

# Appendix C

## Roadway Segments at Level of Service E<sup>(1)</sup> and F, 2003

Street	From	To	Direction	AM Speed	Peak LOS	PM Speed	Peak LOS
A	2nd	5th	NB	9.5	D	5	F
A	5th	2nd	SB	7.2	E	5.6	F
C	2nd	5th	NB	8.5	E	5.1	F
Bellam	Andersen	Kerner	EB	9.4	D	7.1	E
Bellam	Kerner	Andersen	WB	8.6	E	8.4	E
Del Presidio	Las Gallinas	Freitas	NB	6.9	F	8.1	E
Del Presidio	Freitas	Las Gallinas	SB	8.3	E	5.4	F
E	5th	2nd	NB	7.8	E	5.9	F
E	2nd	5th	SB	4.1	F	3.5	F
Grand	4th	2nd	SB	4.7	F	6.9	F
Hetherton	Mission	2nd	SB	7.4	E	5.8	F
Irwin	2nd	Mission	NB	3.9	F	4	F
Lindaro	Andersen	3rd	NB	7.6	E	5	F
Lindaro	3rd	Andersen	SB	3.3	F	7.4	E
Mission	Irwin	Lincoln	WB	5.6	F	4.5	F

(1) Intersections not in Downtown operating at LOS E  
 Source: San Rafael Department of Public Works, 2003

# Appendix D

## Recreation Facilities and Acres to Retain through Naylor Legislation

### **Role of School Facilities and Sites in Meeting Recreational Needs**

The role of schools in the provision of recreational facilities and land in San Rafael is a critical one. Many neighborhoods that lack neighborhood parks, or have parks inadequate in size for provision of varied activities depend heavily on neighborhood schools for satisfaction of certain recreational needs, particularly organized sports activities. Nearly all Planning Area schools provide significant sports facilities to their neighborhoods. Both high schools also provide specialized citywide facilities: gyms, swimming pools and free tennis courts largely unavailable elsewhere.

Retention of school recreation facilities is important because the schools provide playfields, hardcourts and other facilities not otherwise available to their neighborhoods and community at large. Second, the schools have existing investments in recreation facilities that would be difficult to replace. Third, schools are often located on the only land left in the neighborhood that is suitable for intensive recreation facilities.

Responding to the surplus schools issue, the State passed the Naylor Bill (Education Code §39390 to §39404), which allows cities to purchase outdoor school recreation facilities at reduced prices. To qualify, the City or other public agency must have an adopted plan identifying portions of surplus school sites it desires to retain for recreational use. The Naylor legislation is helpful in retaining school recreation facilities but is limited in scope. School gyms, multipurpose rooms, and the City's child care programs are also desirable to retain but do not qualify for purchase under Naylor legislation which limits purchases to land which is used for school playground, playing field or other outdoor recreation purposes and open space land particularly suited for recreational purposes.

School acreage within City limits that the City may wish to purchase through Naylor rights if the site is surplus and offered for sale are identified below. Acreage not designated for retention is property the City does not desire to purchase through Naylor rights. Purchase is a last resort and would be considered only if all other lease, dedication or joint maintenance agreements fail, or if it were the most economical option for the City. The City would not purchase schools outside city limits. Closed school sites within the City limits which have not been officially designated "surplus" which the City may eventually wish to purchase through Naylor rights are also shown.

A priority listing of recreation facilities at all closed school sites in the Planning Area, based on the variety of facilities provided, the site's importance to City sports programs, and the site's importance in meeting neighborhood and other community recreation needs is included. Highly rated schools have a variety of facilities that are well used by the community. Lower priority facilities are of neighborhood importance but receive less community-wide use. This listing is to facilitate evaluation of potential purchases, negotiations for lease arrangements, etc. The City would consider purchase of sites within City limits only. However, if currently unincorporated areas are annexed to the City, the City would evaluate recreation facilities at schools in these areas in accordance with this listing.

Designation of certain school facilities for retention means the City will, if possible, attempt to secure those facilities for future recreation use if a site is to be sold. As soon as the school district decides to sell the site, the City and school district will need to work together to decide upon the most appropriate strategy to retain those facilities. If purchase is necessary, the City would ultimately have the responsibility for securing funding in a timely manner, with the help and cooperation of the districts and interested neighborhood and organized sports groups. Prior to any purchase, cost benefit studies would analyze the ongoing maintenance costs to the City.

**Exhibit EE: Recreation Facilities and Acres to Retain through Naylor Legislation**

CITY OF SAN RAFAEL

Priority	School	School District	Surplus Site?	Total Acres	Recreation Facilities	Recreational Acres (approx.)	Facilities (A)	Use (B)	Neighborhood recreational facilities (C)	Community-wide facilities (D)	Total
High	Don Timoteo (leased to St. Mark's)	Dixie	No	10	Playfields Hardcourts Parking Child care program	5.25	3	3	1	1	8
Not a priority	Laurel Dell Primary	SRCS	No	1		0	0	1	0	1	
Not a priority	Davidson Annex	SRCS	No	1.2		0	0	0	1	0	1
Low	Nova Albion (currently school district offices)	Dixie	Yes	10.4	Community garden Playfield	3	1	0	1.5	1	3.5
High	San Pedro	SRCS	No	7.25	Playfields Parking	3	1	2	3	0	6
High	San Rafael High	SRCS	No	29.2	Football stadium Gyms Parking Playfields Swimming pool Tennis courts Track	8.75	3	3	3	1	10
High	Santa Margarita (leased to a variety of entities)	Dixie	No	11	Playfields Multipurpose room	6	2	2.5	2	0	6.5

**EVALUATION SCALE**

- A Variety of Facilities: 1 = few; 3 = many and/or significant
- B Use by Sports Groups; 0 = no regular use; 1 = light use; 2 = medium use; 3 = heavy use
- C Adequacy of Neighborhood recreational facilities: 1 = adequate; 2 = marginal; 3 = inadequate
- D Unique/Important Community-wide Public Facilities: 1=yes

Priority	School	School District	Surplus Site?	Total Acres	Recreation Facilities	Recreational Acres (approx.)	Facilities (A)	Use (B)	Neighborhood recreational facilities (C)	Community-wide facilities (D)	Total
Low	Short	SRCS	No	1	Child care programs	0	1	0	1	1	3
High	Terra Linda High	SRCS	No	30.2	Gyms Parking Playfields Tennis courts	9.1	3	3	1.5	1	8.5

UNINCORPORATED SAN RAFAEL PLANNING AREA

Priority	School	School District	Surplus Site?	Total Acres	Recreation Facilities	Recreational Acres (approx.)	Facilities (A)	Use (B)	Neighborhood recreational facilities (C)	Community-wide facilities (D)	Total
High	Gallinas (old)	SRCS	No		Playfields		1	2	2	0	5
Low	Lucas Valley (leased to Waldorf)	Dixie	Yes		Playfields Tot lots		1	1	1	0	3
High	Mary Silveira	Dixie	No		Playfields		1	2	2	0	5
High	McPhail	SRCS	No		Playfields		1	1.5	2	0	4.5
High	Dixie	Dixie	No		Playfields		1	1.5	2.5	0	5

EVALUATION SCALE

- A Variety of Facilities: 1 = few; 3 = many and/or significant
- B Use by Sports Groups; 0 = no regular use; 1 = light use; 2 = medium use; 3 = heavy use
- C Adequacy of Neighborhood recreational facilities: 1 = adequate; 2 = marginal; 3 = inadequate
- D Unique/Important Community-wide Public Facilities: 1=yes

# Appendix E

## Earthquake Intensity

The following exhibits shall be used to identify if buildings shall be inspected following an earthquake, consistent with policy S-10, Post Earthquake Inspections. The Modified Mercalli Intensity scale is a subjective scale and would require City staff to judge the intensity of any earthquake felt within the Planning Area. An intensity VII earthquake would be major earthquake and would represent a notable event felt by most people in the Planning Area. The exhibit below shows at what distance, in kilometers, from the Planning Area a Magnitude 5, 6, 7, or 8 earthquake should result in a Modified Mercalli Scale intensity of about VII. As shown in this exhibit, intensity VII would be experienced at lower Magnitude earthquakes at greater distances on soft soils than on firm soils or rock. For example, a Magnitude 6 earthquake occurring about 65 kilometers from San Rafael would be experienced as an intensity VII on the Mercalli Scale in the parts of San Rafael that are on soft soils, but not in the parts that are on firm soils or rock. A Magnitude 8 earthquake occurring about 65 kilometers from San Rafael would be needed for an intensity VII on the Mercalli Scale in parts of the Planning Area, on firm soils, and rock.

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**Exhibit FF: Modified Mercalli Scale**

<b>Average Peak Velocity (cm/s)</b>	<b>Intensity Value and Description</b>	<b>Average Peak Acceleration (g =9.80 m/s)</b>
	<b>I.</b> Not felt except by a very few under especially favorable circumstances.	
	<b>II.</b> Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.	
	<b>III.</b> Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibrations like passing of truck. Duration estimated.	
1-2	<b>IV.</b> During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing automobiles rocked noticeably.	0.015g-0.02g
2-5	<b>V.</b> Felt by nearly everyone, many awakened. Some dishes, windows, and so on broken; cracked plaster in a few places; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	0.03g-0.04g
5-8	<b>VI.</b> Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster and damaged chimneys. Damage slight.	0.06g-0.07g
8-12	<b>VII.</b> Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars.	0.10g-0.15g
20-30	<b>VIII.</b> Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stack, columns, monuments, and walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving cars disturbed.	0.25g-0.30g
45-55	<b>IX.</b> Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.50g-0.55g
More than 60	<b>X.</b> Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed, slopped over banks.	More than 0.60g
	<b>XI.</b> Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	
	<b>XII.</b> Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown into the air.	

Source: *Earthquakes - Newly Revised and Expanded*, Bruce A. Bolt, Appendix C - Abridged Modified Mercalli Intensity Scale, W.H. Freeman and Co., 1993.

**Exhibit GG:**

**Approximate Earthquake Magnitude and Distances (km) for a Mercalli Scale Intensity Value VII within San Rafael Planning Area.**

<b>Soil Type</b>	<b>Moment Magnitude</b>			
	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Soft Soil	< 30 km	< 65 km	< 180 km	< 500 km
Firm Soil / Rock	< 10 km	< 20 km	< 40 km	< 70 km

Source: Miller Pacific Engineering Group.





# Appendix F

## GEOTECHNICAL REVIEW

### GEOTECHNICAL REVIEW INTRODUCTION

Geotechnical review is an important part of City project review. Applications for master plan zoning, subdivision, use permit/grading permit, design review, or conditional certificates of compliance require geotechnical studies. If the site is rated 3 or 4 (most hazardous) on the General Plan Geoseismic or Slope Stability Maps, a Geotechnical Investigation Report will be required for projects to be deemed complete. If the site is rated 1 or 2, a preliminary Geologic Report will be required. A Geotechnical Investigation may also be required on a more stable site if the use is a defined "critical use" or if the site is downslope of possible debris flow avalanche areas.

Additionally, for use permits, subdivisions except lot line adjustments, design review permits and master plan zonings located on artificial fill or on land which has been used by businesses, the preliminary Geotechnical Report would include a preliminary hazardous materials evaluation. If the preliminary evaluation identifies evidence of hazardous materials, a Hazardous Waste Investigation Report will be required.

The contents of the Preliminary Geologic Report, the Geotechnical Investigation Report and Hazardous Waste Investigation Report are identified in the attached Geotechnical Review Matrix.

### GEOTECHNICAL REVIEW MATRIX CONTENTS

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## EXPLANATION OF GEOTECHNICAL REVIEW MATRIX FOR SAN RAFAEL GENERAL PLAN 2000

The Geotechnical Review Matrix (Exhibit 1) summarizes the geotechnical requirements for various types of land use projects during different stages of government processing. The level of investigation for each project is related to public safety and the geologic risks associated with the site. Projects which have the greatest potential impact on public safety and that are proposed on lands with high geologic risk have the strictest requirements.

It is the intent of the matrix to help members of the community to plan and organize for projects presented to the City. It is also intended that the matrix will recognize a standard of practice pursued by geotechnical consultants. The main purpose of the matrix is to require a level of effort that is prudent and economically fair to developers and that adequately reduces the community's risks associated with geologic hazards. Another purpose of the matrix is to reduce the time needed by the City to make decisions by providing a means of objectively reviewing projects.

The governmental approval processes affecting land use projects are listed in the left-hand column of the matrix. The four land use categories listed across the top of the matrix are defined below:

**Critical Use:** Hospitals and related care centers, schools, auditoriums, churches and theaters, fire and police stations, transportation centers and facilities, major utilities, and communication facilities.

**High Occupancy:** Residential (single-family, apartments and PUDs); commercial (office buildings, restaurants and retail stores); and light and heavy manufacturing and assembling.

**Low Occupancy:** Warehouses, storage facilities and distribution centers.

**Parks/Open-Space:** Parks, marinas, and public and private open-space.

The relative slope stability and geo-seismic hazard zones are indicated by the numbers 1, 2, 3 and 4. The relative slope stability zones are based on the slope stability maps of San Rafael and other portions of eastern Marin County prepared by the California Division of Mines and Geology in 1976. The slope stability zones used by the California Division of Mines and Geology are defined as follows:

**Zone 1** - The most stable category. This zone includes resistant rock that is either exposed or is covered only by shallow colluvium or soil. Also included in this zone are broad, relatively level areas along the tops of ridges or in valley bottoms that may be underlain by material that is quite weak (such as Franciscan melange and alluvium) but occupies a relatively stable position.

**Zone 2** - Includes narrow ridge and spur crests that are underlain by relatively competent bedrock, but are flanked by steep, potentially unstable slopes.

**Zone 3** - Areas where the steepness of the slopes approaches the stability limits of the underlying geological materials. Some landslide deposits that appear to have relatively more stable positions than those classified within Zone 4 are also shown here.

**Zone 4** - The least stable category. This includes most landslide deposits in upslope areas, whether presently active or not, and slopes where there is substantial evidence of downslope creep of the surface materials. These areas should be considered naturally unstable, subject to potential failure even in the absence of man's activities and influences. Banks along deeply incised streams are also included in Zone 4.

These judgments are interpretive, and generally apply to large areas. Within each area conditions may range locally in detail through all stability categories. Hence, an area designated 1 may locally contain unmapped landslides, and an area designated 4 may locally contain relatively stable sites." Debris-avalanche landslides move rapidly downslope and may travel thousands of feet crossing over areas zoned 1 through 3 as well as Zone 4 areas. Areas in Zones 1 through 3 that may be affected by such landslides, in the judgment of a Certified Engineering Geologist, shall be downgraded to Zone 4 areas. In general, slope stability zones should be re-evaluated by a Certified Engineering Geologist during site-specific investigations. Based on such investigations, the City may upgrade or downgrade the mapped slope stability in some areas.

The relative geo-seismic hazard zones are based primarily on a rating system that assigns a geo-seismic hazard rating for each of the geologic units in the planning area. The system rates from 1 to 4 the geo-seismic hazard associated with each geologic unit shown on the California Division of Mines and Geology Maps of the San Rafael Vicinity prepared in 1976. Geologic units are defined on the State maps. Geo-seismic hazards include, but are not limited to, landslides, soil creep, expansive soil, seismic shaking, seismically induced ground failure, surface fault rupture, tsunamis, flooding, and high ground water table. Units rated as Zone 1 are the least hazardous. The hazard rating assigned to each geologic unit is derived from the work of the California Division of Mines and Geology. These ratings with some modifications are indicated on the following table:

<b>GEOLOGIC UNIT</b>	<b>GEOSEISMIC HAZARD ZONES</b>
Qaf (Fill) Fill is assumed to be 4. If investigation shows fill to be engineered, the fill will be assigned the number of the underlying geologic unit.	
Landslides	4
Qm (Bay mud)	4
Qa (Alluvium)	2
Qc (Colluvium)	Slope stability 1 or 2 = 2 Slope stability 3 or 4 = 4
Tv (Volcanic Rocks)	1
Ks (Arkosic Sandstone and Shale)	1
Kjs (Graywacke Sandstone and Shale)	1
Kjch (Chert)	1
Kjg (Basaltic Volcanic Rocks)	1
Kjsch (Metamorphic Rocks)	Slope Stability 1 or 2 = 2 Slope Stability 3 or 4 = 4
Fm (Franciscan Melange)	3
Fm (Creeping)	4

The capital letters A through D in each geologic risk zone column of the Matrix indicate the levels of report required for a particular land use project in a specific risk zone at a particular stage of governmental process.

## REPORT DOCUMENTATION GUIDELINES

This section provides guidelines for the content of various geotechnical reports submitted to the city at different stages of project review. The content of each level of report should include, but may not be limited to the items listed below. Since different physical conditions demand differing reports, the content indicated for each report should be flexible. The city, however, may not accept reports that omit content guidelines without the City's prior approval. Geologic reports shall be prepared by a Certified Engineering Geologist (CEG) and soil engineering reports shall be prepared by a Registered Geotechnical Engineer (RGE). When reports require input from both disciplines, the reports shall be jointly prepared by a CEG and a RGE. It is the City's policy to evaluate not only the development site and its effect on adjacent properties, but also adjacent properties that may affect the site.

### A. PRELIMINARY GEOLOGIC REPORT

This report is intended as an overview of site conditions. Its purpose is to identify obvious geologic hazards and geotechnical problems and considerations, and to provide a preliminary assessment of the suitability of the site for the project. The level of effort may vary depending on the site conditions.

The study should include:

1. A review of the site history and previous geologic/soils maps, literature and reports.
2. Consultation with prior geotechnical investigators as judged necessary.
3. Interpretation of stereopaired aerial photographs as conditions warrant.
4. A field reconnaissance of the site and vicinity.
5. Subsurface exploration if judged necessary to assess unclear geologic conditions.
6. Review of the engineering aspects of the proposed site including size and type of structures, and magnitude and extent of grading.
7. Review of historical land uses, nature of fill and site characteristics for evidence/potential of hazardous materials. (Refer to General Plan Exhibit 27, Geology and Stability for preliminary mapping of areas of concern).
8. Preparation of a written report which includes the following information:
  - a) A description of the proposed project and its location.
  - b) The general setting of the area being investigated including the location, size, history, topography, drainage and general soil/geologic conditions.
  - c) A detailed geologic map of the site (exceptions are discussed under the heading Geologic Maps in the Report Documentation section).
  - d) A discussion of Geologic hazards.
  - e) The geotechnical feasibility of the proposed project, basic geotechnical problems, and generalized mitigation measures to be considered.
  - f) A discussion of the engineering aspects of the site and proposed project. The discussion should address foundation types for proposed structures, retaining systems, grading considerations, stability of cut slopes and constructed embankments, settlement of the site and adjacent sites due to existing conditions, proposed construction, and proposed surface and subsurface drainage facilities.
  - g) A bibliography of all references used.

## **B. GEOTECHNICAL INVESTIGATION REPORT**

This report stage is intended to define the subsurface conditions, and provide geotechnical conclusions and recommendations for design and construction of the project. The investigation should include the scope of the Level A report as well as the following:

1. Subsurface exploration by test pits or borings. Representative disturbed and undisturbed samples should be taken for laboratory testing. Geophysical instrumentation may be used to provide supplemental information.
2. Laboratory testing of representative samples of soil and bedrock.
3. New (or revised) geologic mapping to reflect data obtained from the subsurface investigation.
4. Analysis of field and laboratory test results.
5. An evaluation of soil and geologic conditions and their effect on the proposed project.
6. A settlement analysis if the site is underlain by Bay Mud or other compressible soils; including assessment of site grades and settlement to account for 30-year elevation of +6 feet MSL or other criteria as determined by the City.
7. An evaluation of soils for liquefaction potential.
8. A site-specific assessment of seismic ground motion for critical use and high hazard zones, particularly Bay Mud sites.
9. A slope stability analysis for embankments constructed on Bay Mud, and for excavation in Bay Mud. A slope stability analysis may also be needed where unretained slopes steeper than 2:1 in soil or 1-1/2:1 in rock are planned or present.
10. Preparation of a written geotechnical investigation report which includes the following information:
  - a) A description of the subsurface conditions encountered.
  - b) Logs of subsurface explorations and laboratory test results.
  - c) A revised geologic map (needed only if geologic conditions differ from the original map).
  - d) Subsurface cross-sections, when appropriate.
  - e) A discussion of potential geologic hazards and recommended mitigation measures.
  - f) Geotechnical recommendations for design and construction of the project which include the following information when appropriate:
    - i. foundation support of structures.
    - ii. lateral pressures for retaining structures.
    - iii. estimated settlement behavior including performance of structures, estimated final grades to achieve 30-year settlement elevations; and discussion of settlement on gravity flow utilities and subsurface drainage.
    - iv. site grading including criteria for cut slopes and embankments on soft soils
    - v. site dynamic response spectra.
    - vi. pavement design criteria.
    - vii. erosion control and winterization measures.
  - g) Items recommended to be observed by geotechnical consultant during construction.

Prior to issuance of a building permit and start of construction, the geotechnical consultant should review the construction plans and submit a letter indicating conformance of the plans with the intent of the geotechnical report recommendations. Plan changes may be recommended before plans are approved and a construction permit is issued. Report and plan reviews are performed at the applicants expense.

### **C. CONSTRUCTION OBSERVATION REPORT**

This report documents the geotechnical field observation and testing during construction. Interim or periodic progress reports may be required on larger projects. The report should include:

1. A description of the grading, foundation excavations, subsurface drainage, and hazard mitigation measures performed.
2. A summary of items observed and tested.
3. Unanticipated conditions encountered during grading or construction, and any field changes implemented that differ from the approved grading and construction plans.
4. A statement regarding the conformance or nonconformance of construction to the geotechnical recommendations, and any items not observed or tested during construction.

### **D. GEOTECHNICAL REVIEW**

Prior to acceptance, geotechnical reports are subject to review by the City of San Rafael Geotechnical Review Consultant. The reports are only reviewed for conformance with the geotechnical requirements of the general plan and this document. Additional work, including exploration, testing, and analysis may be recommended if judged necessary by the reviewer. The geotechnical review will usually require a response by the geotechnical consultants.

### **E. HAZARDOUS WASTE INVESTIGATION REPORT**

This report shall be submitted for: sites where hazardous contamination is suspected or encountered, and for investigations of existing or proposed waste dumps sites.

Tasks should include the following:

1. Installation of ground water and/or vadose zone monitoring wells.
2. Laboratory analysis of fills, unconsolidated deposits, water samples and/or gas samples for hazardous waste contamination.
3. Periodic monitoring of gases and/or water samples.

4. Preparation of a written report which includes the following as judged necessary by the geotechnical consultant:
  - a) Chemical analysis results of soil ground water, and/or gas samples. (Include values for normal or allowable ranges.)
  - b) Boring logs with a description of subsurface materials.
  - c) Subsurface permeability test results.
  - d) Potentiometric map of ground water in site vicinity.
  - e) A map showing the concentrations, lateral extent, and thickness of the contamination zone if ground contamination exists.
  - f) A discussion about water supplies that may be affected by contaminated sites.
  - g) Recommended mitigation measures for contaminated sites.
  - h) Suitability assessment of existing or proposed waste dump sites.

## **REPORT DOCUMENTATION**

### **Landslide Information**

Landslides are one of the most common and serious geologic hazards that affect the San Rafael area, and therefore, should be given special attention by the geotechnical consultant.

A landslide is defined here as the downslope movement of soil and rock material en masse under the influence of gravity. Where landslides affect a site, the consultant should describe, as a minimum, the landslide geometry, mechanics of movement, amount of movement, age of movement, failure surface, ground water conditions, cause(s) of original movement, change in conditions since the last movement, and the degree of present and anticipated future stability. The landslides to be considered include not only landslides on a site, but landslides on adjacent properties that may affect a site. If it appears that a site is not affected by landslides, the consultant should make such a statement in his report.

The above information should be documented by existing literature and observations that may require detailed topographic and geologic mapping, interpretation of aerial photographs, subsurface exploration, sampling and laboratory testing of soil and bedrock, water table measurements, survey measurements to detect movement, slope stability analysis, and the preparation of subsurface cross-sections.

### **Conclusions and Recommendations**

Since conclusions and recommendations are normally the most important portions of a report, they should be described in a separate section. The section should address the following: (1) the effects of the geologic conditions on the proposed land use (2) the effects of the proposed land use on future geologic processes, and (3) the effects of the geologic conditions and proposed land use on surrounding properties.

## **Geologic Maps**

Geologic maps are required with geologic reports with two exceptions:

1. A geologic map may not be necessary for small parcels if the geologic conditions can be completely described in writing or with the aid of geologic sketches to the satisfaction of the City;
2. If a geologic map was included in a previous report a geologic map may be omitted from supplemental reports if the supplemental information does not change the original mapping of geologic conditions.

The base used for geologic maps should be the most recent and legible site plan submitted to the City, and it should be at a scale that is large enough to show pertinent geologic features. The base map should include but not be limited to a bar scale, a north arrow, the source and date, revision dates, the contour interval, and a legend of the engineering and geologic symbols used. If such information is available, the proposed construction areas and proposed grading indicated by contour lines should also be included on the base map.

The geologic map should be of sufficient detail to accurately depict the geologic conditions affecting the study area. The map should include (as is appropriate) geologic formations or other mappable lithologic units; geologic structures; and surficial features in accordance with generally accepted standards and nomenclature. The map should clearly show the geologic features necessary for a complete and accurate evaluation of the feasibility and design of the proposed development. The map should also include the locations of subsurface explorations and geologic sections, if applicable.

## **Geologic Sections, Subsurface Logs, and Tabulations**

Subsurface explorations such as test borings, test pits, geophysical instrumentation, or ground water monitoring wells are needed to accurately identify subsurface conditions. When subsurface work is performed, the information obtained should be documented in reports by use of graphic logs and descriptions. Graphic representations of the logs may be omitted if the subsurface conditions can be described in writing in sufficient detail to satisfy the City.

To fully understand the soil and geologic relationships of subsurface explorations, it may be necessary to prepare a geologic section (subsurface profile) drawing across the site.

Laboratory test results should be included on logs or presented on a summary table. Where curves are plotted to analyze laboratory test results, the graphic representation of such curves should be presented in the geotechnical report.



## GLOSSARY

bedrock - A general term for the rock, usually solid, that underlies soil or other unconsolidated, superficial material.

boring - A hole made while drilling, such as for oil or soil samples.

compaction - The densification of soil by means of mechanical manipulation.

contour line - A line connecting points of equal value (generally elevation) above or below some reference value such as a datum plane. Contour lines are commonly used to depict topographic or structural shapes.

cross-section - A diagram or drawing that shows geologic features transected by a given vertical plane.

debris avalanche - The very rapid and usually sudden sliding and flowage of incoherent, unsorted mixtures of soil and weathered bedrock.

dynamic response - A site specific assessment of seismic ground motions indicating the nature and severity of motions which can cause shaking of a structure. It is usually performed for critical use facilities and sites with potentially hazardous conditions such as bay mud, loose saturated sands, and sanitary landfill.

earthquake - Groups of elastic waves propagating in the earth, set up by a transient disturbance of the elastic equilibrium of a portion of the earth.

embankment - A linear structure, usually of earth or gravel, constructed so as to extend above the natural ground surface and designed to hold back water from overflowing a level tract of land, to retain water in a reservoir, tailings in a pond, or a stream in its channel, or to carry a roadway or railroad; e.g., a dike, seawall, or fill.

erosion - The wearing away of soil and rock as a result of the movement of wind, water, and/or soil.

expansive soil - A soil usually of clayey character, which changes volume with changes in moisture content. As the moisture of the soil increases, the soil swells or expands, as the moisture content decreases, the soil shrinks.

fault - a fracture in the earth's crust along which there has been displacement.

fill - Man-made deposits of soil and/or waste material.

formation - A persistent body of igneous, sedimentary, or metamorphic rock, having easily recognizable boundaries that can be traced in the field without recourse to detailed paleontologic or petrologic analysis, and large enough to be represented on a geologic map as a practical or convenient unit for mapping and description.

geophysical exploration - An indirect method of determining structure and composition of underground geological formations. The principle involved includes the use of electric, gravity, magnetic, seismic, or thermal instrumentation.

ground failure - A permanent differential ground movement capable of damaging or seriously endangering a structure.

groundwater level - The elevation of the water table or another potentiometric surface at a particular place or in a particular area, as represented by the level of water in wells or other natural or artificial openings or depressions communicating with the zone of saturation.

grading - The removal or placement of earth material by mechanical means during preparation of construction sites.

landslide - The downslope movement of soil and rock material en masse under the influence of gravity.

liquefaction - In cohesionless soil, the transformation from a solid to a liquid state as a result of increased pore pressure and reduced effective stress.

permeability - The property or capacity of a porous rock sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under unequal pressure.

potentiometric surface - An imaginary surface representing the total head of ground water and defined by the level to which water will rise in a well. The water table is a particular potentiometric surface.

seismic shaking - Earthquake shaking.

settlement - The reduction of surface elevation due to the compressibility of underlying soils.

slope - An inclined ground surface, the inclination of which is expressed as a horizontal distance to a vertical distance. A 2:1 slope indicates distances of 2 horizontal to 1 vertical.

slope stability - The resistance of a natural or artificial slope or other inclined surface to failure by landsliding.

stereopaired - An overlapping pair of photographs that, when properly oriented and used with a stereoscope, gives a three-dimensional view of the area of overlap.

test pits or test trenches - subsurface excavations other than borings that are usually large enough for a man to enter for the purpose of visual observation, sampling, and mapping.

tsunami - A gravitational sea wave produced by any large-scale, short duration disturbance of the ocean floor, principally by a shallow submarine earthquake, but also by submarine earth movement, subsidence, or volcanic eruption and may pile up to heights of 30 m or more and cause much damage on entering shallow water along an exposed coast.

vadose zone - A subsurface zone containing water under pressure less than that of the atmosphere, including water held by capillarity; and containing air or gases generally under atmospheric pressure. This zone is limited above by the land surface and below by the surface of the zone of saturation.

unconsolidated material - (a) A sediment that is loosely arranged or unstratified, or whose particles are not cemented together, occurring either at the surface or at depth; (b) soil material that is in a loosely aggregated form.

water table - groundwater level.

**Exhibit HH:  
GEOTECHNICAL REVIEW MATRIX**

	SLOPE STABILITY & GEO-SEISMIC HAZARD ZONES 1, 2, 3 & 4															
	LAND USE CATEGORY (1)															
	CRITICAL				HIGH OCCUPANCY				LOW OCCUPANCY				PARKS/OPEN SPACE			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Rezoning, Master Plan	A	A	B/D	B/D	A	A	B/D	B/D	A	A	A	A	N/A	N/A	N/A	N/A
Subdivision – Tentative Map, Parcel Map, Conditional Certification of Compliance Design Review	B/D	B/D	B/D	B/D	B	B	B/D	B/D	A	A	B/D	B/D	A	A	B/D	B/D
Use Permit, Grading Permit, Building Permit	B/D	B/D	B/D	B/D	B	B	B/D	B/D	B	B	B/D	B/D	A	A	B/D	B/D
Occupancy Permit, Notice of Completion	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

Requirements for the following to be determined on a case-by-case basis, dependent upon the specificity of proposal:

- General Plan Amendment
- Annexation
- Rezoning-General
- Subdivision-Other
- Variance
- Open Space Acceptance
- Pre-Application Feasibility

(1) Land Use Categories

Critical Use: Hospitals and related care centers, schools, auditoriums, churches and theaters, fire and police stations, transportation centers and facilities, major utilities, and communication facilities.

High Occupancy: Residential (single-family, apartments and PUDs); commercial (office buildings, restaurants and retail stores); and light and heavy manufacturing and assembling.

Low Occupancy: Warehouses, storage facilities and distribution centers.

Park/Open Space: Parks, marinas, and public and private open-space.

*Report type*

- A Preliminary Geologic Report
- B Geotechnical Investigation Report
- C Construction Observation Report
- D Geotechnical Review

NOTE: A hazardous waste investigation report (E) shall be submitted for sites where contamination is suspected, and for investigations of existing or proposed waste dumpsites.



# Appendix G

## Existing Traffic Noise Levels (2001)

Road Segment	ADT	Truck %	Speed	L <sub>dn</sub> Contour Distance from Center of Roadway (feet)				
				80	75	70	65	60
<b>HIGHWAY 101</b>								
Sir Francis Drake to 17/580	150,000	2	65	115	247	533	1,148	2,474
to Irwin	184,000	2	65	134	288	621	1,339	2,884
to Mission	135,000	2	65	110	236	509	1,096	2,362
to Lincoln	181,000	2	65	132	284	612	1,318	2,840
to No. San Pedro	188,000	2	65	136	293	631	1,359	2,929
to Freitas	176,000	2	65	130	280	603	1,298	2,797
to Smith Ranch	176,000	2	65	130	280	603	1,298	2,797
to Miller Creek	151,000	2	65	118	255	550	1,184	2,551
to n/o Miller Creek	151,000	2	65	118	255	550	1,184	2,551
<b>HIGHWAY 17/580</b>								
Sir Francis Drake to Bellam	40,000	4	65	52	113	244	525	1,131
to Highway 101	52,000	4	65	62	134	288	621	1,339
<b>ANDERSEN DRIVE</b>								
s/o Bellam	10,122	10.1	36	--	--	46	100	215
n/o Bellam	12,602	6.0	39	--	--	46	99	213
<b>W. FRANCISCO</b>								
	13,512	4.0	39	--	--	42	90	193
<b>WOODLAND AVENUE</b>								
Bellam to B Street	9,000	7.4	30	--	--	--	80	173
<b>D STREET</b>								
City Limits to 1st Street	13,791	1.0	36	--	--	--	59	126
to end	9,546	1.0	36	--	--	--	46	99
1ST	5,751	1.0	36	--	--	--	--	70

Road Segment	ADT	Truck %	Speed	L <sub>dn</sub> Contour Distance from Center of Roadway (feet)				
				80	75	70	65	60
<i>C STREET</i> s/o Third	4,862	1.0	36	--	--	--	--	63
<i>LINCOLN</i> Irwin to 2nd	7,207	7.0	31	--	--	--	69	148
to Mission	13,880	4.0	31	--	--	--	81	174
to Linden	19,604	2.0	37	--	--	41	88	190
to Highway 101	23,897	2.0	37	--	--	47	101	217
<i>HETHERTON</i> Highway 101(s) to Mission	15,481	2.0	31	--	--	--	66	141
to Highway 101(n)	25,300	2.0	31	--	--	42	91	196
<i>IRWIN STREET</i> DuBois to Woodland	7,642	9.1	36	--	--	--	78	169
Second to Mission	23,257	2	31	--	--	--	86	186
SECOND Fourth St "Y" to Hetherton	29,752	2.7	30	--	--	51	110	237
to Third	20,061	2.7	30	--	--	--	84	182
<i>THIRD/PT. SAN PEDRO</i> Fourth St. "Y" to Irwin	19,464	2.0	30	--	--	--	74	159
to Jct. W. 2nd	20,870	2.0	30	--	--	--	77	166
<i>FOURTH</i> San Rafael City Limit (w) to Fourth St. "Y"	48,002	3.0	26	--	--	63	136	293
to Irwin	13,477	3.1	26	--	--	--	59	128
to	6,778	3.0	26	--	--	--	--	80

Road Segment	ADT	Truck %	Speed	L <sub>dn</sub> Contour Distance from Center of Roadway (feet)				
				80	75	70	65	60
End								
<b><i>FIFTH</i></b>								
California								
to	4,900	1.0	28	--	--	--	--	47
H								
to	11,097	1.0	28	--	--	--	--	80
Irwin								
to	5,700	1.0	28	--	--	--	--	52
end								
<b><i>MISSION</i></b>								
Court								
to	13,211	1.0	33	--	--	--	52	112
101 on-ramp								
to	9,472	1.0	30	--	--	--	--	80
Mary								
<b><i>B STREET</i></b>								
Woodland								
to	11,000	6.0	30	--	--	--	82	177
Second								
to	4,112	2.0	25	--	--	--	--	46
Mission								
<b><i>GRAND</i></b>								
Francisco								
to	17,644	1.0	25	--	--	--	44	94
Third								
to	9,257	1.0	25	--	--	--	--	61
Mission								
to	7,832	1.0	34	--	--	--	--	83
Mt. View								
to	3,800	1.0	34	--	--	--	--	51
Villa								
<b><i>POINT SAN PEDRO</i></b>								
Jct. W. 2nd Street								
to	21,826	10.0	33	--	--	82	177	382
Marina								
to	17,872	10.0	41	--	--	76	164	353
Manderly								
to	13,106	10.0	36	--	--	55	118	254
Knight								
to	6,000	12.0	36	--	--	--	77	165
Riviera								
to	3,000	15.0	36	--	--	--	54	117
Quarry entrance								
<b><i>NORTH SAN PEDRO</i></b>								
Los Ranchitos								
to	7,914	2.0	31	--	--	--	42	90

Road Segment	ADT	Truck %	Speed	L <sub>dn</sub> Contour Distance from Center of Roadway (feet)				
				80	75	70	65	60
Merrydale to Civic Center	27,308	2.0	31	--	--	45	96	207
to Meadow	14,000	1.0	35	--	--	--	57	122
to East of Meadow	8,000	1.0	40	--	--	--	48	104
<b><i>MERRYDALE</i></b>								
N. San Pedro to 101 on-ramps	18,029	2.0	25	--	--	--	57	122
<b><i>CIVIC CENTER DRIVE</i></b>								
N. San Pedro to Freitas	10,768	1.0	41	--	--	--	62	133
<b><i>REDWOOD HIGHWAY</i></b>								
<b><i>LOS RANCHITOS</i></b>								
Highway 101(s) to N. San Pedro	9,377	1.0	35	--	--	--	43	93
to Northgate(s)	9,292	2.0	35	--	--	--	49	107
<b><i>MANUEL FREITAS</i></b>								
Montecillo to Las Pavadas	5,000	1.0	40	--	--	--	--	76
to Las Gallinas	14,425	4.0	40	--	--	45	97	208
to Civic Center	19,316	4.0	40	--	--	54	117	253
<b><i>LAS GALLINAS</i></b>								
Northgate to Freitas	9,940	2.0	38	--	--	--	58	125
to Lucas Valley	10,068	1.0	38	--	--	--	52	112
to Miller Creek	7,038	1.0	38	--	--	--	41	88
<b><i>LUCAS VALLEY</i></b>								
Mt. McKinley to Miller Creek	7,739	2.0	45	--	--	--	64	137
to Las Gallinas	11,000	2.0	40	--	--	--	67	145



Road Segment	ADT	Truck %	Speed	L <sub>dn</sub> Contour Distance from Center of Roadway (feet)				
				80	75	70	65	60
to Highway 101	18,846	2.0	40	--	--	45	96	207
<b>SMITH RANCH ROAD</b>	11,398	4.0	45	--	--	45	96	207
<b>MILLER CREEK</b>								
Las Gallinas to Highway 101	7,000	2.0	38	--	--	--	46	99
CANAL	6,241	1.0	31	--	--	--	--	63
MEDWAY	8,414	4.0	31	--	--	--	58	125
<b>BELLAM</b>								
e/o Kerner to Kerner	8,276	2.0	34	--	--	--	47	101
to Highway 580	28,456	6.3	34	--	--	78	168	363
to Anderson	24,314	7.1	34	--	--	75	161	346
<b>KERNER</b>								
Irene to Bellam	6,265	5.7	34	--	--	--	59	126
to Larkspur	10,002	2.0	30	--	--	--	47	102
to Canal	8,682	1.0	30	--	--	--	--	75
<b>E. FRANCISCO</b>								
s/o Bellam	10,173	13.0	39	--	--	57	122	263
n/o Bellam	17,897	6.0	31	--	--	54	116	251

# Appendix H

## Future Traffic Noise Levels (2020)

Road Segment	Increase in L <sub>dn</sub> with Project (dB)	L <sub>dn</sub> Contour Distance from Center of Roadway Future Condition with Project (feet)				
		80	75	70	65	60
<b>HIGHWAY 101</b>						
Sir Francis Drake to 17/580	0.4	123	265	570	1,229	2,647
to Irwin	0.4	143	309	666	1,434	3,089
to Mission	0.5	118	255	549	1,182	2,548
to Lincoln	0.5	142	307	661	1,425	3,070
to No. San Pedro	0.5	147	318	684	1,474	3,176
to Freitas	0.5	140	301	649	1,399	3,014
to Smith Ranch	0.5	141	303	653	1,407	3,032
to Miller Creek	0.5	128	276	595	1,283	2,764
n/o Miller Creek	0.5	128	276	595	1,283	2,764
<b>HIGHWAY 17/580</b>						
Sir Francis Drake to Bellam	0.5	57	123	264	569	1,226
to Highway 101	0.4	67	143	309	666	1,434
<b>ANDERSEN DRIVE</b>						
s/o Bellam	0.8	--	--	53	113	244
n/o Bellam	0.8	--	--	52	113	243
<b>W. FRANCISCO</b>						
WOODLAND AVENUE Bellam to B Street	1.6	--	--	53	115	248
<b>D STREET</b>						
City Limits to 1st Street	0.3	--	--	--	61	132
to end	0.6	--	--	--	50	109
<b>IST</b>						
Irwin to 2nd	0.1	--	--	--	--	71
<b>C STREET</b>						
s/o Third	0.0	--	--	--	--	63
<b>LINCOLN</b>						
Irwin to 2nd	0.8	--	--	--	77	167

Road Segment	Increase in L <sub>dn</sub> with Project (dB)	L <sub>dn</sub> Contour Distance from Center of Roadway Future Condition with Project (feet)				
		80	75	70	65	60
to Mission	0.5	--	--	40	87	188
to Linden	0.3	--	--	43	92	198
to Highway 101	0.3	--	--	49	106	228
<b><i>HETHERTON</i></b>						
Highway 101(s) to Mission	0.3	--	--	--	69	149
to Highway 101(n)	0.6	--	--	46	100	216
<b><i>IRWIN STREET</i></b>						
DuBois to Woodland	1.1	--	--	43	92	199
Second to Mission	0.4	--	--	43	92	199
<b><i>SECOND</i></b>						
Fourth St "Y" to Hetherton	0.4	--	--	54	117	252
to Third	0.3	--	--	41	89	192
<b><i>THIRD/PT. SAN PEDRO</i></b>						
Fourth St. "Y" to Irwin	0.4	--	--	--	78	169
to Jct. W. 2nd	0.5	--	--	--	84	181
<b><i>FOURTH</i></b>						
San Rafael City Limit (w) to Fourth St. "Y"	0.4	--	--	67	144	311
to Irwin	0.3	--	--	--	62	134
to End	0.8	--	--	--	42	89
<b><i>FIFTH</i></b>						
California to H	0.4	--	--	--	--	49
to Irwin	0.4	--	--	--	--	86
to end	1.7	--	--	--	--	67
<b><i>MISSION</i></b>						
Court to 101 on-ramp	0.6	--	--	--	57	123
to Mary		--	--	--	40	87

Road Segment	Increase in L <sub>dn</sub> with Project (dB)	L <sub>dn</sub> Contour Distance from Center of Roadway Future Condition with Project (feet)				
		80	75	70	65	60
<b><i>B STREET</i></b>						
Woodland to Second	0.6	--	--	42	90	193
to Mission	0.6	--	--	--	--	50
<b><i>GRAND</i></b>						
Francisco to Third	0.7	--	--	--	49	105
to Mission	0.7	--	--	--	--	68
to Mt. View	0.9	--	--	--	44	95
to Villa	1.0	--	--	--	--	59
<b><i>POINT SAN PEDRO</i></b>						
Jct. W. 2nd Street to Marina	0.3	--	40	86	186	401
to Manderly	0.3	--	--	80	172	371
to Knight	0.4	--	--	58	126	271
to Riviera	0.4	--	--	--	82	177
to Quarry entrance	0.4	--	--	--	58	125
<b><i>NORTH SAN PEDRO</i></b>						
Los Ranchitos to Merrydale	0.9	--	--	--	49	105
to Civic Center	0.7	--	--	49	106	229
to Meadow	0.7	--	--	--	63	135
to East of Meadow	0.7	--	--	--	--	--
<b><i>MERRYDALE</i></b>						
N. San Pedro to 101 on-ramps	0.8	--	--	--	64	139
<b><i>CIVIC CENTER DRIVE</i></b>						
N. San Pedro to Freitas	0.8	--	--	--	70	150
<b><i>REDWOOD HIGHWAY</i></b>						
Highway 101(s) to N. San Pedro	0.6	--	--	42	91	197
to Northgate(s)	0.3	--	--	--	46	98
	0.7	--	--	--	55	118

Road Segment	Increase in L <sub>dn</sub> with Project (dB)	L <sub>dn</sub> Contour Distance from Center of Roadway Future Condition with Project (feet)				
		80	75	70	65	60
<b>MANUEL FREITAS</b>						
Montecillo to Las Pavadas	0.5	--	--	--	--	82
Las Pavadas to Las Gallinas	0.5	--	--	48	104	224
Las Gallinas to Civic Center	0.5	--	--	59	126	272
<b>LAS GALLINAS</b>						
Northgate to Freitas	0.1	--	--	--	60	128
Freitas to Lucas Valley	0.1	--	--	--	53	114
Lucas Valley to Miller Creek	0.7	--	--	--	45	97
<b>LUCAS VALLEY</b>						
Mt. McKinley to Miller Creek	0.3	--	--	--	67	144
Miller Creek to Las Gallinas	0.7	--	--	--	74	160
Las Gallinas to Highway 101	1.1	--	--	53	113	244
<b>SMITH RANCH ROAD</b>						
	0.8	--	--	51	109	235
<b>MILLER CREEK</b>						
Las Gallinas to Highway 101	0.6	--	--	--	50	108
<b>MEDWAY</b>						
	0.8	--	--	--	65	141
<b>BELLAM</b>						
e/o Kerner to Kerner	0.1	--	--	--	48	103
Kerner to Highway 580	-0.3	--	--	75	161	348
Highway 580 to Anderson	-0.2	--	--	72	155	335
<b>KERNER</b>						
Irene to Bellam	0.5	--	--	--	63	136
Bellam to Larkspur	0.5	--	--	--	51	110
Larkspur to Canal	0.5	--	--	--	--	81
<b>E. FRANCISCO</b>						
s/o Bellam	0.5	--	--	61	131	282
n/o Bellam	0.6	--	--	59	128	276

Source: Rosen Goldberg & Der, Inc.



# Appendix I

## Potential Open Space Sites

APN	SITUS_FORM	USE_CD_DES	UNITS	ACRES	APN (Prev.)
009-010-22		Commercial - Unimproved	0	55.197	00901022
009-010-24		Commercial - Unimproved	0	20.749	00901024
010-011-49		Single-Resid. - Unimprove	0	2.862	01001149
011-051-32		Single-Resid. - Unimprove	0	8.058	01105123
011-051-33		Single-Resid. - Unimprove	0	7.601	01105123
011-051-34		Single-Resid. - Unimprove	0	6.78	01105123
011-051-35		Single-Resid. - Unimprove	0	3.396	01105123
011-051-36		Single-Resid. - Unimprove	0	1.715	01105136
011-121-10	190 EL CERRITO AVE	Single-Resid. - Improved	1	5.981	01112106
012-031-40		Single-Resid. - Unimprove	0	3.548	01203140
012-081-28		Single-Resid. - Unimprove	0	1.88	01208128
012-121-03		Single-Resid. - Unimprove	0	2.209	01212103
012-272-01	66 UPPER TOYON DR	Single-Resid. - Improved	1	1.427	01227201
012-291-15		Single-Resid. - Unimprove	0	2.21	01229115
013-174-25		Single-Resid. - Unimprove	0	5.673	01317405
013-271-17		Single-Resid. - Unimprove	0	14.237	01327117
013-271-21		Single-Resid. - Unimprove	0	14.983	01327121
015-250-34		Single-Resid. - Unimprove	0	2.603	01525034
018-180-64		Tax Exempt	0	3.406	01318000
018-180-73		Commercial - Unimproved	0	4.678	01318000
018-180-76		Commercial - Unimproved	0	51.645	01318000
165-220-06		Single-Resid. - Unimprove	0	2.484	16522006
165-220-07		Single-Resid. - Unimprove	0	8.8	16522007
185-010-15	100 LOCKWOOD DR	Single-Resid. - Improved	1	3.991	18501015
185-010-16	75 LOCKWOOD DR	Single-Resid. - Improved	1	1.241	18501016
185-010-17	20 FRIAR TUCK LN	Single-Resid. - Improved	1	2.356	18501017

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