soil conditions outside of the public sewerage boundary are not eligible to connect to the public sewerage system without petitioning Municipal Assembly to move the boundary east. 2. May not achieve higher density of development if allowed by zoning in areas outside of the public sewerage boundary due to generally poor soil conditions for onsite or neighborhood wastewater systems. 3. Public sewers available only to propertyowners inside the public sewerage boundary. 4. Land owners east of the public sewerage boundary desiring Anchorage Water and Wastewater Utility water supply will be refused because of AWWU policy of not providing water to areas not connected to the public sewerage system. 5. Public institutions, church and schools, requiring holding tank wastewater systems will continue using them. 6. Neighborhood systems estimated to be ¼ to ½ the cost of AWWU connection 7. Neighborhood systems provide higher level of wastewater treatment than AWWU 8. Neighborhood systems provide groundwater recharge that is lost by connection to AWWU 9. May impact the quality of groundwater, a public water source 10. Potential for surface seepage of concentrated neighborhood system effluent.
2. Expand public sewerage boundary east to Elmore Road; serve by piped public sewer systems (Furrow Creek and BLM areas).	1. Supports higher density of development if allowed by zoning 2. Does not impact on the quality of groundwater, a public water source 3. Piped water could be extended to serve this area as public sewerage is extended by development interests or improvement districts. 4. Areas with marginally operating onsite wastewater systems could connect to the public sewerage system if the system is extended by development interests or improvement districts. 5. Areas currently undevelopable due to poor soil conditions for onsite wastewater systems will be able to connect to the public sewerage system and become developable if the system is extended by development interests or improvement districts. 6. Public institutions, church and schools, requiring holding tank wastewater systems could connect to the public sewerage system if the system is extended by development interests or improvement districts. 7. Eliminates potential for surface seepage of concentrated neighborhood system effluent. 8. Service estimated to cost two to four times as much per acre served as neighborhood wastewater systems. 9. Eliminates source of groundwater recharge 10. Wastewater treatment level less than well-operated neighborhood wastewater system

Figure II. 4l (continued)
Summary of the Consequences of Each Water and Wastewater Alternative (continued)

The Hillside Water and Wastewater Alternatives and Consequences	
Alternative	Consequences
3. Expand the public sewerage boundary east to Elmore Road and serve by onsite, public piped or Neighborhood System (Furrow Creek and BLM areas).	1. Supports higher density of development if allowed by zoning. 2. Less impact on the quality of groundwater, a public water source, than alternative 1. 3. Areas with marginally operating onsite wastewater systems could connect to the public sewerage system if the system is extended by development interests or improvement districts. 4. Areas currently undevelopable due to poor soil conditions for onsite wastewater systems will be able to connect to the public sewerage system and become developable. 5. Public institutions, church and schools, requiring holding tank wastewater systems could connect to the public sewerage system. 6. Neighborhood systems could be installed to maintain lower density development in areas where poor soil conditions limit the use of individual onsite wastewater systems. 7. Neighborhood systems could be used to support higher density development between the time the boundary is changed and public sewerage is extended by development interests or improvement districts. 8. Piped water could be extended to serve the area where public sewerage is extended by development interests or improvement districts. Public water will not be extended into areas served by neighborhood systems because of Anchorage Water and Wastewater Utility policy (see Issues, Goals, and Choices, Public Water and Sewer). 9. A patchwork of public sewerage jurisdictions may develop if neighborhood systems are installed and AWWU rescinds its certificate to operate a wastewater system in these areas. 10. This alternative is not supported by the AWWU Executive Board
4. Contract the public sewerage boundary west to Finland Road, service by Onsite or Neighborhood System (South Potter Valley area).	1. May not achieve higher density of development if allowed by zoning in areas outside of the public sewerage boundary due to soil conditions. 2. Public sewers available only to propertyowners inside the public sewerage boundary. 3. Land owners east of the public sewerage boundary desiring Anchorage Water and Watewater Utility water supply will be refused because of AWWU policy of not providing water to areas not connected to the public sewerage system. 6. Neighborhood systems estimated to be ¼ to ½ the cost of AWWU connection 7. Neighborhood systems provide higher level of wastewater treatment than AWWU 8. Neighborhood systems provide groundwater recharge that is lost by connection to AWWU 9. May impact the quality of groundwater, a public water source 10. Potential for surface seepage of concentrated neighborhood system effluent. 11. A patchwork of public sewerage jurisdictions may develop if neighborhood systems are installed and AWWU rescinds its certificate to operate a wastewater system in these areas.

5. Infrastructure Management and Financing Mechanisms

Summary of this section

- The combination of past residential growth on the Hillside and throughout the Anchorage Bowl and likely future growth, is straining the traditional (often informal) approach to development. This includes building and maintaining roads, drainage and trails within the Hillside District. Residents like the low costs of the existing system, but problems arise due to increased loads on roads, trails, drainage and other "built and green infrastructure."
- Option 1, discussed in this section, would involve establishing a new Hillside district-wide service area for drainage, roads and trails, similar to the Chugiak Eagle River Birchwood service area.
- Option 2, discussed in this section, would involve establishing separate Hillside district-wide service areas for roads, for trails, and for drainage. Through this approach, the road service area would be limited to improvements to primary roads, leaving intact the existing system of Limited Road Service Areas (LRSAs) and Rural Road Service Areas (RRSAs).
- Option 1, Option 2, and the existing system each offer a range of costs and benefits. The criteria for selecting the best approach build from a set of goals developed by the Citizen Advisory Committee. These goals include: maintain local control, keep costs down, leverage new funding sources, improve the efficiency of service, and provide increased capacity for dealing with current and future demands.
- This Framework Plan recommends employing a new approach to providing needed Hillside services. Selection and implementation of the specific preferred approach is likely to occur after the completion of the Hillside District Plan, working with Hillside residents and landowners.

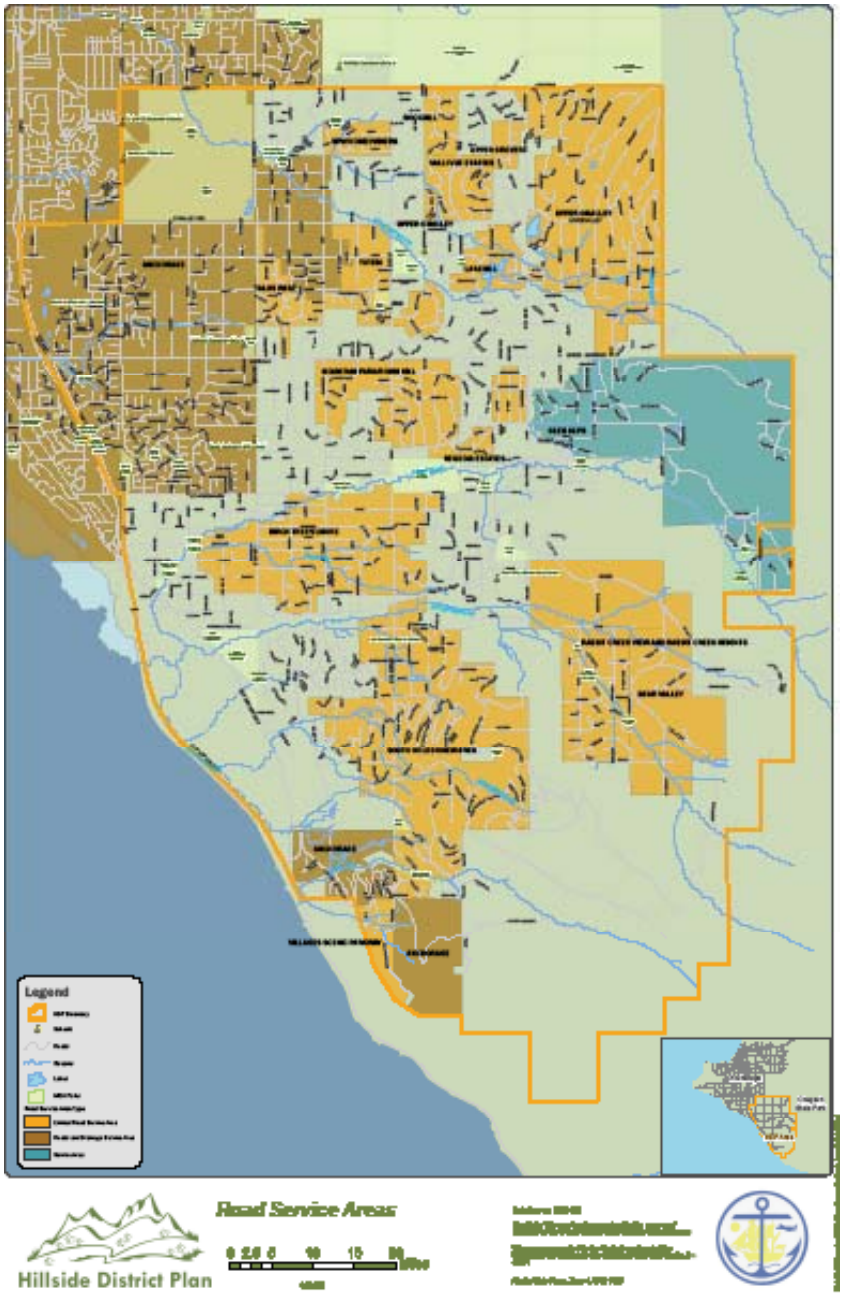
Introduction – The "Good Old Days"

The Hillside developed slowly as homesteads and large lots were subdivided and sold. Services and traffic were limited, and the area had a rural or low-density suburban character. Road standards were not institutionalized or met, which was perfectly acceptable to residents who were satisfied with slower speeds and non-paved roads to access their homes from the state-maintained arterials and collectors. In most cases, maintenance on these residential roads was limited to grading, sanding, and plowing. These responsibilities were assigned to Limited Road Service Areas or were left unassigned and taken up by ad hoc groups or homeowner's associations.

The approach to managing drainage on the Hillside has been even less structured. Unlike the rest of Anchorage, which raises money for drainage through the Anchorage Roads and Drainage Service Area (ARDSA), on the Hillside there has been no formal means to managing storm water runoff. Where Limited Road Service Areas exist, they've worked on drainage-related issues as an unofficial addition to their road maintenance responsibilities. Large portions of their limited budgets, particularly in the southeast Hillside, are spent each year ripping ice off roads and maintaining roadside drainage ditches.

Construction and management of trails has been similarly informal. Local residents could walk along quiet residential roads and ramble on casual trails across undeveloped, private property. Roadside trails were built along a few major roads. Three state-managed trailheads provide access to Chugach State Park, along with a handful of informal entry points.

Map II. 5A
Road Service Areas



Limited road service areas include roughly 67 percent of Hillside roads.

Summary of Alternatives

New Approaches to Managing and Financing Roads, Drainage and Trails

Growth on Hillside and throughout the Anchorage Bowl is now straining this system. Hillside subdivisions that once had just a few homes now have many. New, higher-density subdivisions have been developed, along with new schools to support this growth. Consequently, more cars are using the road network, and roads initially built and conceived of as low-use are now experiencing higher-use, through-traffic, and speeding. Storm water runoff continues to increase, and icing problems are worsening, particularly as development marches into upper elevations with steeper slopes and shallower soils. The laissez-faire approach to trails management that worked when levels of use were low is also breaking down. Trail use is steadily growing, as are conflicts between trail users and adjoining landowners and residents. In some areas, routes that were only used by locals are becoming destination trails for people from all over Anchorage. No management entity exists today to sort out these issues.

This growth is likely to continue. At build-out, with no change to existing zoning, the Hillside will grow from 8,500 to just under 14,000 housing units, an increase of 10,000 to 15,000 new residents on the Hillside.

The challenges outlined above are apparent in developed portions of the Hillside, but are most pronounced in the largely undeveloped southeastern section of the area. New subdivisions in these areas, such as the proposed developments in Upper Little Rabbit Creek, trigger the need for area-wide improvements, such as a drainage system or a collector road serving multiple subdivisions. Mechanisms to plan, pay for and maintain such infrastructure are limited on the Hillside relative to current and future needs. The result is that projects either are approved without solving these issues (which many have argued is the case with the Prominence Pointe subdivision), or subdivisions which could be approved are halted without a way to finance shared infrastructure.

This set of problems – through-traffic, congestion, flooded basements, glaciating roads, overflowing trailheads – are symptomatic of a larger underlying problem. The responsibility and authority to plan, maintain, and upgrade road, drainage and trail infrastructure on the Hillside is unresolved. Limited Road Service Areas are not well equipped to manage the higher-use roadways and growing drainage issues, with adequate funding, the proper authority or the staff support.

These issues are not uniform across the Hillside. Many people are satisfied with the existing level of service and with the resulting low

property taxes. The pressure for new solutions and the likely level of future development varies widely across the Hillside. For example, drainage issues are significant south of Rabbit Creek Road and much less of a problem north of this boundary. Traffic is primarily a problem at a few intersections with periodic fluctuations. Nonetheless, the bottom line is still true: Limited Road Service Areas and ad hoc groups are facing growing challenges to keep up with the levels of maintenance and construction required today. These issues will only intensify as the Hillside adds another 10,000 to 15,000 residents.

The Big Picture – Summary of Recommendations

The Hillside District Plan recommends that new management and financing methods be established to pay for needed capital improvement and maintenance at a higher level of service than exists today. The final decision on which approach will work best for the Hillside may not be made until after the adoption of the plan. Approval of the plan will, however, set in motion the process for establishing a new system to manage and fund construction and maintenance of roads, trails and drainage systems.

The remainder of this section of the Framework Plan addresses alternative structures for funding drainage, road and trail construction and maintenance. Three main alternatives are described, followed by an evaluation:

- "Base Case" Option: Continue current approach
- Option 1: Hillside district-wide service area, combination of drainage, roads and trails (similar to Chugiak-Eagle River)
- Option 2: Separate Hillside district-wide service areas for roads and trails, and for drainage. Road service area limited to primary roads; LRSAs-RRSAs system would not change.
- Options for Improvements to Chugach State Park access

Selection and implementation of the specific preferred approach to manage and fund infrastructure will likely occur after the completion of the Hillside District Plan, working with Hillside residents and landowners. Consequently, an implementation process will be needed once the plan is approved, including the steps below:

- Form an interim Hillside Service Area "Board of Directors" composed of representatives of the LRSAs and independent areas
- Work with consultants and Municipality staff to do a more detailed evaluation of the specific options for providing improved road, drainage and trail services. This will include identifying key capital projects, defining differences in levels of service, setting up a service rate structure, and setting up a fair and representative board structure
- Investigate options for impact fees for development – if and how should new development contribute to off-site infrastructure improvements? Can this be done in a way that produces needed infrastructure and doesn't unfairly burden future development?
- Carry out a public education campaign, to let people know what the problems are and what homeowner responsibilities are, and ultimately to inform the affected land owners and residents of the options that have been considered, and the recommendations reached by the interim board
- Conduct a vote to formally establish the service area(s)

Goals for Formation of Hillside Service Areas

The following list was developed as goals for improving and/or creating more uniform levels of service on the Hillside. These goals double as criteria for evaluating the various proposed options. These goals were formulated working with the Citizen Advisory Committee for this planning process.

- Maintain local control over improvements and costs
- Provide for public health and safety; improve emergency access
- Provide capacity for needed capital improvements
- Be realistic about the level of improvements; aim for modest and affordable infrastructure
- Recognize different levels of service are required in different parts of the Hillside
- Phase improvements making small repairs prior to major capital projects
- Provide for efficient service delivery and administration

- Create an equitable system, so residents and landowners "get what they pay for" and costs are charged to those that create them
- Leverage: Capture new funding resources; do more to supplement Hillside dollars with State and Municipal funding
- Start slow: Accept that many residents are satisfied with the existing service structure, and that establishing new approaches will take time, likely at least a year

Base Case Option
Ad Hoc Management of Roads, Drainage and Trails
Roads

Currently, Hillside roads are managed by a complicated mix of entities, including the State of Alaska Department of Transportation and Public Facilities (approximately 30 miles of roadway within the study area boundary), the Municipality of Anchorage (approximately 45 miles of roadway within the study area boundary), and private entities such as ad hoc homeowner associations, local road service area or rural road service area (approximately 155 miles of roadway within the study area boundary).

The Department of Transportation and Public Facilities and the Muncipality maintain roadways in the Anchorage Bowl. Generally, the Muncipality maintains muncipality-owned roads and the Department of Transportation and Public Facilities maintains state-owned roads. In some cases maintenance responsibilities have been shifted through formal agreements. Road maintenance includes summer grading, road repair work, pothole repairs, drainage ditch clearing, dust control, snow and ice removal, and ice control.

If no alternative structure for Hillside road management is adopted, roadway and drainage improvements will continue to be implemented by this mix of entities, with little to no coordination. Existing local road service areas and rural road service areas would continue to operate as they do today.

Over time, additional Limited Road Service Areas and Rural Road Service Areas would likely form in an attempt to meet increasing local road service needs. Some Limited Road Service Areas would likely convert to Rural Road Service Areas as roads deteriorate and these areas need to take on additional powers to provide major maintenance and capital projects, particularly for improved emergency access. Roads that are managed by a Limited Road- or Rural Road Service Areas but serve the greater Hillside district would continue to be paid for and managed by the respective Limited Road Service Areas or Rural Road Service Areas. State roads within the service area would continue to be the responsibility of state Department of Transportation and Public Facilities, and calls for improvements to these roads would continue to compete statewide for capital improvement funding.

Drainage

No single entity is currently responsible for managing each Hillside watershed from the top to the bottom. Drainage is currently dealt with on a piecemeal fashion with subdivisions, homeowners and service area managers each attempting to convey runoff through or around their properties. These entities generally do not have the capabilities required to identify and construct systematic drainage system upgrades and cannot construct new or upgraded systems to control increased runoff from upstream development.[1]

The current situation is particularly acute in the southeast Hillside, where recent subdivisions have resulted in growing drainage issues. If this status quo remains, development will increase runoff to systems that already have problems and are not designed to convey increased flow. Existing drainage-related problems will worsen and new problems will be created, particularly in the steeper, higher elevation areas of the Hillside.

Trails

Trails would be improved and managed as they are today, that is, minimally. The few trails projects that have occurred in the area in recent years have come about through volunteer-led efforts. In a few instances, community councils have secured grant funding. A substantial portion of the southeast Hillside is outside of the Municipality's Park and Trail service area, which means this portion of the Hillside neither contributes to or receives any management or funding for park and trail improvements. This area is where demand for trail use is growing most rapidly.

Map 11. 5B
Park Service Areas

Park Service Area
Alaska State Plane, Zone 4, NAD 1983
File: HDP_map.mxd, 08/01/07
1:54,898

All data courtesy of Municipality of Anchorage, except for some aerial photography from NRCS.

This map was compiled for the Municipality of Anchorage, with assistance from Agnew::Beck Consulting.

This map shows that the Muncipality parks and trails service area boundary currently does not include Southeast Hillside, an area where demand for public trails and open space is growing rapidly.

1 The Glen Alps Service Area and the Goldenview Rural Road Service Area can collect fees to construct capital improvement projects

Option 1: Hillside Road, Drainage, Trails Service Area ("HRDTSA")

Overview

Under this option, the entire Hillside District outside of the Anchorage Roads and Drainage Service Area would be established as a Rural Road Service Area modeled on the Chugiak, Birchwood, Eagle River Rural Road Service Area (CBERRRSA). The "HRDTSA" would have jurisdiction over roads, drainage and trail capital improvements and maintenance within the entire Hillside District. All public roads, drainage and trail facilities within the area would be subject to the authority granted to the service area. Rates and service provision could be split to reflect the most equitable, locally supported funding and service strategy.

As is done in CBERRRSA, the service area could be overseen by a local service area board. One board member (and an alternate) could be nominated by each community council in the service area, subject to approval by the Municipal Assembly. Any other representative board could also be developed to administer the service area. Work would be contracted, much like it is done through the Limited and Rural Road Service Area system today. Contracts would be overseen by HRDTSA board, with administrative support by Muncipality staff including fee collection, contracting of services, and work oversight.

The HRDTSA board would prepare and submit an annual budget to the municipal administration and the Assembly for approval; establish policy guidelines and priorities guidance for capital projects and maintenance; review and comment to the Assembly on all proposed capital projects for the improvement of road, drainage and trail facilities under the jurisdiction of the service area; and have limited authority to authorize work in emergency situations.

As is done in CBERRRSA, capital and maintenance funds for roads would be collected from all service area propertyowners as a dedicated levy on their property tax bill. The mil levy would be set by ballot in the ordinance establishing the service area. The initial ordinance establishing the service area could set a maximum mil rate, as was done for the Chugiak Eagle River service area. The fee structure for the drainage program would be established by rate studies on a watershed basis.

Establishing the service area would require a majority of voters within the proposed district to pass the ordinance on a municipal ballot. For any existing local road service area to be included in the district-wide service area, a majority of voters in those service areas would also need to vote to dissolve and/or annex themselves. If a given service areas did not vote itself into the district-wide service area during the initial ballot

and wished to be included at a later date, it would need a majority of voters in the local area to vote to dissolve, and a majority of the voters in the larger service district to let the local road service area join.

Roads

Existing Limited Road Service Areas or Rural Road Service Areas within the area would be dissolved. The dissolution of these service areas would need to be passed via ballot by the majority of voters within each existing service area in accord with municipal code. State roads and associated drainage and trail systems within the service area would remain under state jurisdiction, meaning the state would continue to provide capital improvements and maintenance for the state facilities. The service area board could support state projects by providing capital and/or matching money to help projects on State roads better compete for state funds (see Map II. 5D Option 1 – Possible Primary and Secondary Roads).

Drainage

The fee structure for the drainage program would be established by rate studies on a watershed basis. The fees would likely be assessed based on impervious surface values along with an impact fee for new development. Regardless of the method selected to collect fees, the fee schedule would be commensurate with the drainage needs of the watershed – residents living in watersheds having fewer drainage problems would pay less than those living in watersheds experiencing more drainage problems.

Trails

The HRDTSA could have responsibility for all non-State trails in the Hillside service area or only those trails within road rights-of-way; in which case, greenbelt trails would be managed either through a separate Hillside parks service area or by expanding the Muncipality Parks Service Area boundary. In Eagle River, the local service area (CBERRRSA) manages trails only in road rights-of-way. Trails in greenbelts are managed separately by a parks service area that levies a separate tax for parks. CBERRRSA split out a parks service area to ensure funding for trails and parks because roads invariably received priority over trails for finite funds. See more on this topic in the following Option 2.

What Will It Cost Me?

The tables on the following pages show the amount of money that might be raised under different mil rates. The second table shows what the annual property tax would be on homes of different values at these different rates.

For example, with a mil rate of 1.78, a possible new Hillside-wide capital and maintenance service area would raise $3,082,244. At this rate, a home assessed at $350,000 would pay $623 a year in property taxes. This rate combines an increment of funding for capital projects and for costs for maintenance (the latter increment comparable to what is charged in existing LRSAs - for a $350,000 house this is $350 a year at 1 mil).

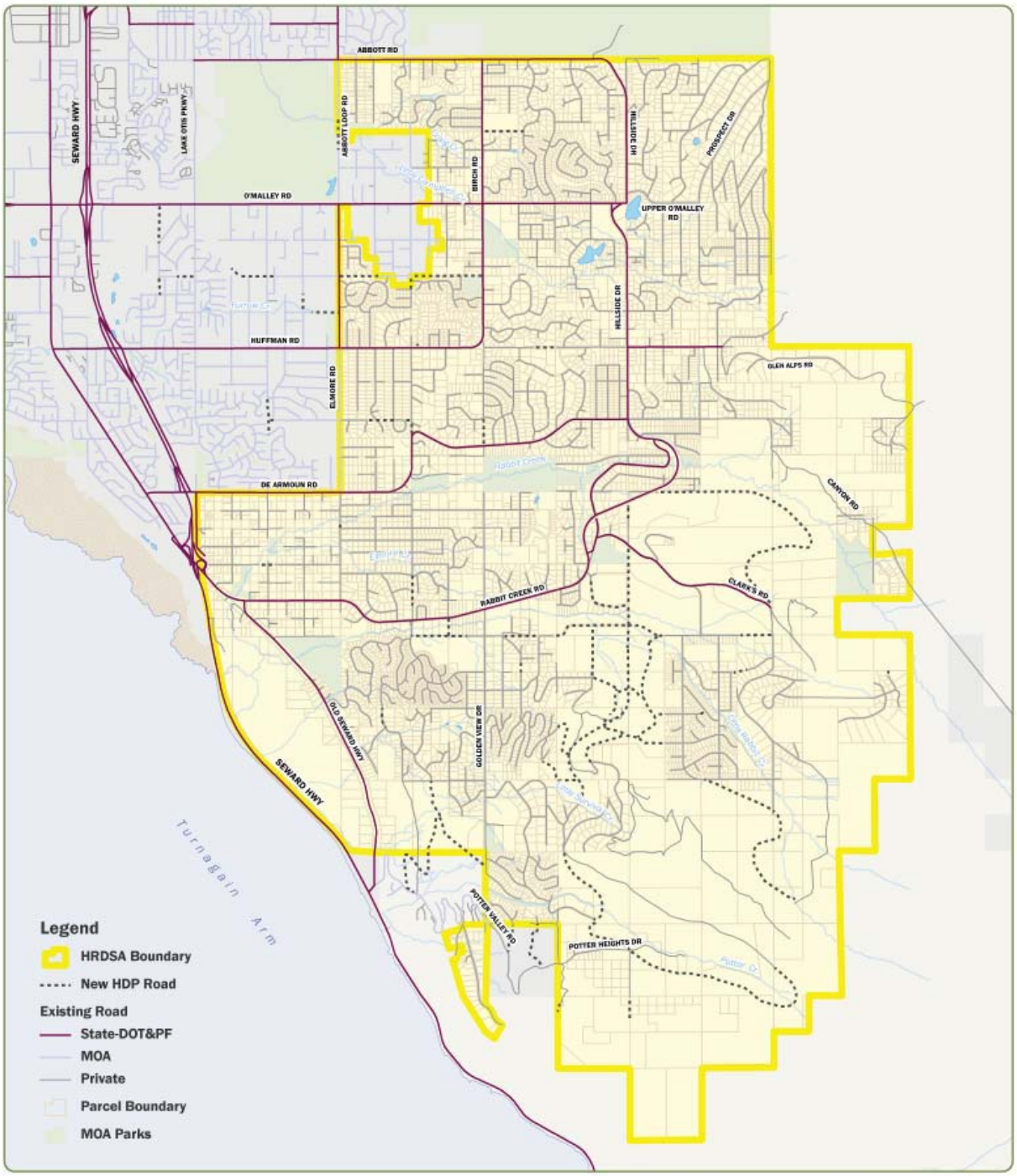
Figure II. 5C

Potential Annual Revenue of Hillside Road, Drainage, Trails Service Area

Potential Annual Revenue of HRDSA Under Various Mil Rate Options **								
	EXISTING MIL RATE	NUMBER OF PARCELS	TAXABLE VALUE*	LOWEST LRSA MIL RATE OPTION (1.00)	MEAN HDP MIL RATE OPTION (1.78)	CBERRSA MIL RATE OPTION (1.85)	AVERAGE OF HIGHEST THREE LRSA MIL RATE OPTIONS (2.5)	MIL RATE REQUIRED TO GENERATE ~1,000,000
Bear Valley LRSA	1.5	122	$25,024,790	$25,025	$44,431	$46,296	$62,562	0.46
Birch Tree Elmore LRSA	1.5	497	$146,560,420	$146,560	$260,214	$271,137	$366,401	0.46
Glen Alps SA	2.75	397	$84,939,290	$84,939	$150,808	$157,138	$212,348	0.46
Lakehill LRSA	1	74	$27,976,200	$27,976	$49,671	$51,756	$69,941	0.46
Mountain Park Estates LRSA	1	105	$27,380,700	$27,381	$48,614	$50,654	$68,452	0.46
Mountain Park Robin Hill LRSA	1.3	270	$81,108,520	$81,109	$144,006	$150,051	$202,771	0.46
Paradise Valley South LRSA	1	42	$10,138,100	$10,138	$18,000	$18,755	$25,345	0.46
Rabbit Creek LRSA	2.5	347	$27,263,640	$27,264	$48,406	$50,438	$68,159	0.46
Raven Woods LRSA	1.5	33	$10,515,200	$10,515	$18,669	$19,453	$26,288	0.46
Rockhill LRSA	1.5	62	$25,710,600	$25,711	$45,649	$47,565	$64,277	0.46
Sequoia Estates LRSA	1.02	25	$13,109,700	$13,110	$23,276	$24,253	$32,774	0.46
Skyranch Estates LRSA	1.3	93	$20,898,100	$20,898	$37,104	$38,661	$52,245	0.46
South Goldenview RRSA	1.8	746	$238,604,558	$238,605	$423,636	$441,418	$596,511	0.46
SRW Homeowners LRSA	1.5	129	$27,914,050	$27,914	$49,561	$51,641	$69,785	0.46
Talus West LRSA	1.3	192	$50,973,468	$50,973	$90,502	$94,301	$127,434	0.46
Totem LRSA	1.5	67	$18,340,090	$18,340	$32,562	$33,929	$45,850	0.46
Upper Grover LRSA	1	37	$11,156,300	$11,156	$19,808	$20,639	$27,891	0.46
Upper O'Malley LRSA	2	699	$263,499,090	$263,499	$467,836	$487,473	$658,748	0.46
Valli Vue Estates LRSA	1.4	233	$72,099,550	$72,100	$128,011	$133,384	$180,249	0.46
View Point	2.59	24	$4,658,600	$4,659	$8,271	$8,618	$11,647	0.46
Villages Scenic Parkway LRSA	1	50	$10,838,800	$10,839	$19,244	$20,052	$27,097	0.46
Areas not in service areas (ad hoc)	1	3,321	$940,910,838	$970,910	$36,160	$37,678	$50,915	0.46
Total			$3,082,244,269	$3,082,244	$5,472,446	$6,780,937	$8,476,172	$~1,000,000

Note: This table is for comparison purposes only and may not reflect actual budget amounts. Taxable value based on 2006 and 2008 data from City Tax assessor, Muncipality Parcels GIS layer and LRSA GIS layer. ** Based on applying mil rate to taxable value. CBERRSA mil rate = the mill rate for road & drainage maintenance (0.85 mils) plus capital program (1.0 mills)

Map II. 5D
Option 1: Possible Primary and Secondary Roads



Hillside District Plan

Alternative 1
Hillside Road and Drainage Service Area (HRDSA)

0 1,500 3,000 6,000 Feet

N

Data Sources: Municipality of Anchorage, AKDNR, HDR.

Alaska State Plane, Zone 4, NAD 1983

File: HDP_HRDSA.mxd
04/09/08

Option 2: Manage Roads, Drainage and Trails Separately

An alternative to a single Hillside roads, drainage and trails service area would be to establish separate area-wide service areas to manage roads, drainage and trails on the Hillside. This approach could go a step further and split these service areas by geographic area, for example, setting up separate north and south drainage service areas. As part of this option, for the topic of roads, this alternative looks at the option of only focusing on primary roads, and continuing to rely on the existing set of LRSAs and RRSA's for neighborhood road maintenance.

Roads

Under this option, the entire Hillside District outside of the Anchorage Roads and Drainage Service Area would be established as a rural road service area. The Hillside Road Service Area (HRSA) board would be granted authority only over "primary" roads, providing operations and maintenance and capital improvement to those roads. Basically, the HRSA board would have the same authorities as the HRDTSA board (Option 1) except that their responsibilities would only cover the primary road network. Existing LRSAs and RRSAs within the service area would continue to operate as they do today, providing operations and maintenance services to local and secondary roads. Areas outside LRSAs would remain independent.

State Roads within the service area would remain under state jurisdiction, and the state would continue to provide capital improvements and maintenance for the state facilities. Many of the "primary" roads are part of the state road network but the service area board could support state capital projects by providing capital and/or matching money to help projects compete for state funds.

The HRSA would be overseen by a local service area board. One board member (and

Figure II. 5E
Water Service Cost Example

Cost Example				
TAXABLE VALUE	LOWEST LRSA	MEAN HDP	CBERRSA	AVERAGE OF HIGHEST THREE
	MIL RATE OPTION (1.00)	MIL RATE OPTION (1.78)	MIL RATE OPTION (1.85)	LRSA MIL RATE OPTIONS (2.5)
$100,000	$100	$178	$185	$250
$150,000	$150	$267	$278	$375
$200,000	$200	$356	$370	$500
$250,000	$250	$445	$463	$625
$300,000	$300	$534	$555	$750
$350,000	$350	$623	$648	$875
$400,000	$400	$712	$740	$1,000
$450,000	$450	$801	$833	$1,125
$500,000	$500	$890	$925	$1,250
$550,000	$550	$979	$1,018	$1,375
$600,000	$600	$1,068	$1,110	$1,500
$650,000	$650	$1,157	$1,203	$1,625
$700,000	$700	$1,246	$1,295	$1,750
$750,000	$750	$1,335	$1,388	$1,875
$800,000	$800	$1,424	$1,480	$2,000
$850,000	$850	$1,513	$1,573	$2,125
$900,000	$900	$1,602	$1,665	$2,250
$1,000,000	$1,000	$1,780	$1,850	$2,500

CBERRSA mil rate = the mill rate for road & drainage maintenance (0.85 mils) plus capital program (1.0 mills)

an alternate) would be nominated by each community council, subject to approval by the Assembly. Work would be contracted out, much as is done through the LRSA/RRSA process today. Capital and maintenance funds for primary roads would be collected from all service area propertyowners as a dedicated levy on their property tax bill.

Establishing the service area would require a majority of voters within the proposed service area to pass the ordinance on a municipal ballot. Because no change is proposed to the existing LRSAs or RRSAs, they would not need to be dissolved (see Map II. 5E Option 2 – Possible Primary and Secondary Roads).

Drainage

A separate utility would be formed to oversee drainage infrastructure for the Hillside District, covering operations and maintenance and capital improvements. The service utility would manage drainage on a watershed basis, which would allow individual watersheds set rates separately, as outlined in the watershed drainage plans.

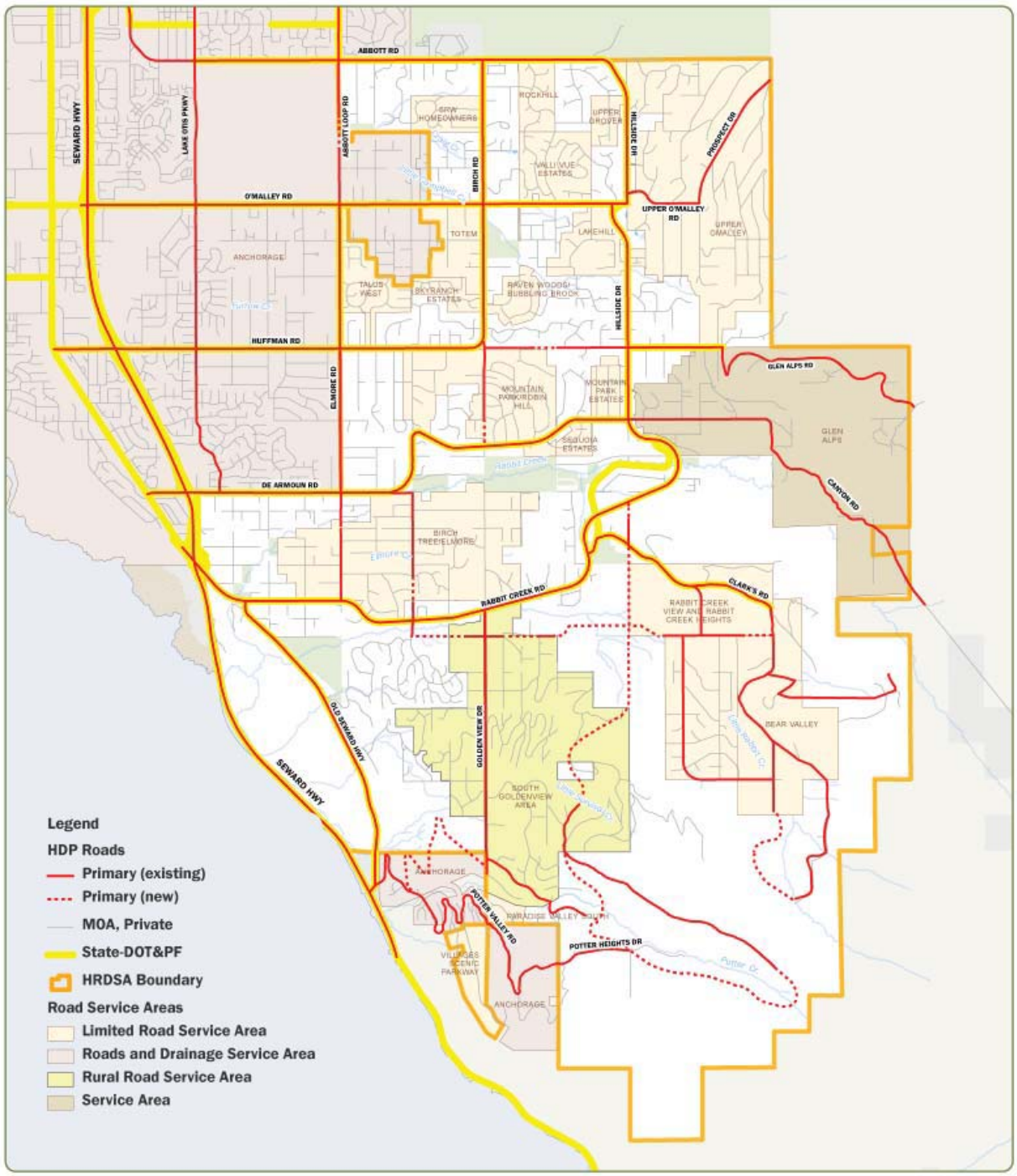
The Hillside drainage service area could also be managed as more than one service area (e.g. split north-south, or by watershed) to reflect the different challenges in different parts of the Hillside. Such a management structure is not dependent on what might or might not occur related to passage of the HRSA. Both the road service area and the drainage service area would be brought forward as separate ballot measures.

Under this option, existing local road service areas and rural road service areas within the service area would continue to operate as they do today. Drainage improvements completed by the new drainage service areas may lessen the maintenance burdens associated with road upkeep in certain areas. Drainage along state roads within the service area would remain under state jurisdiction.

Drainage services would be overseen by a local service area board. Drainage service area board members would be appointed by the Mayor and confirmed by the Assembly. The drainage board would prepare and submit an annual budget; establish policy guidelines and priorities for drainage capital projects and maintenance; review and comment to the assembly on all proposed capital projects for the improvement of drainage facilities under the jurisdiction of the service area; review and comment to the assembly on all proposed contracts for services within the service area.

Capital and maintenance funds for drainage facilities would be collected based on rate studies on a watershed basis. Rates would be established as a result of drainage plans done for each watershed and therefore commensurate with the drainage needs within each watershed.

Figure II. 5F
Option 2: Possible Primary and Secondary Roads



Hillside District Plan

Alternative 2a

0 1,500 3,000 6,000 Feet

N

Data Sources: Municipality of Anchorage, AKDNR, HDR.

Alaska State Plane, Zone 4, NAD 1983

File: HDP_LRSA&Arterials.mxd
04/09/08

Establishing each drainage service area would require a majority of voters within the proposed watershed to pass the ordinance on a municipal ballot. Each watershed service area would be proposed on separate ballots after the watershed drainage plan is complete, allowing better information on the needs and costs that each drainage service area would be dealing with and how those needs would affect the rate structure.

Trails and Parks

Under the current system, the Municipal Parks Department is responsible for trail and park issues in those portions of the Hillside covered by the existing park service area boundary. Although the focus of this part of the Framework Plan has been roads, drainage and trails, because the Muncipality manages parks and trails together, these topics are addressed jointly in this section.

Options for Hillside trails and parks include:

A) Through a new, separate Hillside parks service area, similar to the Eagle River Parks Service Area. The boundary of the existing Parks Service Area would be modified to only include the lower portions of the Anchorage Bowl and a separate Hillside Park Service Area would be established to serve the Hillside.

B) Remain as part of the existing Muncipality Parks service area.

A separate issue is the appropriate boundary for the park service area boundary. The existing service area boundary does not include the large block of undeveloped land in the southeast Hillside (see Map II. 5F Option 2 – Possible Primary and Secondary Roads). The boundary of a future service district, either the Anchorage Bowl-wide Muncipality Parks service area or a new Hillside parks service area, could be extended approximately one mile past the Chugach State Park boundary. This would create the capacity to work with the State on projects of mutual importance, such as improved trailheads. Modifying the existing parks service area boundary would require a city-wide vote, which could present voters two options: Leave things as they are today, or dissolve the existing boundary and extend to the new full boundary.

Figure II. 5G
Evaluation of Trail and Park Options

Issue	OPTION A – New Hillside Parks Service Area	OPTION B – Remain in Bowl-wide Muncipality Parks Service Area
Local Control	Hillside pays for and manages Hillside park & trail needs May be resistance to separating Hillside funds from other Bowl-wide recreation needs	Muncipality management includes a SE Parks District, which provides local control Muncipality Parks Department is devoting more resources to trails
Equity; recognize different service level needs	Chugach State Park trailheads are an area-wide need, not only a Hillside need (see more on this topic in Option 3 at end of this section) Hillside residents would set priorities; if for example, trails are priority, money would go to trails	Hillside trail and park needs must compete for funding against other Bowl-wide needs, which means that some trails and parks may never get built
Increase capacity for capital improvements	Anchorage Parks Foundation funding continues to be available Hillside-specific service area may secure funding beyond what is possible with Muncipality Parks service area	Anchorage Parks Foundation funding continues to be available
Impact on taxes	Hillside would drop out of existing Muncipality Parks Service Area; pay into new service area (no net change in taxes?)	Adds new landowners into Muncipality Parks Service Area; also expands responsibilities (no net change in taxes?) Those who do not currently pay into Park Service Area may resist expansion of the service area

The figures on the following pages provide a summary of the consequences of the Base Case, Option 1, and Option 2.

Figure II. 5H
Options for Hillside Service Areas – Roads, Trails, Drainage

GOALS	Base Case – Local Road Service Areas, Areas outside of any Service Area	Option 1 – New Combined Roads, Drainage & Trails Service Area (HRDTSA)	Option 2 – New Separate Service Areas (see explanation in text)
Maintain local control	↑ LRSAs, RRSAs continue existing control over road maintenance ↑ Maintenance providers directly accountable to local residents; maintenance usually happens quickly ↑ Roads not built or maintained to municipal standards will tend to stay that way; this sustains Hillside "rural" character	↑ LRSAs, RRSAs dissolved and replaced by new Hillside Service Area; through the service area board Hillside residents determine project priorities, funding levels, mil levy rates ↑ combine control for roads and drainage under one entity ↓ If existing LRSAs dissolve, local control would not be quite as local, as authority is shifted to a Hillside-wide board	↑ No LRSA or RRSA would be dissolved; road maintenance responsibilities remains with existing LRSAs, RRSAs ↓ fractioned control for roads and drainage ↑ New Hillside capital project road service area (HRSA) formed, this gives Hillside more clout and leverage in seeking capital funds ↑ Separate service areas created in different parts of Hillside (e.g. north, south) rather than area as a whole; more control at neighborhood level
Provide for emergency access, public health and safety	↑ Emergency access remains a problem where roads are poorly maintained, narrow, or lack formal names, addresses ↓ Emergency evacuation routes are limited ↓ Speeding through neighborhoods is a regularly voiced local concern ↓ Limited ability to address safety issues on state roads (e.g., intersection of Goldenview & Rabbit Creek Road, O'Malley in front of the Alaska Zoo)	↑ Improved road connectivity, road maintenance and condition results in improved safety and improved emergency access	↑ Improved road connectivity, road maintenance and condition results in improved safety and improved emergency access • Generally same as option 1 but "neighborhood-based" service areas in option 2 may have different priorities for capital projects and maintenance than the Hillside-wide service area
Increase capacity for needed capital improvements	↓ LRSAs not authorized to perform major maintenance or capital improvements ↑ Some service areas have converted to Rural Road Service Areas. RRSAs have authority for capital improvements, but still lack authority over drainage issues outside road rights-of-way	↑ Increased capacity to fund and develop priority capital improvements for roads, drainage and trails	↑ Increased capacity to fund and develop priority capital improvements • Generally same as option 1 but "neighborhood-based" service areas in option 2 may have different priorities for capital projects and maintenance than the Hillside-wide service area
Recognize different levels of service are required in different parts of the Hillside	↑ Local boards and ad hoc groups in charge of small areas outside of any service area provide much flexibility for level of service	↓ District-wide board authorized to prioritize projects and funding – may result in less flexibility than current system ↑ Even with a single service area, it would still be possible to set different levels of service, different mil rates in different parts of Hillside	↑ Existing local boards and ad hoc groups remain in charge of small portions of the service area. Flexibility to provide varying levels of service continues

Figure II. 5H
Options for Hillside Service Areas – Roads, Trails, Drainage

GOALS	Base Case – Local Road Service Areas, outside of any Service Area	Option 1 – New Combined Roads, Drainage & Trails Service Area (HRDTSA)	Option 2 – New Separate Service Areas (see explanation in text)
Improve efficiency of service delivery and administration	↓ Multiple citizen boards working independently duplicates administration ↓ Small scale of LRSA's mean they are very responsive to citizen concerns and needs ↑ Competitive bid process ensures maintenance is completed in a timely manner – most residents report satisfaction with level of service	↑ Reduces costs through economy of scale for administration, management, and negotiating for contracted services ↑ Increased administrative efficiency by creating a single management and funding authority	↓ Generally same as option 1 but separating drainage, roads and trails less efficient than a combined service area ↑ Possibility for duplication among existing LRSA-RRSA and new HRSA. ↑ Option in future to combine separate roads, drainage, trails districts into single HRDTSA
Create an equitable system – people "get what they pay for"	↑ Different LRSAs levy different mil rates on their residents, resulting in varying levels of funding in different areas ↓ Some residents may pay nothing into local maintenance or construction funds while they still use local roads and enjoy the benefits of road maintenance ↓ Hillside residents do not pay for maintenance of "their" roads, in the same way rest of Anchorage (through ARDSA) pays for roads	↑ Distributes costs of maintaining roads across all Hillside taxpayers ↓ Some people perceive they are paying for services they do not need or want ↓ Hillside residents may question why they should fund roads and trails used by all Anchorage residents	↑ An equitable sharing of responsibility for the backbone system of roads is created through primary road HRSA. ↑ Generally same as option 1 but finer-grained splitting of responsibilities to pay for services (by type of service, by geographic area)
Capture new funding resources	↓ Existing situation - very limited capacity to capture new resources (e.g. state funding); only mechanism is request for one-time special legislative designation, often not successful separate ↑ ability to change from an ad hoc neighborhood group to an RRSA or create a Road Improvement District separate ↑ ability to change from an ad hoc neighborhood group to an RRSA or create a Road Improvement District	↑ Generates local funds towards capital projects; used as matching funds, greatly increases access to a range of transportation and drainage funding sources, e.g., State of Alaska DOT/PF funds ↑ For trails management, would increase access to Parks Foundation funding ↑ Incorporating trails within the service area could provide some transportation funds to mitigate major safety hazards, and make the area eligible for multi-modal project funding and grants	↓ Generally same as option 1 but separate service areas would not realize the economies of scale in administration costs that a combined roads and drainage authority would have

Figure II. 5H
Options for Hillside Service Areas – Roads, Trails, Drainage

GOALS	Base Case – Local Road Service Areas, Areas outside of any Service Area	Option 1 – New Combined Roads, Drainage & Trails Service Area (HRDTSA)	Option 2 – New Separate Service Areas (see explanation in text)
Impact on taxes and fees	↑ Taxes would not change except where voters approved new service areas or changes to existing service areas	↑ For roads, a mil levy cap would be set by the enabling ordinance establishing the service area. Cap determined when Hillside residents select desired service option. ↑ Allows for variation in mil rates based on need, so for example, rates for drainage could vary by watershed. Residents living within a watershed pay for drainage upgrades within their watershed. ↓ Possible property tax increase due to fees for additional services. Determined by local service area board ↓ Increase in taxes for ad hoc areas	↑ Generally same as option 1 but the area-wide levy would be less (because the service area only addresses capital costs); fees for LRSAs and RRSAs would not change ↑ LRSAs that currently have responsibilities for part of the primary road network would see reduced responsibility and could potentially lower their rates ↑ Generally same as option 1 but easier to set drainage fee schedule to be commensurate with watershed drainage needs – watersheds with fewer drainage problems would have lower fees than watersheds experiencing more problems ↓ Increase in taxes for ad hoc areas
Approval process	↑ Requires no changes to municipal ordinances	• Requires a majority of voters within the proposed service area to pass the ordinance on a municipal ballot. • Requires a majority of voters in any existing service area agree to dissolve and/or annex themselves into the new, Hillside-wide service area.	• Generally same as option 1; does not require vote to dissolve LRSAs, RRSAs
Service Delivery		↓ Without a designated funding apportionment to trails or a requirement to include trails within road ROWs, the HRDTSA board may not consider trails along roads to be a priority	↑ Existing local road service areas and rural road service areas within the Hillside would continue to operate as they do today. ↑ Drainage services would likely improve because they could be addressed by their own authority.
Phased approach to changing Hillside service areas	Not Applicable	↓ "All in" – requires large, dramatic change from current system ↓ Any areas not voting to join would result in a disjointed service area. These "donut holes" would make it difficult to implement proposed drainage and road improvements	↑ Small first step – creates capital improvements service area only for roads; leaves open option to revise LRSA structure at a later date

Bonus Option 3: Chugach Access Service Area (addresses Trails only)

An additional trails management option emerged through the Hillside District Plan process: A proposal to raise funds from the Anchorage Bowl as a whole for maintenance and capital improvements to trailheads and access points to Chugach State Park. This proposal is based on the fact that use of the state park is generated from the entire Anchorage Bowl.

Evaluation of Option 3:

This would establish a vehicle for generating funding for construction and operations costs related to Chugach State Park access. This could be structured in one of two ways:

- **Service Area:** establish a service area that extends over the entire Anchorage Bowl, to generate funds specifically for Chugach access related activities.
- **Bond Measure:** pass a one time bond measure, including money for capital projects, and money to establish an interest-generating fund that could contribute annual revenue towards operations and maintenance.

Evaluation – Either Option

- Approximately 80 percent of users of Chugach State Park come from outside the Hillside, and nearly 100 percent of these users come by private vehicle. This approach would spread costs among all the users of the state park, not just nearby landowners and residents (many of whom experience more problems than benefits from their proximity to the park).
- Some would argue, why make the Muncipality pay for a State of Alaska asset? The response is that Anchorage residents are the direct beneficiaries of this Park, the State of Alaska has underfunded capital and operations in the park since its creation, and finally, improvements to the state park generate economic benefits for Anchorage (for example, increasing length of stay for out of state visitors).
- Chugach State Park access would not have to compete against other Muncipality park priorities.
- Anchorage Bowl users of Chugach State Park may be willing to support such a measure, having seen first hand the overcrowding and lack of facilities at many trailheads. On the flip side, there may be resistance from tax payers to the formation of another bond or tax service area.
- Some may argue that funding for parks service needs should not be split out on an issue by issue basis.

Service Area versus One-time Bond Measure

- Parks bonds fail half the time – why would this be different?
- The bond approach puts to voters a clean, one-time request for funding for a fixed amount of money. This may be more politically palatable than establishing another service area.