Chapter 10.10A
SENSITIVE LANDS EVALUATION & DEVELOPMENT STANDARDS (SLEDS)

Sections:

Appendices:

10.10A.010 Purpose.

The city deems it appropriate that sensitive land areas in the city be protected through their inclusion in a sensitive lands district to ensure that development is regulated in a manner that will minimize the potential impact from natural and man-made hazards and will reasonably preserve natural scenic beauty and ecological integrity. To the greatest extent practicable, the objectives to be achieved by the designation of a sensitive lands district include, without limitation, the following:

A. The protection of the public from natural hazards, such as land slide, rock fall, debris flow, earthquake ground rupture, liquefaction, shallow ground water, snow melt/storm water runoff and erosion.

B. The minimization of the threat of and consequential damage from fire in wildland interface areas.

C. The preservation of significant geological features, hydrologic features, wildlife habitat and migration corridors, and open space, including retention of natural topographic features such as drainage channels, streams, ridge lines, rock outcroppings, vistas, trees and other natural geologic and plant formations.

D. The preservation of appropriate public access to mountain areas and natural drainage channels for recreation.

E. The consideration, preservation and enhancement of environmental quality.

F. The master planning of an adequate transportation system for the total hillside area, including consideration of the city's master plan for streets, trails, bikes and pedestrians and consideration of densities and topography, with minimal cuts, fills, or other visible scars.

G. The use of terrain-adaptive architecture to ensure compatibility with the natural terrain, to preserve natural open spaces and vistas, and to minimize impact from geologically hazardous areas.

H. The placement of building sites in such a manner as to permit ample room for landscaping compatible with the natural vegetation and surface drainage.

10.10A.020 Scope and application.

A. *Application*. The provisions of this chapter shall apply to all lands in the city located in any area designated as a sensitive lands district on the city's official maps contained in Appendix A of this ordinance as amended from time to time. All approved subdivision plats that lie wholly or partially in a sensitive lands district shall be recorded with such designation shown on the official plat.

B. *Supplemental and Conflicting Provisions*. Unless otherwise specifically provided, the regulations contained in this chapter are in addition to the standards applicable to the underlying zones, or overlay zones, provided elsewhere in this title or any other applicable title, code, ordinance or law. In the event of conflict between the standards, guidelines and criteria of this chapter and the requirements of the underlying zoning district, the city's subdivision ordinance or any other requirements of this code, the more restrictive provision shall apply.

C. *Geologic hazard studies*. Project developers and their consultants shall present the results of geologic hazard studies in compliance with this chapter and its appendices. The standards set forth in the appendices to this chapter are the city's minimum requirements, but may be made more stringent, in specific, fact-sensitive circumstances, by the DRC based on recommendations of the city engineer or city geologist if evidence becomes available that suggests more stringent requirements are appropriate. In addition, the appendices shall not supersede other more stringent

requirements that may be required by other regulatory agencies or governmental entities that have jurisdiction.

D. *Appendix A.* Appendix A presents study area maps reflecting geological, hydrologic, infrastructure and other natural and man-made hazard concerns, as well as supplemental maps pertaining to development in the city's sensitive lands districts. The maps incorporate data obtained from numerous publications, previous geologic hazard studies and other expert sources such as FEMA, UGS, USGS, AGRC, etc. Updated versions of the maps will be added as they become available.

E. *Appendix B.* Appendix B presents the minimum standards for surface fault rupture hazard studies conducted in the city and describes the accepted minimum requirements for planning, conducting and reporting the results of surface fault rupture hazard studies. Site-specific surface fault rupture hazard studies performed by qualified engineering geologists shall be required prior to developing projects located in the Surface Fault Rupture Hazard Study Area as delineated on Map 1 in Appendix A of this chapter. The information contained in Appendix B was compiled from numerous published and unpublished sources and presents the current standard of care for surface fault rupture hazard studies in the city. If due to additional evidence a surface fault rupture hazard becomes known or suspected in an area subject to a development application, which area is not depicted on the Surface Fault Rupture Hazard Study Area Map, the DRC shall require the developer to submit applicable studies as recommended by the city engineer and the city geologist and the process outlined in this chapter shall be followed.

F. *Appendix C.* Appendix C presents the minimum standards for slope stability and landslide hazard studies conducted in the city and describes the accepted minimum requirements for planning, conducting and reporting the results of slope stability and landslide hazard studies. Site-specific slope stability and landslide hazard studies performed by qualified engineering geologists and geotechnical engineers shall be required prior to developing projects located in the Slope Stability and Landslide Hazard Study Area as delineated on Map 2 in Appendix A of this chapter. The information contained in Appendix C was compiled from numerous published and unpublished sources and presents the current standard of care for slope stability and landslide hazard studies in the city. If due to additional evidence a slope stability and/or landslide hazard becomes known or suspected in an area subject to a development application, which area is not depicted on the Slope Stability and Landslide Hazard Study Area Map, the DRC shall require the developer to submit applicable studies as recommended by the city engineer and the city geologist and the process outlined in this chapter shall be followed. At a minimum, a special study of slope stability will be required in the following instance:

(1) Site-specific slope stability analysis for all development in zones with moderate to very high hazard of landslides (Map 2).

G. *Appendix D.* Appendix D presents the minimum standards for liquefaction hazard studies conducted in the city and describes the accepted minimum requirements for planning, conducting and reporting the results of liquefaction hazard studies. Site-specific liquefaction hazard studies performed by qualified engineering geologists and geotechnical engineers shall be required prior to developing projects located in the Liquefaction Hazard Study Area as delineated on Map 3 in Appendix A of this chapter. The information contained in Appendix D was compiled from numerous published and unpublished sources and presents the current standard of care for liquefaction hazard studies in the city. If due to additional evidence a liquefaction hazard becomes known or suspected in an area subject to a development application, which area is not depicted on the Liquefaction Hazard Study Area Map, the DRC shall require the developer to

submit applicable studies as recommended by the city engineer and the city geologist and the process outlined in this chapter shall be followed. At a minimum, a special study of liquefaction hazard will be required in the following instances:

(1) Require site-specific liquefaction hazard analysis in zones of moderate to high liquefaction potential (Map 3) for the following IBC occupancy groups: Assembly Group A, Business Group B, Factory Group F-1, Educational Group E, High-Hazard Group H, Institutional Group I, and Residential Groups R-1, R-2, and R-4.

H. *Appendix E*. Appendix E presents the minimum standards for debris flow/alluvial fan flooding hazard studies conducted in the city and describes the accepted minimum requirements for planning, conducting and reporting the results of debris flow/alluvial fan flooding hazard studies. Site-specific debris flow/alluvial fan flooding hazard studies performed by qualified engineering geologists and geotechnical engineers shall be required prior to developing projects located in the Debris Flow/alluvial fan flooding Hazard Study Area as delineated on Map 4 in Appendix A of this chapter. The information contained in Appendix E was compiled from numerous published and unpublished sources and presents the current standard of care for debris flow/alluvial fan flooding hazard studies in the city. If due to additional evidence a debris flow/alluvial fan flooding hazard becomes known or suspected in an area subject to a development application, which area is not depicted on the Debris Flow/Alluvial Fan Flooding Hazard Study Area Map, the DRC shall require the developer to submit applicable studies as recommended by the city engineer and the city geologist and the process outlined in this chapter shall be followed. At a minimum, a special study of debris flow/alluvial fan flooding hazard will be required in the following instances:

(1) Site-specific debris flow/alluvial fan flooding hazard analysis for all development in zones with moderate to high debris flow/alluvial fan flooding hazard (Map 4).

I. *Appendix F*. Appendix F presents the minimum standards for rockfall hazard studies conducted in the city and describes the accepted minimum requirements for planning, conducting and reporting the results of rockfall hazard studies. Site-specific rockfall hazard studies performed by qualified engineering geologists and geotechnical engineers shall be required prior to developing projects located in the Rockfall Hazard Study Area as delineated on Map 5 in Appendix A of this chapter. The information contained in Appendix F was compiled from numerous published and unpublished sources and presents the current standard of care for rockfall hazard studies in the city. If due to additional evidence a rockfall hazard becomes known or suspected in an area subject to a development application, which area is not depicted on the Rockfall Hazard Study Area Map, the DRC shall require the developer to submit applicable studies as recommended by the city engineer and the city geologist and the process outlined in this chapter shall be followed. At a minimum, a special study of rockfall hazard will be required in the following instance:

(1) Site-specific rockfall hazard analysis for all development in zones with moderate to high rockfall hazard (Map 5).

J. *Appendix G*. Appendix G presents the source protection zones that require special regulations for the storage, handling, use or production of hazardous or toxic substances in order to protect, preserve and maintain existing and future public drinking water sources. The source protection zones are generally located upgradient of wells or near proposed points of diversion for the development of groundwater. Groundwater recharge zones are located in permeable and/or sensitive areas that have a critical impact on the groundwater quality and quantity of supply. The protection of source protection zones and groundwater recharge areas is essential to

the health, safety and welfare of city residents and visitors. At a minimum, observations of excavations will be required in the following instance:

(1) Observations of excavations by qualified engineers and/or geologists for all development within active fault special study zones (Map 1), areas with moderate to very high slope stability hazard (Map 2), areas with moderate to high liquefaction potential (Map 3), and areas with groundwater at depths of less than ten feet (Map 11).

(2) Observations of excavations by qualified engineers and/or geologists for all development, even outside of the zones specified above, for the following IBC occupancy groups: Assembly Group A, Educational Group E, High-Hazard Group H, Institutional Group I, and Residential Groups R-1, R-2, and R-4.

K. *Appendix H*. Appendix H presents the foundation excavation observations that are required for all new structures or additions that are built in the city. The DRC shall require the owner to submit a foundation excavation observation report, prepared in accordance with the process outlined in this chapter, prior to the construction of any structural footing or foundation for all buildings in the city.

L. *Appendix I*. Appendix I presents the riparian corridor and watershed protections adopted to minimize erosion and stabilize stream banks, improve water quality, preserve fish and wildlife habitat, regulate stream temperatures, reduce potential for flood damage, preserve natural aesthetic value of streams and protect the prime groundwater recharge areas of the city. These requirements are intended to provide protection for above-ground streams, stream corridors and recharge areas. Where streams flow through areas that are already developed, the riparian corridor and watershed protection requirements are intended to achieve a reasonable balance between natural streams and developed land uses.

10.10A.030 Definitions.

As used in this chapter:

A. "Acceptable and reasonable risk" means no loss of or significant injury to occupants, no release of hazardous or toxic substances, and structural damage but no collapse of structures.

B. "Accessory building" means any structure not designed for human occupancy, which may include detached garages with no habitable space, tool or storage sheds, gazebos, and swimming pools.

C. "Active fault" means a fault displaying evidence of displacement along one or more of its traces during Holocene time, which is approximately 10,000 years ago to the present.

D. "AGRC" means the Utah State Automated Geographic Reference Center.

E. "Avalanche" means a large mass of snow, ice, soil or rock, or a mixture of these materials, falling, sliding, or flowing rapidly down a hillside or mountainside under the force of gravity.

F. "Buildable area" means that, based on an accepted engineering geology report, the portion of a site not impacted by geologic hazards, or the portion of a site where it is concluded the identified geologic hazards can be mitigated to a level where risk to human life, property and city infrastructure is minimized and where structures may be safely sited.

G. "City" means the city of Fruit Heights and its public works director, city engineer, community development director, planning manager, building official, or other Fruit Heights officer or employee, as applicable.

H. "City council" means the Fruit Heights city council.

I. "Cluster development" means development in which a number of dwelling units are

placed in closer proximity than usual, or are attached, with the purpose of retaining or enlarging an open space area.

J. "Critical facilities" means essential, hazardous, special occupancy facilities, and Occupancy Categories III and IV as defined in the currently adopted International Building Code, and lifelines such as major utility, transportation, and communication facilities and their connections to critical facilities.

K. "Curriculum vitae" or "CV" means a written account of the professional life comprising one's education, accomplishments, work experience, publications, etc.

L. "Debris flow" means a slurry of rock, soil, organic material, and water transported in an extremely fast and destructive flow down channels and onto and across alluvial fans; including a continuum of sedimentation events and processes such as debris flows, debris floods, mudflows, clear-water floods, and alluvial-fan flooding.

M. "Development" means all critical facilities, subdivisions, single- and multi-family dwellings, commercial and industrial buildings; also additions to or intensification of existing buildings, storage facilities, pipelines and utility conveyances, and other land uses.

N. "Development review committee" or "DRC" means a committee of city staff members that reviews proposed development projects for compliance with this code, consisting of the director and others designated from time to time by him or her as approved by the city council, such as the city engineer, one or more of city planning staff members, the city's fire inspector, a representative of the city's public works provider, the city attorney, city geologist and/or others.

O. "Director" means the city's community development director.

P. "Engineering geologist" means a Utah-licensed geologist, who, through education, training, and experience, is competent in applying geologic data, geologic techniques, and geologic principles, which includes conducting field investigations, so that geologic conditions and geologic factors affecting engineered works, ground-water resources, and land-use planning are recognized, adequately interpreted, and clearly presented for use in engineering practice, land use planning, and for the protection of the public, and who utilizes specialized geologic training and experience to provide quantitative geologic information and recommendations and also works with and for land-use planners, environmental specialists, architects, public policy makers, and property owners to provide geologic information on which decisions can be made.

Q. "Engineering geology" means geologic work that is relevant to engineering and environmental concerns, and the public health, safety, and welfare. Engineering geology is the application of geological data, principles and interpretation so that geological factors affecting planning, design, construction, and maintenance of engineered works, land use planning and ground-water resources are adequately recognized and properly interpreted for use in engineering, land-use planning, and related practice.

R. "Essential facility" means buildings and other structures intended to remain operational in the event of an adverse catastrophic event, including all structures defined in Table 1.

S. "Fault" means a fracture in the earth's crust forming a boundary between rock or soil masses that have moved relative to each other.

T. "Fault setback" means an area on either side of a fault within which structures for human occupancy or critical facilities or their structural supports are not permitted.

U. "Fault scarp" means a steep slope or cliff formed by movement along a fault.

V. "Fault trace" means the intersection of a fault plane with the ground surface, often present as a fault scarp, or detected as a lineament on aerial photographs.

W. "Fault zone" means a corridor of variable width along one or more fault traces, within

which deformation of soil and rock units has occurred due to movement of the fault trace.

X. "FEMA" means the Federal Emergency Management Agency.

Y. "Geologic hazard" means a surface fault rupture, liquefaction, slope instability, landslide, debris-flow, rock-fall, or other geologic process or condition that may present a risk to life or property.

Z. "Geologic hazard study area" means a potentially hazardous area as shown on the geologic hazard study area maps within which hazard investigations are required prior to development.

AA. "Geotechnical engineer" means a professional, Utah-licensed engineer who, through education, training and experience, is competent in the field of geotechnical engineering.

BB. "Geotechnical engineering" means the investigation and engineering evaluation of earth materials including soil, rock, and man-made materials and their interaction with earth retention systems, foundations, and other civil engineering works. The practice involves the fields of soil mechanics, rock mechanics, and earth sciences and requires knowledge of engineering laws, formulas, construction techniques, and performance evaluation of engineering.

CC. "Governing body" means the city council or its designee.

DD. "Landslide" means the down-slope movement of a mass of soil or bedrock, including a continuum of processes between landslides, earth-flows, debris flows and debris avalanches, and rock falls.

EE. "Liquefaction" means a process by which certain water-saturated soils lose bearing strength because of earthquake-related ground shaking and subsequent increase of groundwater pore pressure.

FF. "Natural drainage channel" means naturally occurring features such as open swales, open channels, or open creek beds that help collect and convey stormwater over natural terrain to a determinate downstream point of discharge.

GG. "Non-buildable area" means a site that has any portion thereof within a geologic special study area where a geologic hazards investigation has not been conducted, a site where known or readily apparent geologic hazards exist in an area subject to a development application, which area is not depicted on the geologic hazards study area where a geologic hazards investigation has not been conducted, or that portion of a site which a geologic hazards report has concluded may be impacted by geologic hazards that cannot be reasonably mitigated to an acceptable level, and where the siting of habitable structures, structures requiring a building permit, or critical facilities, is not permitted.

HH. "Rockfall" means a rock or mass of rock, newly detached from a cliff or other steep slope which moves down-slope by falling, rolling, toppling, or bouncing; includes rockslides, rock-fall and rock avalanches.

II. "Sensitive lands" or "sensitive area" means any land within a sensitive lands district or which qualifies for inclusion in the sensitive lands as provided in this chapter.

JJ. "Sensitive lands district" or "sensitive lands overlay" means any designated overlay area published on an official map by the city which describes a sensitive area or special study zones. An official sensitive lands overlay map, as shown in Appendix A, shall be approved by the city council and shall be on record with the city at the front counter, in the planning department and/or with the city recorder. Sensitive lands overlay maps may also be available on the web at the city's official website.

KK. "Setback" means an area within which foundation elements that support habitable structures or critical facilities are not permitted.

LL. “Slope stability” means the resistance of a natural or artificial slope or other inclined surface to failure by sliding, usually assessed under both static and dynamic (earthquake-induced) conditions.

MM. “Snow avalanche” means a mass of predominantly snow and ice, but also including a mixture of soil or rock and organic debris, falling, sliding, and/or flowing rapidly down a hillside or mountainside under the force of gravity.

NN. “Special study zone” refers to an area within the vicinity of a potential or known fault zone(s) that warrant study to determine the feasibility of development in compliance with the regulations as outlined in Appendix B.

OO. “Structure designed for human occupancy” means any residential dwelling or any other structure used or intended for supporting or sheltering any use or occupancy.

PP. “SWPPP” means a storm water pollution prevention plan, conducted in accordance with appropriate standards, as determined by the city.

QQ. “Terrain adaptive architecture” means a system of architectural design where buildings step down steeply sloping sites and hillsides to create the least amount of visual impact from lower lying vantage points.

RR. “Talus” means rock fragments lying at the base of a cliff or a very steep rocky slope.

SS. “Trail” means a system of public recreational pathways located within the city for use by the public.

TT. “UGS” means the Utah Geological Survey.

UU. “Unpublished sources” means maps, documents, consultant’s reports or other data produced by credible scientific or professionally licensed individuals or entities that have not been published in publically or generally available formats.

VV. “USGS” means the United States Geological Survey.

WW. “Wet stamp” or “seal” means the official hallmark of an engineer, surveyor or other licensed professional that is reproduced, via ink or embossing, on plans, plats, studies or the like prepared by such professional or under his direction, to prove its authenticity and/or to confirm its accuracy.

10.10A.040 Development standards and controls.

Compliance with the development standards and controls of this chapter shall be required in connection with all structures and construction on sensitive lands; provided, however, that the development standards and controls contained in this chapter shall not circumvent or diminish the zoning controls of underlying zoning designations. Instead, the development standards and controls in this chapter are intended to, and shall, enhance the city’s regulatory control regarding building and development surrounding and within sensitive lands.

A. *Slopes*. The applicant will submit a predevelopment map with contour lines not to exceed 2’ intervals and indicating all slopes that are 30% or greater. Slope areas in excess of 30% may not be developed, and no more than 30% of a development’s slope areas in excess of 30% may be included in the area calculation to determine residential density. The planning commission may modify this requirement to include no more than 50% of the slope in excess of 30% toward density calculations upon finding that:

1. No significant or moderate harm will result;
2. The proposed modification will result in a more functional and improved plan;
3. The developer agrees to comply with any conditions or requirements imposed by the planning commission to mitigate any adverse effects which may result from the proposed

modification; and

4. If reasonably requested by the city in compliance with applicable legal standards for, *inter alia*, development exactions, the developer agrees to dedicate as open space any portion of the project that is not developable under this title.

B. *Single Family Lots*. For developments containing single family lots, the minimum lot size and yard requirements of the underlying zone shall apply, with the following exceptions:

1. Every lot shall have at least 5,000 square feet of buildable area, consisting of the area of the lot where the slope is 30% or less, which is completely contiguous and which has a minimum dimension of 50 feet either length or width.

2. Lots shall be designed to allow dwelling units to be located within 250 feet from a public street. All main and accessory buildings shall be built entirely within the buildable area.

C. *Density Limitations*.

1. The density limitations of the underlying zoning district shall control residential density.

2. The planning commission shall not adjust other zoning controls related to bulk and massing, including increased maximum structure height.

D. *Maximum Impervious Surface*. The total maximum allowable coverage by impervious material within a project or portion of a project within a sensitive lands district shall not exceed 30% of the total project area. Areas of roofs and private driveways will be estimated and included in the total impervious surface area.

E. *Grading, drainage, and erosion control*. The area of the watershed shall be used to determine the amount of storm water runoff generated before and after construction.

1. A grading and drainage report shall be prepared in which the developer shall describe the methods intended to be employed to control the erosion increase while in construction.

2. The developer is responsible for interim stabilization of all disturbed areas during periods of construction to prevent erosion offsite effects, and for final stabilization once construction is completed.

3. The SCS, Curve Number Method, or Rational Method, or other storm water computation method as approved by the city engineer, shall be used in computing runoff.

4. Lots shall be arranged so as to ensure adequate setbacks from drainage channels. The 100-year storm event shall be that basis for determining the minimum floor elevation. No structure shall be allowed in the 100 year floodplain as determined by the City Engineer.

5. Existing natural drainage channels shall remain as historically located except that roads and utilities may be installed across such channels as approved by the city engineer. Where these channel modifications are planned, the developer shall obtain applicable state Division of Water Rights and U.S. Army Corps of Engineers permits. The developer shall provide evidence of such permits to the city.

6. Facilities for the collection of storm water runoff shall be constructed on the development sites and according to the following requirements:

(a) Such facilities shall be the first improvements or facilities constructed on the development site.

(b) Such facilities shall be designed so as to detain safely and adequately the maximum expected storm water runoff for a 100-year storm event while allowing an offsite discharge not to exceed one tenth (0.1) cubic foot per second per acre.

(c) Such facilities shall be so designed so as to divert surface water away from cut faces or sloping surfaces of a fill.

(d) The existing drainage system, including natural drainage channels, shall be utilized to the

greatest extent practicable, as directed by the city engineer.

(e) Where drainage channels are required, wide shallow swales lined with appropriate vegetation, rock, or other approved material shall be used instead of cutting narrow, deep drainage ditches. Flow retarding devices, such as detention ponds, check dams, and recharge berms, shall be used where practical to minimize increases in runoff volume and peak flow rate due to development.

7. Construction on a development site shall be of a nature that will minimize the disturbance of vegetative cover.

8. Erosion control measures on a development site shall minimize increased suspended solids loading in runoff from such areas. A drainage system design to control storm water erosion during and after construction shall be contained in a detailed grading and drainage report submitted by the developer.

9. No grading or stripping shall be permitted except as part of a development plan approved in advance by the DRC pursuant to this chapter.

F. *Cut and Fill Slopes*. Cut and fill slopes shall comply with the following unless otherwise recommended in an approved soils and geology report:

1. Cut and fill slopes shall not exceed 12 feet.

2. Cut and fill slopes shall not exceed a slope ratio of 2:1 except as follows:

(a) No slopes shall be cut steeper than the bedding plane, fracture, fault or joint in any formation where the cut slope will lie on the dip of the strike line of the fracture, bedding plane, fault or joint.

(b) No slopes shall be cut in an existing landslide, mud flow or other form of naturally unstable slope.

(c) If the material of a slope is of such composition and character as to be unstable under the anticipated maximum moisture conditions, the slope angle shall be reduced to a stable value or increased through retention using a method approved by the city engineer and certified as to its stability by a professional soils engineer.

3. Fill slopes shall not be constructed on natural slopes steeper than 2:1.

4. Roadway cut and fill slopes located outside the dedicated public right-of-way shall be within recorded easements providing for slope protection and preservation. The easements shall be in a form acceptable to the city.

G. *Earthwork.*

1. All surface areas to receive fill shall be stripped of any surface vegetation, topsoil, and organics and cleared of any trash and debris that may be present at the time of construction.

2. After the site has been cleared and stripped, the exposed subgrade soils in those areas to receive fill shall be scarified to a depth of eight inches.

3. All fill material shall be earth materials that are free from organic material, (less than 30% by volume) and other deleterious materials as well as free of metal, concrete, asphalt and other construction debris. Imported fill material should be a non-expansive (less than 2% swell) granular materials and should not contain rocks or lumps over 6-inches in greatest dimension and not more than 15% of the material larger than 2½ inches.

4. Surface areas disturbed by trench excavations shall be contained within the limits of the development or within approved rights-of-way, except as may be necessary in order to comply with Occupational Safety and Health Administration requirements and as approved by the city engineer. Trench boxes shall be used whenever required to ensure compliance with this requirement.

5. The following compaction criteria shall be met for filling operations based on ASTM test designation 698-78:

Compaction Effort	*Description*
95%	Subgrade
97%	Structural fill
95%	Trench backfill
97%	Trench backfill (top 12-inches beneath pavement or concrete)
90%	Basement wall backfill

Fill material shall be spread and compacted in uniform horizontal lifts not exceeding eight inches in uncompacted thickness. Before compaction begins, the fill shall be brought to within 2% +/- of the optimum moisture content. Each lift should be thoroughly mixed before compaction to ensure a uniform distribution of moisture.

6. All structures shall bear on well compacted fill material or firm, undisturbed natural soil. No organic material, mud, muck, frozen material or ponded water shall be allowed in the footing foundation.

7. A written summary report of the completed compaction, showing location and depth of tests, materials used, moisture-density curves, moisture contents and relative density (if appropriate), prepared by a civil engineer, geotechnical engineer, or soils engineer shall be submitted to the city engineer for review.

8. The city engineer may require additional tests or information if the results of his review indicate that the conditions or materials are such that additional information is necessary.

H. *Setbacks*. The setbacks and other restrictions specified by this subsection are a minimum, and may be increased by the city if necessary for safety and stability, to prevent damage of adjacent properties from deposition or erosion, or to provide access for slope maintenance and drainage. Setbacks dealing with distances from property lines, structures or faults must satisfy the requirements of the following paragraphs. Retaining walls may be used to reduce the required setbacks when approved by the city.

1. Setbacks from property lines shall comply with most restrictive requirements that are applicable under this title and the city's building code.

2. Setbacks between graded slopes (cut or fill) and structures shall comply with this title, the city's building code and all other applicable ordinances.

3. No habitable structure, essential facility or critical facility shall be located over a fault. Determinations of the appropriate setback distance from the fault shall be made using data obtained in the geological report by the person or firm who prepared the geological report, but in no case shall this distance be less than fifteen feet.

I. *Vegetation and Re-vegetation*.

1. All areas on development sites cleared of natural vegetation in the course of construction of offsite improvements shall be replanted with drought tolerant vegetation which has good erosion control characteristics.

2. The use of persons or firms having expertise in the practice of re-vegetation (i.e., licensed landscape architects, erosion control specialists or nurserymen) shall approve the planning and installation of vegetative cover.

3. Vegetation shall be removed only when absolutely necessary, e.g., for the construction of buildings, roads and filled areas.

4. No vegetation shall be removed on a continuous hillside, crest (upslope or downslope) or a slope 30% or greater unless otherwise determined by the planning commission upon recommendation of the DRC.

5. Approval from the city engineer for uses such as trails and open space improvements. Any re-vegetation method of a trail, open space or hillside shall be subject to the approval of the city engineer.

6. Topsoil removed during construction shall be conserved whenever practicable for later use on areas requiring vegetation or landscaping (i.e., cut and fill slopes).

7. All disturbed soil surfaces shall be stabilized or covered prior to November 1st. If the planned impervious surfaces (i.e., road, driveways, etc.) cannot be established prior to November 1st, a temporary treatment adequate to prevent erosion shall be installed on those surfaces.

8. The property owner and/or developer shall be fully responsible for any destruction of native or applied vegetation identified as necessary for retention and shall be responsible for such destroyed vegetation. They shall carry the responsibility both for employees and subcontractors from the first day of construction until the final acceptance of improvements. The property owner and developer shall replace all destroyed vegetation with varieties of vegetation approved by the DRC. The property owner shall assume co-responsibility with the developer upon purchase of the property.

J. *Geology*.

1. No habitable structure or critical or essential infrastructure shall be built on or within 15 feet of any identified fault. Actual setbacks shall be determined through the process outlined in Appendix B.

2. No structures or off-site improvements shall be allowed on any active landslide area.

3. Problems associated with development on or near perched ground water and/or shallow ground water must be mitigated in a manner as approved by the planning commission.

K. *Fire Protection*.

1. Footing and foundation permits shall not be issued until work on an approved water system has commenced. A full building permit shall be issued only when the water system is completed and operational to provide fire protection.

2. Each development site proposal and building permit application shall be reviewed by the fire department to assure compliance with the city's fire code. Non-compliant developments shall not be approved.

3. Spark arresters shall be installed in every fireplace, whether constructed indoor or outdoor. The diameter of screen openings in such arresters shall not exceed ¼ inch.

4. Development adjacent to public lands shall provide access for fire protection vehicles and equipment.

5. A development in a sensitive lands district shall not permit the use of wood shake shingles or wood exterior siding, regardless of whether or not such materials have been treated with fire retardant.

L. *Streets and Ways*. Streets, roadways, and private access ways shall follow as nearly as possible the natural terrain. The following additional standards shall apply:

1. At least two ingress and egress routes shall be provided for each subdivision or PUD project.

2. Points of access shall be provided to all developed and undeveloped areas for emergency and fire-fighting equipment. Driveways located upon each lot extending from a public or private street shall have sufficient width and design to admit and accommodate fire-fighting equipment

and must comply with all applicable city standards.

3. Cul-de-sacs shall not exceed 600 feet in length and shall have a fire-department-approved turnaround with a back of curb line radius of at least 55 feet. Stub-streets that are longer than the width or length of any adjacent single lot or 200 feet, whichever is less, shall have a temporary turnaround at the end thereof.

4. Centerline curvatures shall not be less than a 100 foot radius on any curved street pattern.

5. Variations of the street design standards developed to solve special hillside visual and functional problems may be presented to the planning commission for consideration and approval. Examples of such variations may be the use of split roadways to avoid deep cuts, one-way streets, modifications of surface drainage treatments, sidewalk design.

6. Development sites which are located near canyon trails will provide public access to those trails. Public parking areas may be required by the planning commission at trail heads.

7. Developments adjacent to public lands shall provide for access by fire protection equipment.

8. The maximum amount of impervious surface for streets and roadways shall be 20% of the entire development site.

9. All streets or rights-of-way for vehicular traffic shall be subject to the following limitations:

(a) The maximum grade of such streets or rights-of-way shall be 12% except as hereafter provided.

(b) The provisions of this subsection shall not apply to streets or rights-of-way already constructed or which have heretofore been granted preliminary approval by the planning commission.

(c) Roads shall be designed to meet the city's road base, asphalt and compaction standards.

M. *Trails upon hillsides*.

1. The subdivider or other developer shall dedicate and improve to city standards trails necessary to provide public access to public lands and other trails shown on city or county master plans or required by the planning commission. Trails shall be located so that the route is feasible for both construction and long-term maintenance; side slopes shall not exceed 70% and rock cliffs and other insurmountable physical obstructions shall be avoided. The specific location of the trail right-of-way shall be verified on the ground before approving the subdivision.

2. A trail may be constructed to access upper/lower portions of residential property subject to the following conditions:

(a) No un-engineered cut or fill of the hillside shall be in excess of four feet. All cuts or fills shall be properly retained.

(b) The trail shall follow a meandering course, and not use a direct line pathway to the desired location. Where possible, the trail should follow the natural contours of the hillside.

(c) The grade of trails shall not exceed 12%. Trails, and retainage of adjacent slopes, shall be designed as directed by the city engineer.

(d) New trails shall be planned to harmonize with nature, including minimizing the destruction of existing stands of vegetation.

(e) New trails shall include the installation of bridges across natural drainages with permanent or temporary flow that cannot be crossed without entering the drainage.

(f) The trail shall be appropriately landscaped with native materials.

(g) Prior to construction and/or hillside cuts, the trail plan shall be submitted to the director and city engineer for review and approval.

N. *Architectural Design*. Architectural controls are primarily regulated by underlying zoning districts; however, the architectural requirements of this chapter include the following as determined by the Planning Commission:

1. The design of buildings and structures proposed for construction shall be visually compatible with the natural beauty of the foothills and canyon areas and other surrounding sensitive lands.
2. The materials used for buildings, structures and fences shall blend harmoniously with the natural setting.
3. The planning commission may review the design and comment on the specified exterior materials and colors for all structures.
4. Exposed foundation walls shall not exceed four feet above finished grade at any point.
5. The design and construction of structures within the urban interface area shall be consistent with the 2006 Utah Wildland-Urban Interface Code, as amended.

O. *On-Site Development*. The property owner and developer shall be fully responsible for making all improvements in accordance with the development site approval, e.g., drainage, erosion and vegetation requirements.

P. *Bond*. In addition to the requirements of this code requiring the posting of a completion bond for a development, the developer or owner shall be required to guarantee (via a cash bond, cash escrow or bank letter of credit, all in such form as city may require) the completion of re-vegetation projects, the stabilization of grading sites, cuts and fills, construction of storm water runoff facilities, and the construction of recreation space as required in this code. Such bond shall be in an amount equal to 125% of the city's estimate of the cost of construction of such work, and shall continue for 18 months after the completion date of all such project, improvements or facilities.

Q. *FEMA*. All habitable living space for new construction shall be at least one (1) foot above the 100 year flood plain elevation. Any additions to existing structures that includes any additional square feet shall meet this requirement.

10.10A.050 Responsibility for geologic hazard and other studies.

A. All applicants wishing to develop and/or build on sensitive lands shall provide, at their own expense, all applicable geologic, geotechnical or other studies outlined in this chapter and as directed by the DRC pursuant to section 10.10A.020.

B. Geologic hazard studies often require both engineering geology and geotechnical engineering expertise. Engineering geologic studies shall be performed under the direct supervision of a licensed engineering geologist qualified as provided in section 10.10A.060, and geotechnical engineering studies shall be performed under the direct supervision of a licensed geotechnical engineer qualified as provided in section 10.10A.060. All plans submitted to the city shall be stamped by a licensed geotechnical engineer and/or engineering geologist, as the case and standard of care may warrant, appropriately licensed and in good standing with the state of Utah.

C. As the case may warrant, the DRC, or the planning commission upon recommendation of the DRC, may from time to time require that additional studies related to the sensitive lands being developed be completed to address issues that may include, without limitation, hydrology, wildlife habitat, ecology, etc. All additional studies shall be completed by a city-approved expert in the particular field of study.

10.10A.060 Minimum acceptable qualifications of professionals.

A. *Minimum acceptable qualifications of the engineering geologist*. Engineering geology and the evaluation of geologic hazards is a specialized discipline within the practice of geology requiring technical expertise and knowledge of techniques not commonly used in other geologic disciplines. Therefore, geologic hazard investigations involving engineering geologic studies shall only be accepted by the city when conducted, signed and stamped by a qualified engineering geologist. The minimum qualifications of the engineering geologist who performs geologic hazard investigations of sensitive lands in the city are:

1. An active, current Utah State Professional Geologist's license.
2. In good standing with the Division of Professional and Occupational Licensing of the Utah Department of Commerce.
3. Demonstrated competence in the specified field as evidenced by a current CV provided to the city for review and approval.

B. *Minimum acceptable qualifications of a geotechnical engineer*. Evaluation and mitigation of geologic hazards often require contributions from a qualified geotechnical engineer, particularly in the design of mitigation measures. Geotechnical engineering is a specialized discipline within the practice of civil engineering requiring technical expertise in geotechnical engineering. Therefore, geologic hazard investigations requiring contributions from a qualified geotechnical engineer will only be accepted by the city when also conducted, signed and stamped by a qualified professional engineer. Minimum qualifications of a geotechnical engineer who participates in geologic hazard investigations of sensitive lands in the city are:

1. An active, current Utah State Professional Engineer's license.
2. In good standing with the Division of Professional and Occupational Licensing of the Utah Department of Commerce.
3. Demonstrated competence in the specified field as evidenced by a current CV provided to the city for review and approval.

C. *Minimum acceptable qualifications of other professionals*. From time to time the DRC, or the planning commission upon recommendation of the DRC, may require additional studies to evaluate issues that may include, but are not limited to hydrology, wildlife habitat, ecology, vegetation, etc. The DRC shall determine the adequacy of the qualifications of professionals performing additional studies based upon the following minimum standards:

1. An active, current Utah State professional license in the specified field and in good standing with the Division of Professional and Occupational Licensing of the Utah Department of Commerce; or,
2. Demonstrated competence in the specified field as evidenced by a current CV provided to the city for review and approval, showing extensive study in the specified field, experience performing the specified studies and professional competence; and
3. Professional certification obtained through a reputable national organization such as LEED, AIA, AICP, ASLA or other applicable equivalent.

10.10A.070 Procedure.

Proposals for building or development on sensitive lands shall follow the procedure set forth in this section, which shall consist of four distinct parts: (1) scoping study; (2) conceptual proposal/ disturbance permit request; (3) preliminary proposal; and (4) final approval. Applications for review by the city shall be filed and processed in the following order:

A. *Scoping meeting*. The developer or consultant shall schedule a scoping meeting with the

DRC to evaluate the investigative approach of the engineering geologist/geotechnical engineer. At this meeting, the consultant shall present a work plan that includes locations of anticipated geologic hazards and locations of proposed exploratory excavations, such as trenches, borings, and CPT soundings, which meet the minimum standards of practice. The investigation approach should allow for flexibility due to unexpected site conditions. Field findings may require modifications to the work plan. Upon successful completion of the scoping meeting, an application for a disturbance permit may be submitted to the city.

B. *Conceptual proposal/disturbance permit applications*.

1. Proposals for surveying, testing or other design-related activities requiring physical entry into areas located within a sensitive lands district shall be submitted to the DRC for review and modification, approval or denial. Prior to review by the DRC, the areas of proposed disturbance shall be staked at the applicant's expense. Following staking, the city engineer or city geologist shall have at least two business days to observe the staking.

2. Thereafter, the DRC, upon receiving a favorable recommendation from the city engineer and geologist, may authorize issuance of a grading permit to allow access to, and permit testing of, the approved areas.

3. The permit shall be limited to the staked area of proposed disturbance and may include conditions deemed appropriate by the DRC to protect sensitive areas. As dictated by the DRC, such conditions may include requirements for the following:

(a) Photo documentation to identify pre-existing types and general locations of vegetation which may need to be protected or replaced.

(b) The submission of a SWPPP for the implementation of adequate erosion control measures to protect affected areas. Supplemental erosion control measures may also be required between initial disturbances and either construction of permanent improvements or restoration and re-vegetation of the disturbed area.

(c) Limitations on cuts and fills to ensure that they are made only where necessary to obtain access for required testing.

(d) Requirements for restoration and re-vegetation of disturbed areas where permanent improvements are not constructed within one year following the disturbance.

(e) A land disturbance bond (cash bond, cash escrow or bank letter of credit, all in such form as city may require) to cover the expense of re-vegetating disturbed areas and returning graded areas to their natural state.

(f) Any other reasonable requirement to mitigate the effect of potential interruption caused by the disturbance of the area for conceptual or preliminary activities.

4. The conceptual plan shall include the following information; provided, however, that the DRC may reasonably modify the following requirements:

(a) A conceptual development map, drawn at a minimum scale of 1"=100', which shows:

(i) One or two foot contours;

(ii) Natural slopes of 30% or greater color shaded;

(iii)Proposed development layout of lots, roads, schools, churches, parks, open space, fire stations, commercial, cut or fill slopes or areas of disturbance, and any other proposed land use;

(iv)Labeling of any roads with grades in excess of eight percent; and

(v) Native vegetation, by type and location.

(b) A report which indicates:

(i) Total development area;

(ii) Total area with over 30% slope

(iii) Number of lots or units proposed;

(iv) Proposed density calculation;

(v) Evidence of compliance with city stormwater requirements;

(vi) Percentage of each use, such as residential, commercial, recreational, transportation, etc.; and

(vii) Statement of compliance with the design requirements of this chapter.

(c) A re-vegetation plan addressing restoration plans for areas disturbed by preliminary activities.

C. *Preliminary assessment and mitigation*. Following conceptual approval, preliminary approval of a hazard assessment plan shall be sought from the planning commission or the city's planning department, as applicable. The information and reports required in this subsection are outlined in the appendices to this chapter; shall be submitted as part of an application for preliminary approval; and may be in addition to information required for preliminary approval for a subdivision, PUD or permit for a conditional or permitted use.

D. *Final approval of assessment and mitigation measures*. Final approval of hazard assessment and mitigation measures shall be issued by the planning department if the applicant demonstrates satisfactory compliance with all of the requirements of this chapter and compliance with all city requirements for final plat approval, PUD approval and/or conditional use approval, as applicable. In addition, all bonding requirements of this code shall be satisfied prior to the issuance of the final approval by the planning department.

10.10A.080 Geologic hazards study area maps.

A. *Geologic hazards study area maps*. Appendix A of this chapter contains the geologic hazards study area maps and other supplemental maps (the "*Appendix A maps*") applicable to identified sensitive lands in the city. The Appendix A maps are prepared using the best available scientific information, but are necessarily generalized and designed only to indicate areas where hazards may exist and where geologic hazards studies are required. Because such maps are prepared at a non-site-specific scale, hazards may exist that are not shown on the maps. The fact that a site is not shown in a geologic hazards study area for a particular hazard does not exempt the applicant from considering the hazard if evidence is found that it may exist. It is the responsibility of the applicant to consider and identify all geologic hazards on the subject site. If it is subsequently determined that the site has geologic hazards or other features that are not shown on the Appendix A maps, the review process will be pursuant to this chapter.

B. *Geologic hazards study area boundaries*. Boundaries shown on the Appendix A maps will not be systematically adjusted as each individual site-specific study indicates whether or not an actual hazard exists. Geologic hazards study area maps and other supplemental maps are meant only to define areas within the city where scientific evidence indicates a hazard may exist. However, the Exhibit A maps may be updated and amended by the city if found to be inaccurate or erroneous, or as new methods or data are developed to better define areas of potential hazards.

C. *Modification of geologic hazards study area and supplemental maps*. Where geologic hazards study area maps are thought by an applicant to be inaccurate or erroneous and require revision, the applicant shall submit to the city technical evidence by a qualified professional supporting the claim and showing the proposed revision. The DRC will review the information and render a decision. The applicant may appeal that decision to the City Council.

10.10A.090 Geologic hazard studies and reports required.

A. Any applicant requesting development approval on sensitive lands shall submit to the city five paper copies and one electronic copy of a site-specific geologic hazard study report for such land meeting the requirements of Appendices B-G of this chapter.

B. Applicants who are required to complete site-specific geological hazards tests shall be directed by the city regarding the scope of the required studies and tests through the conceptual proposal/disturbance permit process outlined in this chapter.

C. A foundation excavation report or observation report must be submitted to the city's building department for all new construction on sensitive lands. This report shall show that the developer or applicant has complied with all requirements and recommendations (included those in previous geotechnical reports that have been conducted for the subject property); shall show any geologic hazards found after excavation but prior to footing and foundation construction; and shall be certified by a licensed geotechnical engineer or engineering geologist as required by this chapter.

10.10A.100 Geologic hazard reports.

A. Upon a determination by the DRC of the scope of geologic or other hazard studies required by an applicant, the applicant, at its expense, shall provide the city with a site-specific report consistent with the requirements of this chapter that identifies all known or suspected geologic hazards on the site, whether originating on-site or off-site, and whether previously identified or previously unrecognized, that may affect the subject property. All reports shall include the original signature and wet stamp of the qualified professional geotechnical engineer or engineering geologist. Geologic hazards reports co-prepared by professional geologists and engineers must include the original signature and wet stamp of both professionals.

B. The scope of the development and the potential for hazards to exist on a sensitive lands property, as determined by the DRC in consultation with the city engineer and city geologist, shall govern which of the following studies must be completed in connection with a development application (the specific requirements for the performance of such studies are found in the appendices to this chapter):

1. Surface fault rupture hazard report (Appendix B). Surface fault rupture hazard reports shall contain all requirements described in Appendix B of this chapter, *Minimum Standards for Surface Fault Rupture Hazard Studies*. Surface fault rupture studies shall be conducted by a qualified engineering geologist.

2. Slope stability and landslide hazard reports (Appendix C). Slope stability and landslide hazard reports shall contain all requirements described in Appendix C of this chapter, *Minimum Standards for Slope Stability Hazard Studies*. Slope stability and landslide studies shall be conducted by a qualified engineering geologist or a qualified professional engineer.

3. Liquefaction hazard reports (Appendix D). Liquefaction hazard reports shall contain all requirements described in Appendix D of this chapter, *Minimum Standards for Liquefaction Hazard Studies*. Liquefaction analyses shall be conducted by a qualified geotechnical engineer.

4. Debris flow hazard reports (Appendix E). Debris flow hazard reports shall contain all requirements described in Appendix E of this chapter, *Minimum Standards for Debris Flow Hazard Studies*. Debris flow hazard investigations shall be conducted by a qualified engineering geologist. Mitigation measures will generally require contributions from geotechnical engineers, hydrologists, or civil engineers.

5. Rockfall hazard reports (Appendix F). Rockfall hazard reports shall contain all

requirements described in Appendix F of this chapter, *Minimum Standards for Rock-Fall Hazard Studies*. Rockfall studies shall be conducted by a qualified engineering geologist. Mitigation measures will generally require contributions from geotechnical and/or civil engineers.

6. Foundation excavation observation reports (Appendix H). Foundation excavation observation reports shall contain all requirements described in Appendix H of this chapter, *Minimum Standards for Foundation Excavation Observation Reports*. Foundation observation reports shall be conducted by a qualified geotechnical engineer or engineering geologist.

C. In addition to the requirements of the aforementioned reports, all geologic hazards reports shall include the following:

1. A 1:24,000-scale geologic map, with references, showing the general surface geology (landslides, alluvial fans, etc), bedrock geology where exposed, bedding attitudes, faults, and other geologic structural features;

2. A detailed site map of the subject area, at a scale equal to or more detailed than one inch equals 200 feet, showing the locations of subsurface investigations and site-specific geologic mapping performed as part of the geologic investigation, including boundaries and features related to any geologic hazards, topography, and drainage. The site map must show the location and boundaries of the property, geologic hazards, delineation of any recommended setback distances from hazards, and recommended locations for structures. Buildable and non-buildable areas shall be clearly identified;

3. Trench logs, when applicable, prepared in the field and presented in the geologic hazard report at a scale equal to or more detailed than one inch equals five feet;

4. Boring logs, when applicable, prepared with standard geologic nomenclature;

5. Listing of aerial photographs used and other supporting information, as applicable;

6. Conclusions, clearly supported by adequate data included in the report, that summarize the characteristics of the geologic hazards, and that address the potential effects of the geologic conditions and geologic hazards on the proposed development and its occupants, particularly in terms of risk and potential damage;

7. Specific recommendations for additional or more detailed studies, as may be required to understand or quantify a geologic hazard;

8. An evaluation of whether or not mitigation measures are required, including an evaluation of multiple mitigation options;

9. Specific recommendations for avoidance or mitigation of the effects of the hazards, consistent with the purposes set forth in this chapter, including design or performance criteria for engineered mitigation measures and all supporting calculations, analyses, modeling or other methods, and assumptions. Final design plans and specifications for engineered mitigation must be signed and stamped by a qualified geotechnical, civil and/or structural engineer, as appropriate;

10. All data upon which recommendations and conclusions are based shall be clearly stated in the report;

11. A statement shall be provided regarding the suitability of the proposed development from a geologic hazard perspective; and

12. Identification of all utilities that serve the proposed development, including design and specifications of flexible expansion joints for utility lines that cross any fault line(s).

D. When a submitted report does not contain adequate data to support its findings, additional or more detailed studies shall be required to explain or quantify a particular geologic hazard or to describe how mitigation measures recommended in the report are appropriate and adequate.

10.10A.110 Review of geologic hazard reports.

A. The city shall review any proposed land use which requires preparation of a geologic hazards report under this chapter to determine the possible risks to the safety of persons, property and city infrastructure from geologic hazards.

B. Prior to consideration of any request for rezoning of property, preliminary plat approval, or site plan approval, the required geologic hazard reports shall be submitted to the city for review.

C. The city will act diligently in reviewing each submitted geologic hazard report.

D. All direct costs associated with the review of geologic hazard reports shall be paid by the applicant through the application fee.

E. The city shall retain a copy of each geologic hazard report in the department's project file.

F. The city shall determine whether the report complies with all of the standards set forth in this chapter, including the following:

1. That suitable geologic hazard reports have been prepared by qualified professionals.

2. That the proposed land use does not present an unreasonable risk to the health, safety, and welfare of persons or property, including buildings, storm drains, public streets, culinary water facilities, utilities or critical facilities, whether off-site or on-site, or to the aesthetics and natural functions of the landscape, such as slopes, streams, other waterways, drainage, or wildlife habitat, whether off-site or on-site, because of the presence of geologic hazards or because of modifications to the site due to the proposed land use.

3. That the proposed land use demonstrates that, consistent with the state of the practice, the identified geologic hazards can be mitigated to a level where the risk to human life and damage to property are reduced to an acceptable and reasonable level in a manner which will not violate applicable federal, state, or local statutes, ordinances or regulations. Mitigation measures should consider, in their design, the intended aesthetic functions of other governing ordinances. The applicant must include with the geologic hazards reports a mitigation plan that defines how the identified hazards or limitations will be addressed without impacting or adversely affecting off-site areas. Implementation of mitigation measures must be reasonable and practical, especially if such measures require on-going maintenance by property owners.

G. The city may set other requirements that it deems necessary to mitigate any geologic hazards and to ensure that the purposes of this chapter are met. These other requirements may include, without limitation, the following:

1. Additional or more detailed studies to understand or quantify the hazard or determine whether mitigation measures recommended in the report are adequate;

2. Specific mitigation requirements, establishing buildable and non-buildable areas, limitations on slope grading and controls on grading, or re-vegetation;

3. Grading plans prepared by a licensed professional engineer which include the following, as required by the DRC:

(a) Maps of existing and proposed contours;
(b) Present and proposed slopes for each graded area;
(c) Existing and proposed drainage patterns;
(d) Location and depth of all proposed cuts and fills;
(e) Description of methods to be employed to achieve stabilization and compaction;
(f) Location and capacities of proposed drainage, structures, and erosion control measures

based on maximum runoff for a 100-year storm;

(g) Location of existing buildings or structures on or within 100 feet of the site, or which may be affected by proposed grading and construction; and

(h) Plan for monitoring and documentation of testing, field inspections during grading, and reporting to the city.

4. Installation of monitoring equipment and seasonal monitoring of surface and subsurface geologic conditions, including ground-water levels; and

5. Other requirements such as time schedules for completion of the mitigation and phasing of development.

H. All information shall be submitted as an original signed, wet-stamped document for the city's use, such as, making additional copies as deemed necessary, distribution to the public, review by other professionals or use by other parties that have an interest in the property. All information shall also be submitted in a digital format as directed by the city for use in the city's infrastructure database, GIS, CADD archives or other digital platform for city business, or for recordation at the Salt Lake County Recorder's office.

I. As a condition of approval of any development of sensitive lands which requires a geologic hazards report, the city may also set additional requirements as it deems necessary to protect the health, safety, and welfare of its residents, protect the city's infrastructure and financial health, and minimize potential adverse effects of geologic hazards to public health, safety, and property.

J. The city may require a qualified professional to be on site, at the developer's cost, during certain phases of development and construction, particularly during grading phases and the construction of retaining walls. For any real property being developed based on a geologic or geotechnical report which has been accepted by the city, no final inspection shall be completed, certificate of occupancy issued or performance bond released until the geotechnical engineer or engineering geologist who signed and approved such report certifies in writing that the completed improvements and structures conform to the descriptions and requirements contained in such report.

K. An applicant may appeal any decision made under the provisions of this chapter only after the city has issued a written review of a report. Any such appeal shall set forth the specific grounds or issues upon which the appeal is based. The appeal shall be submitted in writing to the director within 30 days of the city's issuance of the written review or other decision. The city's board of adjustment shall serve as the appeal authority for any technical dispute.

10.10A.120 Disclosure when a geologic hazard report is required.

A. Whenever a geologic hazard report is required under this chapter, the owner of the affected site shall record a signed, notarized disclosure notice, running with the land, in a form satisfactory to the city prior to the city's approval of any development or subdivision of such land. The recorded disclosure shall include the following:

1. Notice that the land is located within a geologic hazards study area as shown on the geologic hazards study area map or as otherwise defined in this chapter; and

2. Notice that a geologic hazards report was prepared and is available for public inspection in the city's files.

B. Where geologic hazards and related setbacks are delineated in a subdivision, the owner shall also place additional notification on the plat stating the above information, prior to final approval and recording of the plat.

10.10A.130 Warning and disclaimer.

The city's geologic hazards study area maps represent only those potentially hazardous areas known to the city and should not be construed to include all possible potential hazard areas. This chapter and the geologic hazards study area maps referenced herein may be amended by the city as new information becomes available pursuant to procedures set forth in this chapter. The provisions of this chapter do not in any way assure or imply that areas outside the geologic hazards study area maps boundaries are free from the possible adverse effects or risk of geologic hazards. This chapter shall not create any liability on the part of the city or any of its officers, employees, reviewers, consultants, agents or contractors for any damages from geologic hazards that result from reliance on this chapter or any administrative requirement or decision lawfully made hereunder.

10.10A.140 Change of use.

No change in use which results in the conversion of a building or structure from one that is not used for human occupancy to one that is used for human occupancy shall be permitted unless the building or structure complies with the provisions of this chapter.

10.10A.150 Conflicting regulations.

In cases of conflict between this chapter and the provisions of existing zoning classifications, building code, subdivision ordinance, or any other ordinance of the city or applicable law, the most restrictive provision shall apply.

Table 1--Essential Facilities

A. In the event of failure, the following buildings and structures represent a substantial hazard to human life:

1. Buildings where more than 300 people congregate in one area;
2. Elementary schools, secondary schools, or day care facilities with an occupancy greater than 250;
3. Colleges or adult education facilities with an occupancy greater than 500;
4. Health care facilities with an occupancy greater than 50 or more resident patients but not having surgery or emergency treatment facilities;
5. Jails and detention facilities;
6. Any structure with an occupancy greater than 1,000;
7. Power generating stations, water treatment or storage for potable water, waste water treatment facilities and other public utility facilities; and
8. Buildings containing toxic or explosive substances that would be dangerous to the public if released.

B. Essential facilities include, without limitation, the following buildings and structures:

1. Hospitals and other care facilities having surgery or emergency treatment facilities;
2. Fire, rescue and police stations and emergency vehicle garages and fueling facilities;
3. Designated emergency shelters;
4. Designated emergency preparedness, communications, and operation centers and other facilities required for emergency response;
5. Power-generating stations and other public utility facilities required as emergency backup facilities for facilities and structures included in this table;
6. Structures containing highly toxic materials as defined by the most recently adopted version of the IBC;
7. Aviation control towers, air traffic centers and emergency aircraft hangars;
8. Buildings and other structures having critical national defense functions; and
9. Water treatment and storage facilities required to maintain water pressure for fire suppression.