APPENDIX B

Traffic Report

TRAFFIC IMPACT ANALYSIS

FOR

HIDDEN FALLS REGIONAL PARK ADDITION

Placer County, California

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Hidden Falls Park 4.23.08.rpt

TRAFFIC IMPACT ANALYSIS FOR
HIDDEN FALLS REGIONAL PARK ADDITION
Placer County, CA

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April 23, 2008

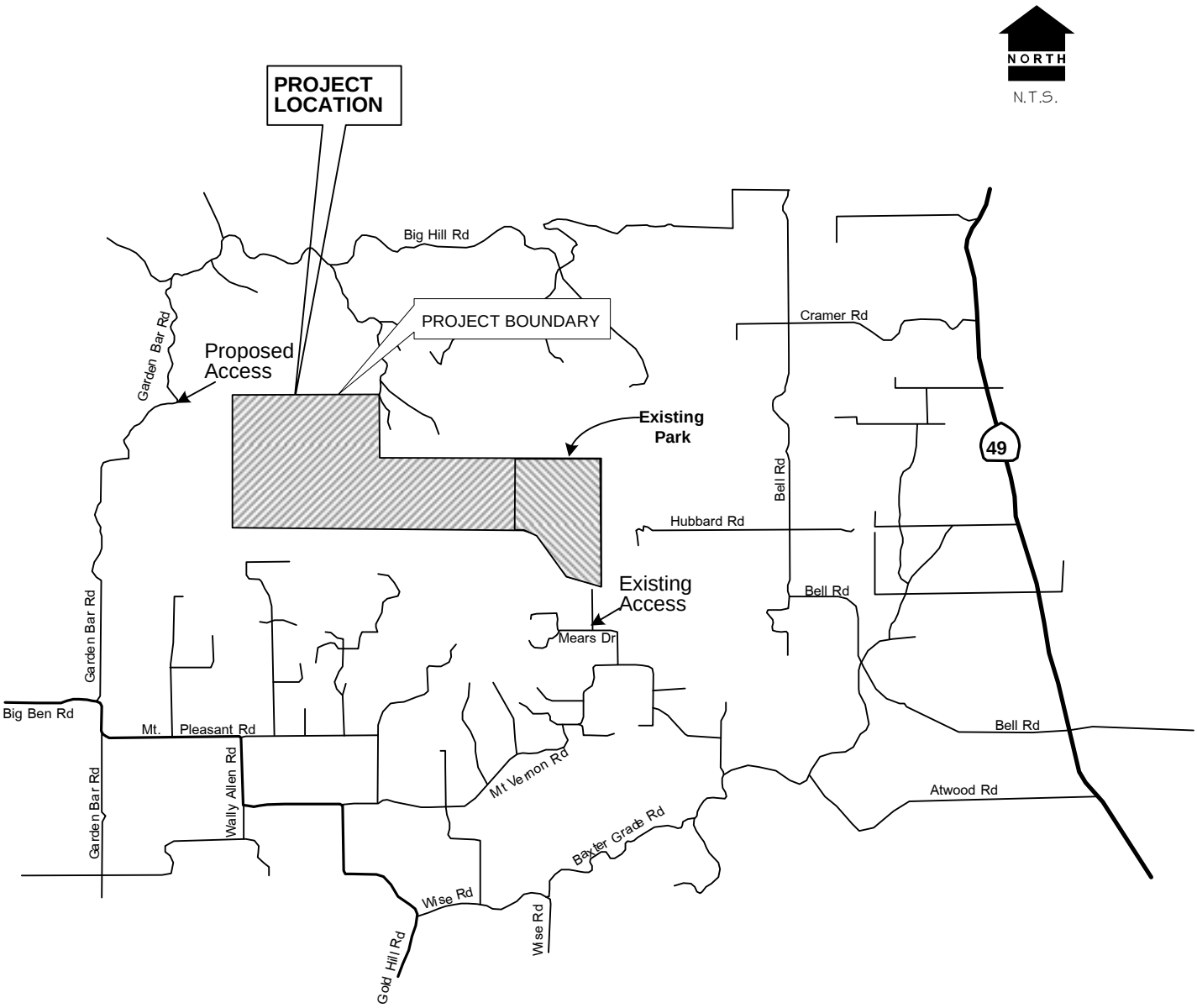
TRAFFIC IMPACT ANALYSIS FOR
HIDDEN FALLS REGIONAL PARK ADDITION

INTRODUCTION

This report documents **KD Anderson & Associates'** assessment of traffic impacts associated with development of the **Hidden Falls Regional Park Addition** project in Placer County. This analysis is intended to quantify the traffic impacts of the project and address circulation and access in the vicinity of the project site within the context of both current and future background conditions.

Project Description

The Hidden Falls Regional Park Addition project proposes development of an 979 acre site to be added to the County's existing park west of the City of Auburn. The current park facilities are located off of Mears Drive in the area north of Mount Vernon Road. The park addition is generally located to the west between the existing facilities and Garden Bar Road, as shown in Figure 1. While the facilities in the project can be accessed via the roadways already serving the existing site, a new access to the project site will be created onto Garden Bar Road. The proposed project includes phased implementation of improvements to Garden Bar Road to support use of that road by the public. Regional access to the project will be via rural Placer County roads such as Mt Pleasant Road, Garden Bar Road and Mt Vernon Road, which link the site with SR 193 to the south and SR 49 to the east.



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VICINITY MAP

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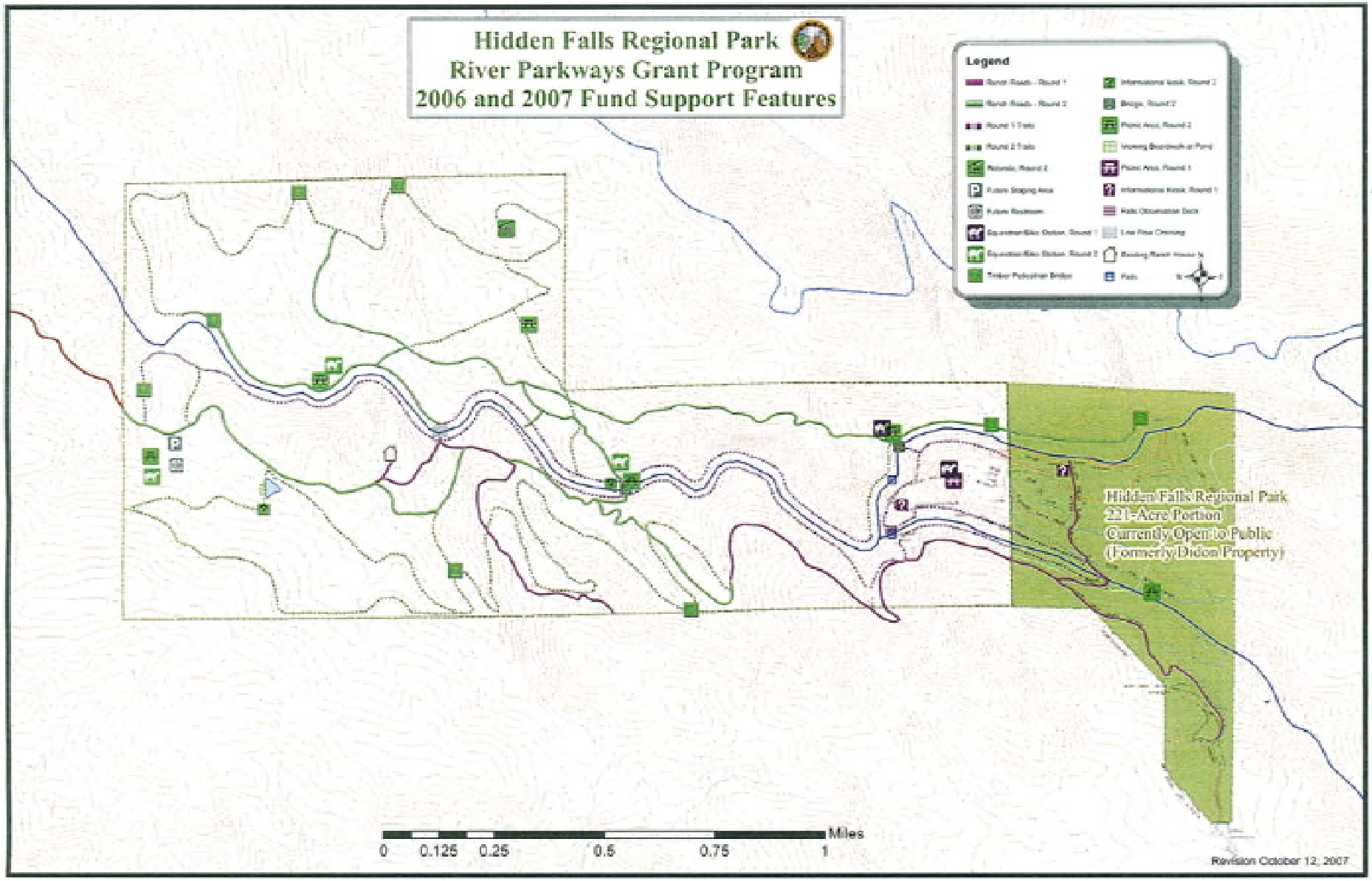
figure 1



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SITE PLAN

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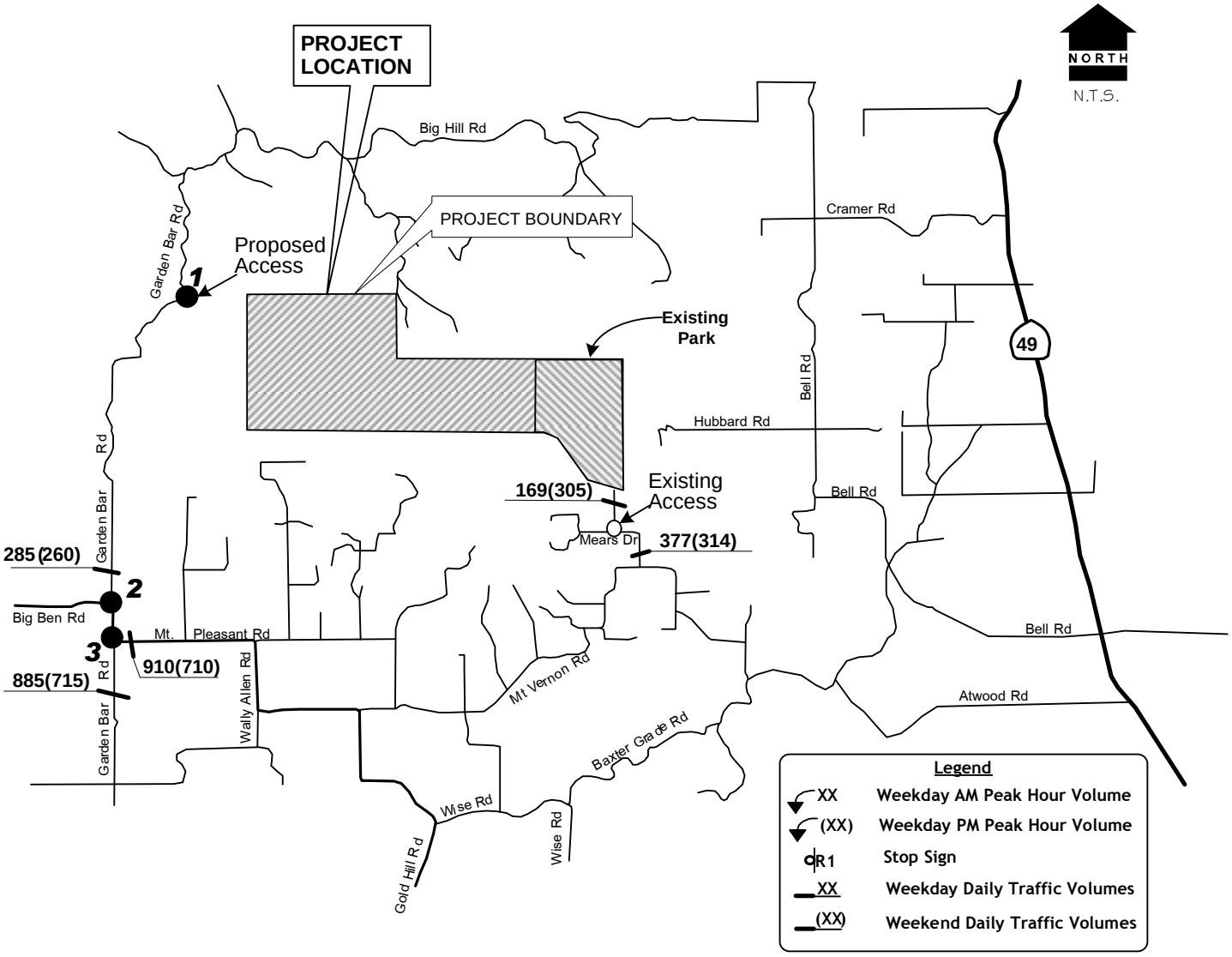
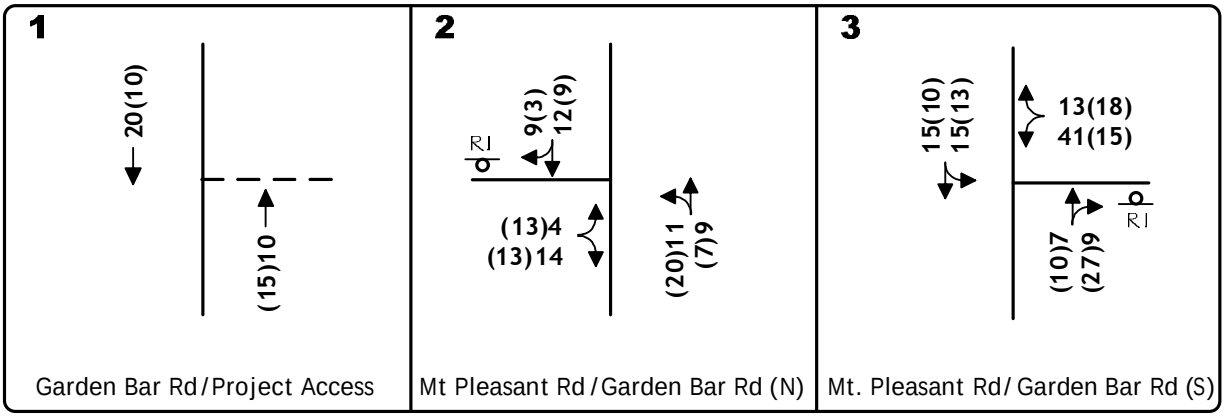
figure 2





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EXISTING TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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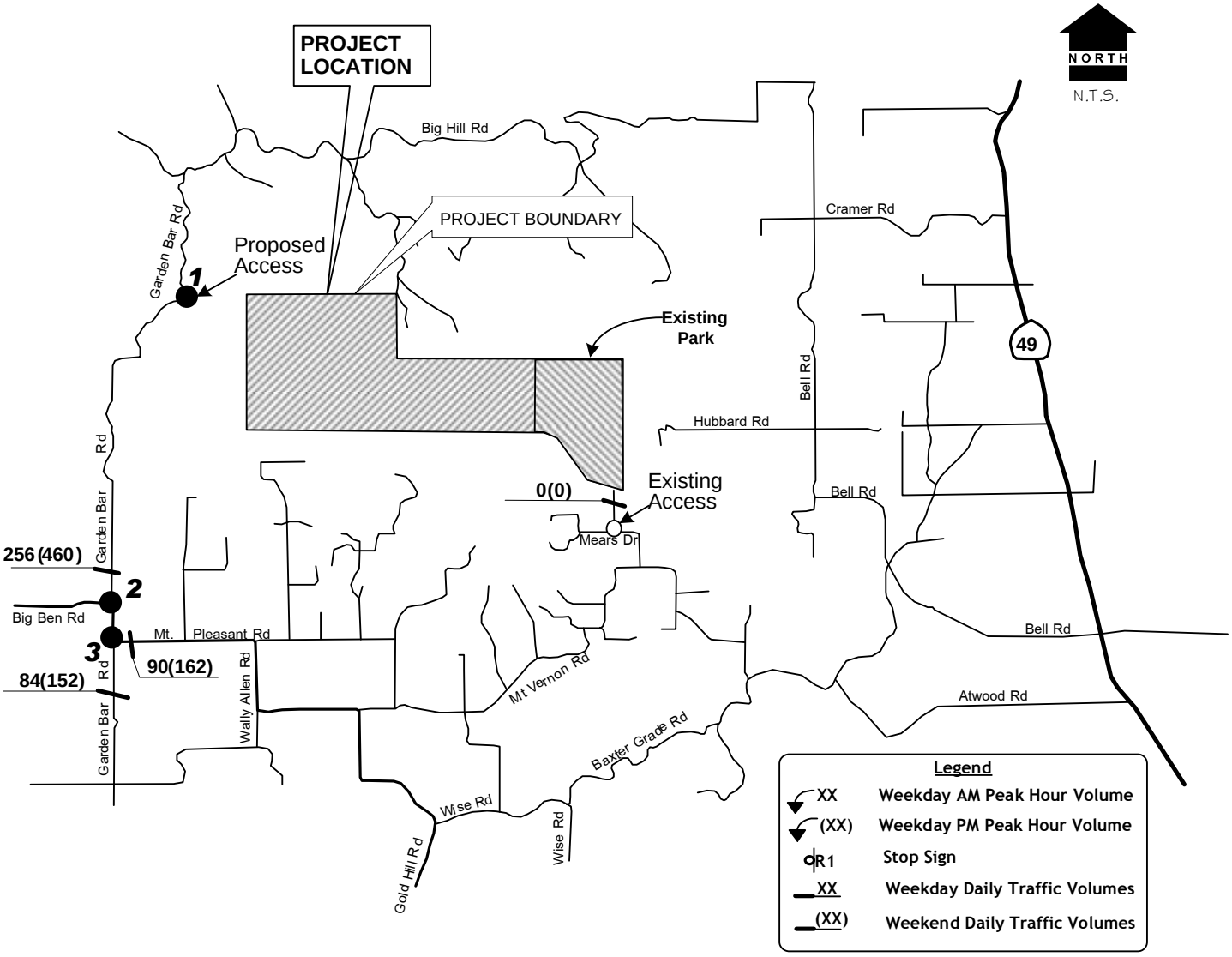
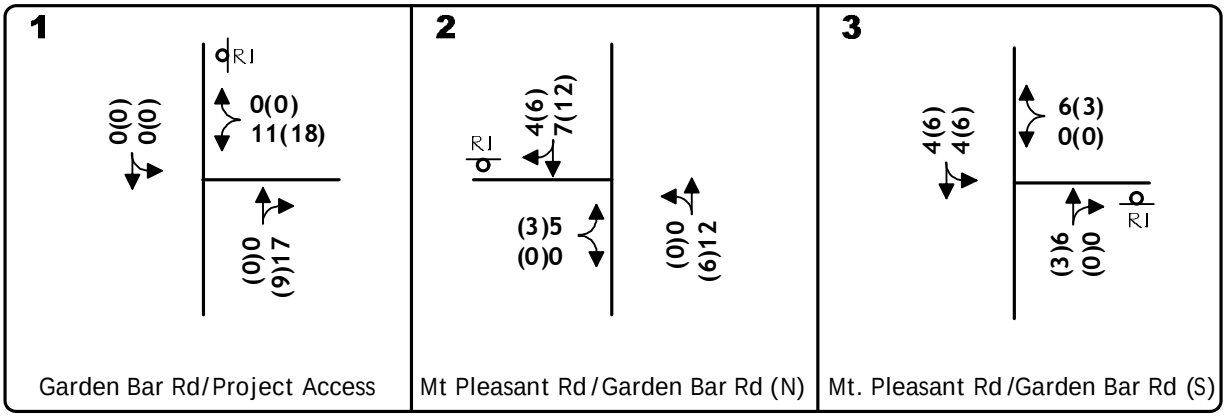
figure 3





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PROJECT ONLY TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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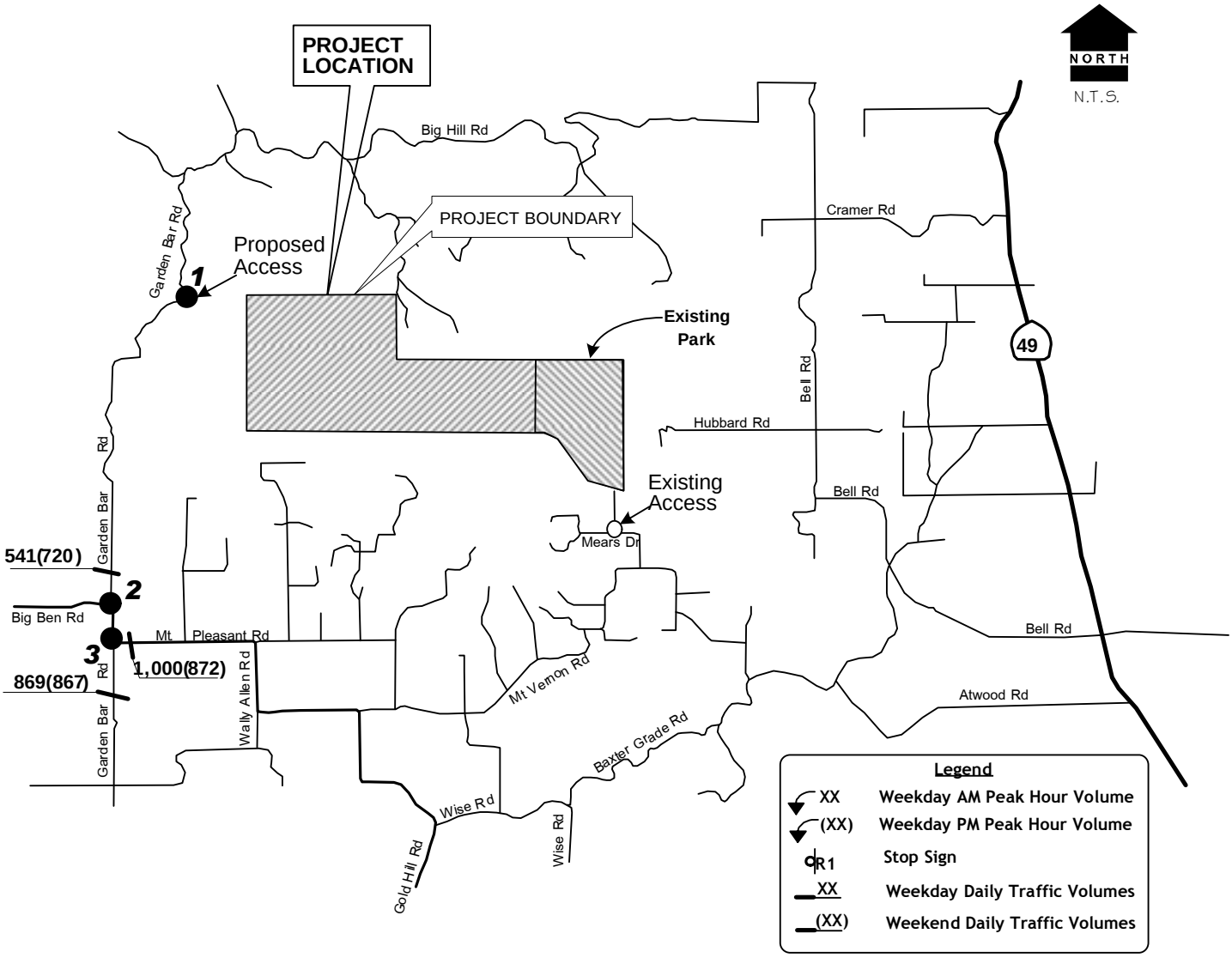
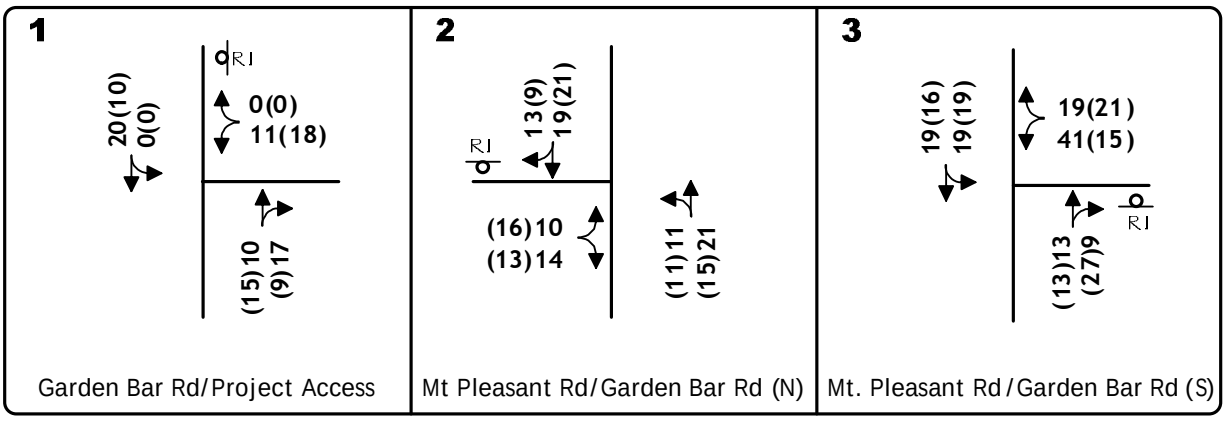
figure 4





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EXISTING PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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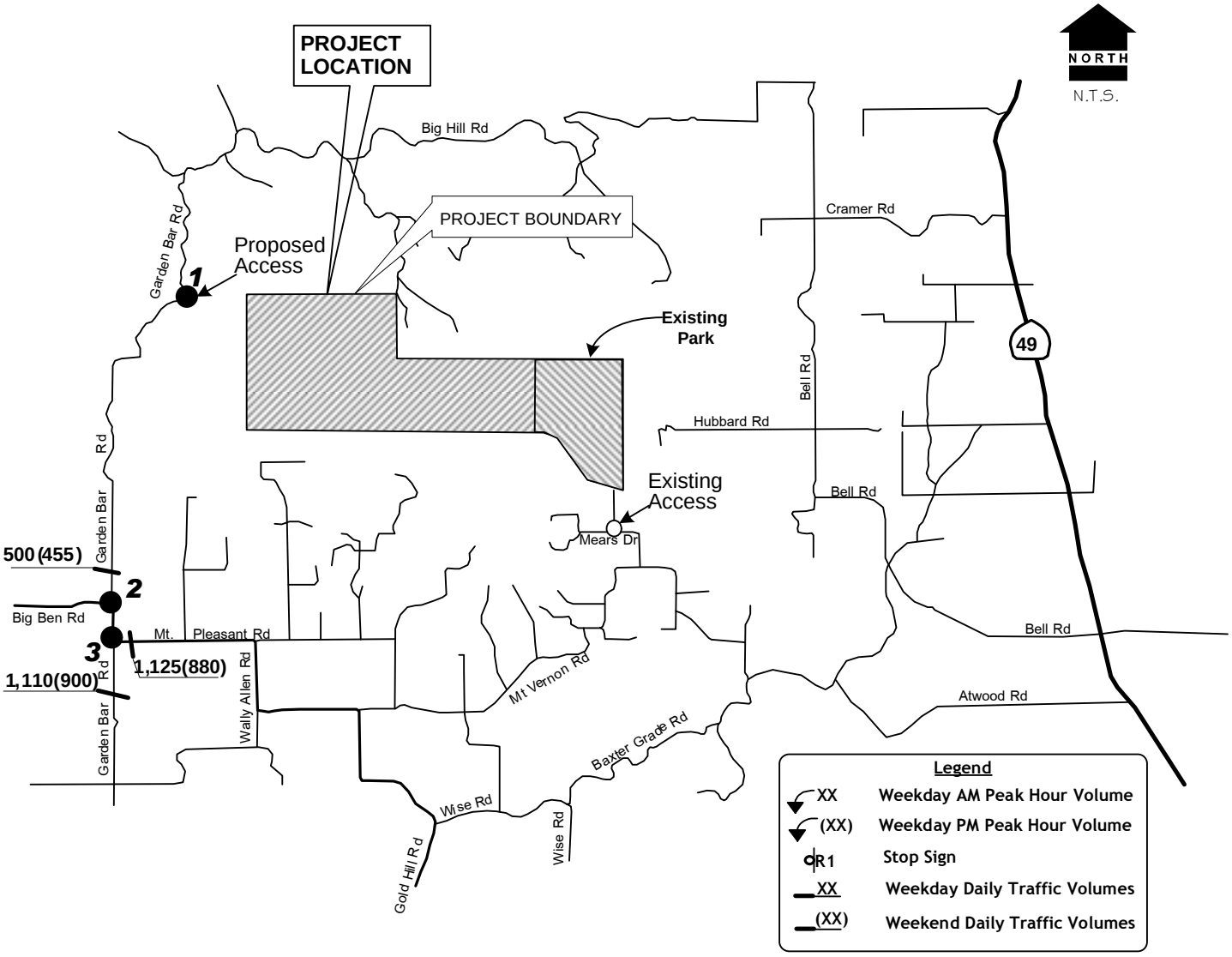
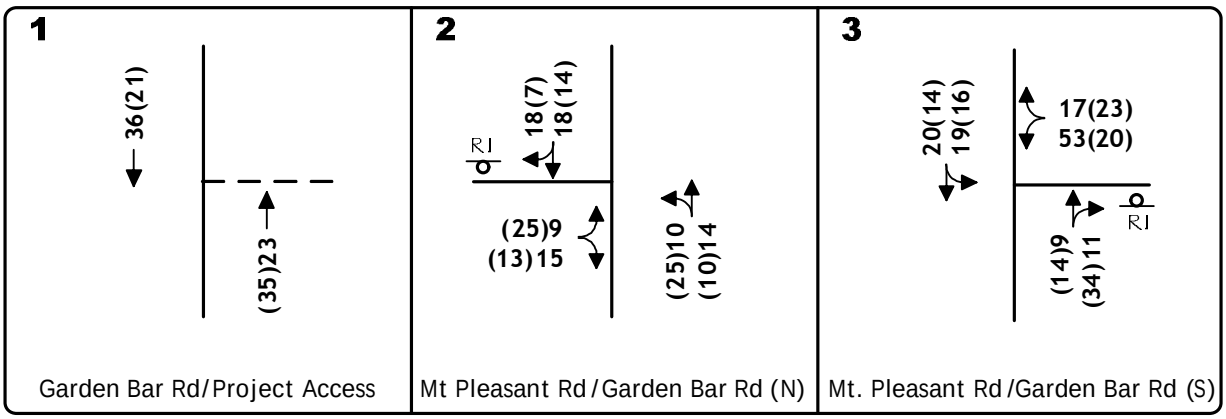
figure 5





YEAR 2027 NO PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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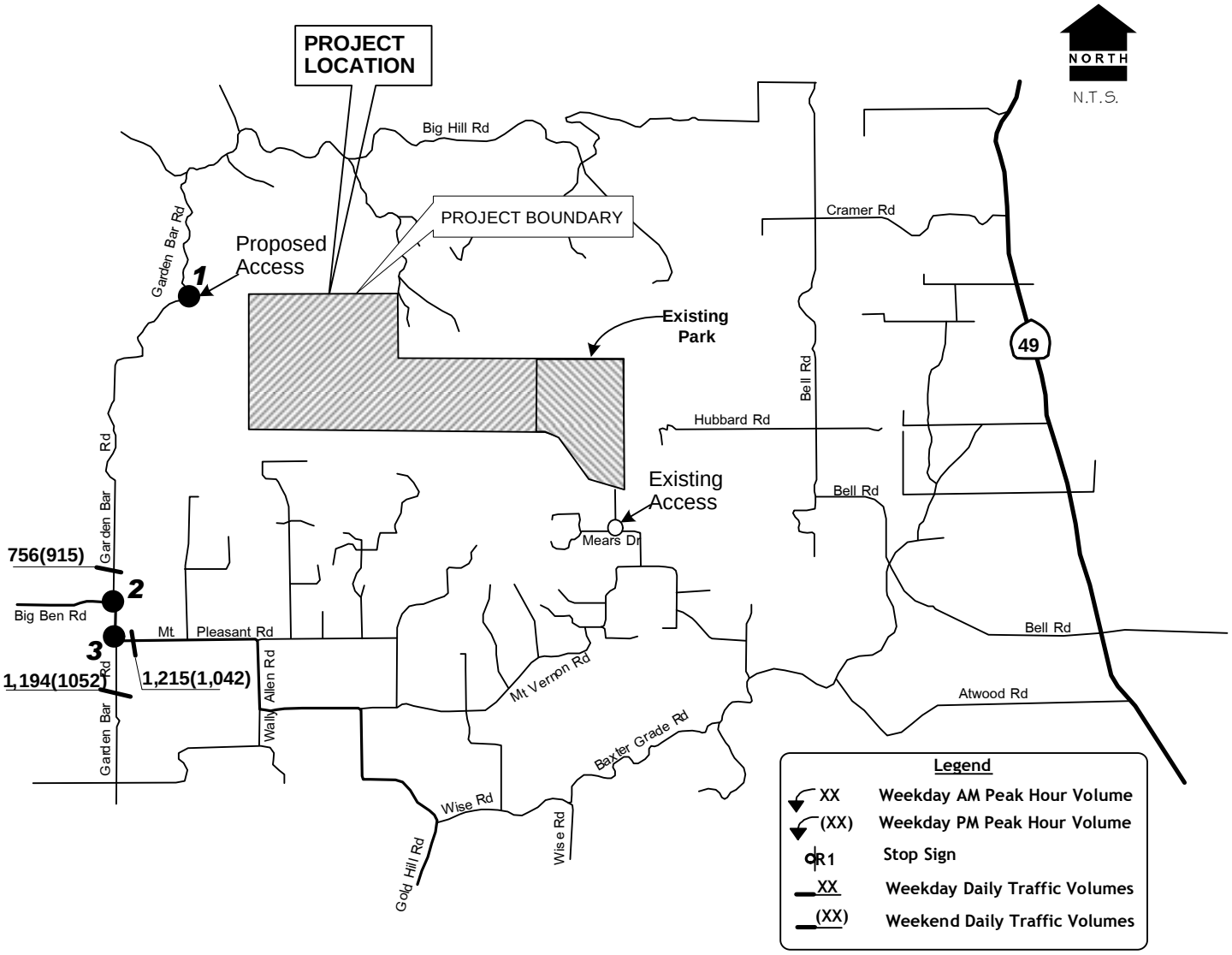
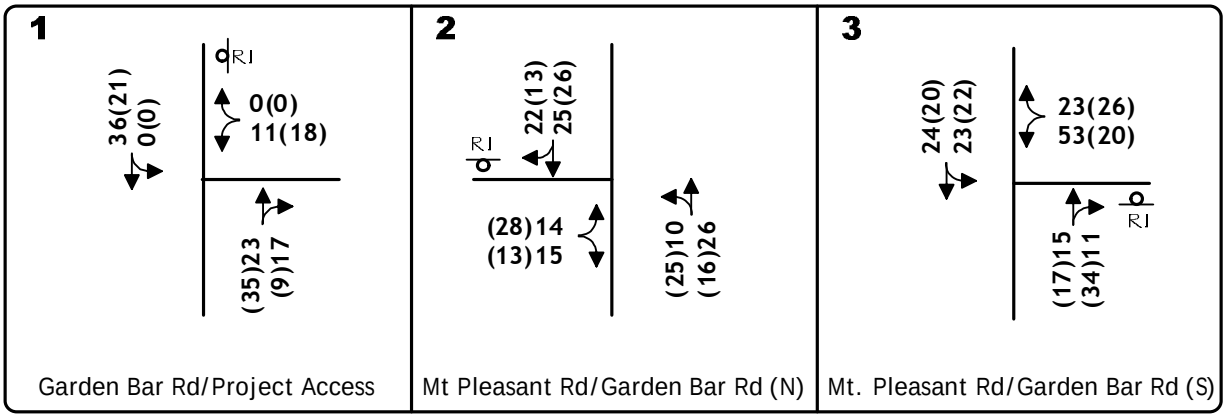
figure 6





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YEAR 2027 PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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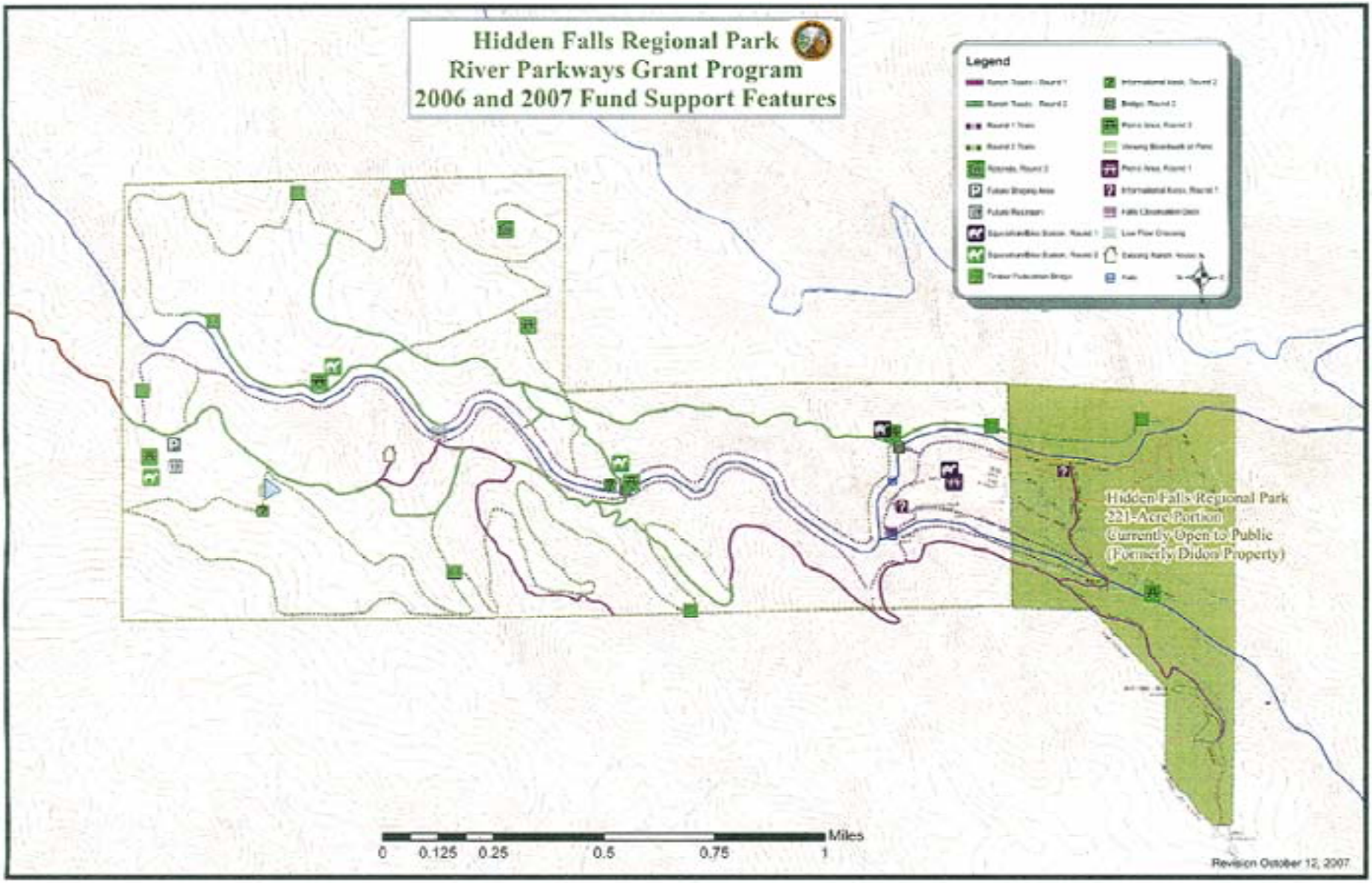
figure 7



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SITE PLAN

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figure 2

EXISTING SETTING

Regionally, the project site is served primarily by a series of rural Placer County roads which link the park with Lincoln to the west, Loomis and the Penryn – Horseshoe Bar area to the south and the Auburn area to the east. Regional roads such as Mt Pleasant Road, Garden Bar Road and Mt Vernon Road, Big Ben Road, Wise Road, Riosa Road, McCourtney Road, Fowler Road, Fruitvale Road, and Gold Hill Road will link the site with SR 65 to the west, SR 193 to the south and SR 49 to the east. Locally, the traffic using the site will use Mt Vernon Road and Mears Drive to reach the existing parking facilities that serve the existing portion of the park. The new park access off of Garden Bar Road can be reached via Mt Pleasant Road and Garden Bar Road.

Study Area Circulation System - Roads

Classification. Under the Placer County General Plan the roads in the study area range in functional class from Rural Arterials to Rural Collectors to local roads.

Rural Arterials

Wise Road from Mt Vernon Road to SR 65
McCourtney Road from the Lincoln city limits to Camp Far West Road

Rural Collectors

Fruitvale Road from McCourtney Road to Hungry Hollow Road
Mt Vernon Road from Joerger Road to Wise Road
Riosa Road from the Sutter County line to McCourtney Road
Fowler Road from SR 193 to Fruitvale Road

Local Roads

Mt Pleasant Road
Mears Drive
Garden Bar Road
Big Ben Road

Mt Pleasant Road is a local east-west road that extends for approximately three miles linking Big Ben Road and Mt Vernon Road. The alignment Mt Pleasant Road follows the rolling terrain of the foothills west of Auburn. The road itself is 20 to 22 feet wide with graveled shoulders of varying width. Placer County's adopted design standard for Mt Pleasant Road calls for 32 feet of pavement (traveled way and shoulders) within a 60 foot right of way with a design speed of 35 mph.

Mt Vernon Road is a Rural Collector road that extends easterly from an intersection on Wise Road for about 7 miles into the City of Auburn. Placer County's design standard for Mt.Vernon Road from Wise Road to Joerger Road calls for 32 feet of pavement (traveled way and shoulders) within a 60 foot right of way with a design speed of 35 mph.

Mears Drive is a local street that connects the existing portion of Hidden Falls Park with Mt. Vernon Road. This two lane road features 20 feet of pavement and limited shoulders. Placer County's adopted design standard for Mears Drive north of Mt Vernon Road calls for 32 feet of pavement (traveled way and shoulders) within a 60 foot right of way with a design speed of 30 mph.

Garden Bar Road is a local road that extends north from an intersection on Fruitvale Road across Mt Pleasant Road along the west side of the proposed project and for approximately three miles to the Nevada County line. The alignment and width of Garden Bar Road varies greatly along its length. In the area of the proposed project the road varies from approximately 15 to 20 feet in width. Shoulders are most often non-existent and horizontal curves with radii as short as 80 feet exist at various locations. Placer County's adopted design standard for Garden Bar Road for 32 feet of pavement (traveled way and shoulders) within a 60 foot right of way with a design speed of 35 mph.

Study Area Circulation System - Intersections

The quality of traffic flow is often governed by the operation of key intersections. The following intersections have been identified for evaluation in this study in consultation with Placer County staff.

The **Garden Bar Road (North) / Mt. Pleasant Road** intersection is a "tee" intersection controlled by a stop sign on the southbound Garden Bar Road approach. The intersection is located on a horizontal curve along Mt Pleasant Road. There are no turn lanes on Mt Pleasant Road at the northern Garden Bar Road intersection.

The **Garden Bar Road (South) / Mt Pleasant Road** intersection is a "tee" intersection controlled by a stop sign on the northbound Garden Bar Road approach. The intersection is located on a horizontal curve along Mt Pleasant Road. There are no turn lanes on Mt Pleasant Road at the southern Garden Bar Road intersection.

Standards of Significance: Levels of Service - Methodology

To assess the quality of existing traffic conditions and provide a basis for analyzing project impacts, Levels of Service were calculated at study area intersections and project driveways. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment.

The Placer County General Plan governs development in this area of Placer County, and the Community Plan includes Level of Service goals. Policies 3.A.1. thru 3.A.16 under General Plan Goal 3.A are applicable.

According to the General Plan, the minimum level of service (LOS) on rural roadways and at intersections shall be shall be Level of Service C.

Table 1 presents general characteristics associated with each LOS grade.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Volume / capacity (V/C) < 0.60	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. 0.60 ≤ v/c < 0.70	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. 0.70 ≤ V/C < 0.80	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed.).80 ≤ V.C < 0.90	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). 0.90 ≤ V/C < 1.00	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. V/C > 1.00	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.			

Methodology for LOS at Unsignalized Intersections. At unsignalized intersections the number of gaps in through traffic, gap acceptance time and corresponding delays for motorists waiting to turn are used for Level of Service analysis. Procedures used for calculating unsignalized intersection Level of Service are as presented the *Highway Capacity Manual, 2000 edition.*

Daily Traffic Volumes

The quality of traffic flow on Placer County roads can also be determined based on the daily traffic volumes and generalized Level of Service thresholds. The Placer County General Plan EIR presents generalized "planning level" daily volume thresholds that can be used to identify operating Levels of Service on streets and highways. These thresholds are re-printed in Table 2.

General Plan threshold do not specifically account for the condition of roads in terms of width and the availability of shoulders. For this analysis is has been assumed that in areas of Rolling and Mountainous terrain Level of Service thresholds could be influenced by these factors. To determine

applicable adjustments, LOS threshold tables employed by other counties were reviewed. The most applicable data is available from the Tuolumne County Transportation Commission (TCTC), and the thresholds employed by that agency specifically address the width of less than standard roads. Applying the adjustments made by TCTC, roads that are 18' wide would have thresholds that were 80% of standard, while the thresholds on roads with pavement width less than 18' would be 66% of standard. The effects of these adjustments are also noted in Table 2.

TABLE 2
EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE

Roadway Capacity Class	Maximum Daily Traffic Volume Per Lane Level of Service				
	A	**B**	**C**	**D**	**E**
1. Freeway – Level Terrain	6,300	10,620	13,680	17,740	18,000
2. Freeway – Rolling terrain	5,290	8,920	11,650	14,070	15,120
3. Freeway – Mountainous Terrain	3,400	5,740	7,490	9,040	9,720
4. Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
5. Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
6. Arterial – Low Access Control	4,500	5,250	6,000	6,870	7,500
7. Rural 2-lane Highway – Level terrain	1,500	2,950	4,800	7,750	12,500
8. Rural 2-lane highway – Rolling terrain	800	2,100	3,800	5,700	10,500
Rural 2-lane - Rolling (≥18' of pavement)	*640*	*1,680*	*3,040*	*4,560*	*8,400*
9. Rural 2-lane highway – Mountainous Terrain	400	1,200	2,100	3,400	7,000
Rural 2 lane road - Mountainous (≥18 ' of pavement)	*320*	*960*	*1,680*	*2,720*	*5,600*
Rural 2 lane road – Mountainous (<18 feet of pavement)	*265*	*795*	*1,390*	*2,250*	*4,635*
Source: Placer County General Plan FEIR and *KDA from TCTC guidelines*					

Existing Traffic Volumes and Intersection Levels of Service

This analysis addresses traffic conditions occurring during peak weekday hours. Peak hour traffic counts were conducted in April 2007 during the morning (i.e., 7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak hours. The highest one-hour volume observed during each two hour period was employed for this analysis. The results of these traffic counts are presented in Figure 3.

Table 3 presents current peak hour Level of Service at the study area intersections. As shown, all study intersections currently operate at LOS C or better.

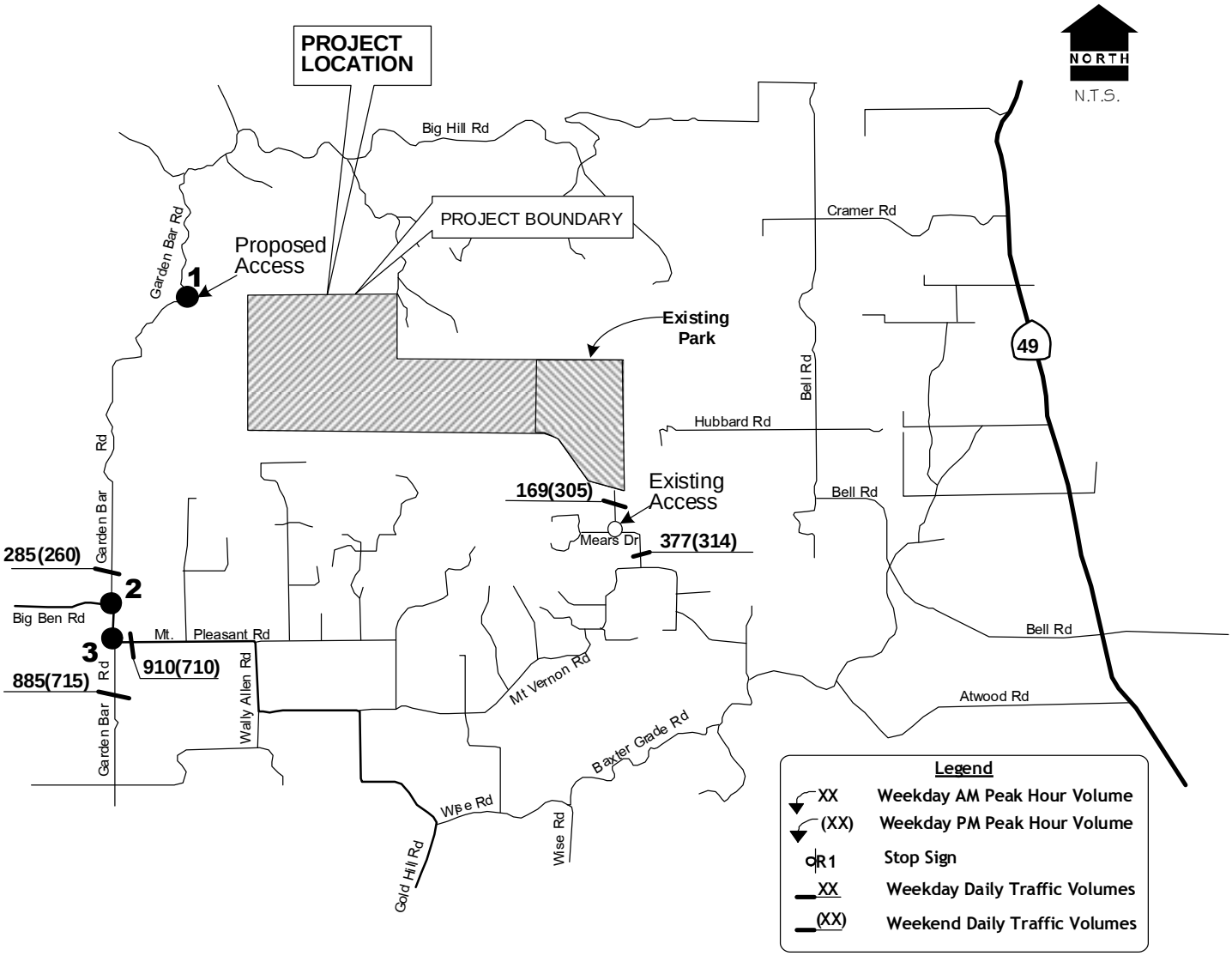
An additional measure of the quality of traffic flow is the extent to which the traffic volumes at these intersections meet warrants for signalization. None of the unsignalized study intersections carry volumes satisfying warrants during either the a.m. or p.m. peak hour. Based on this information, traffic signals are not judged to be needed at this time.

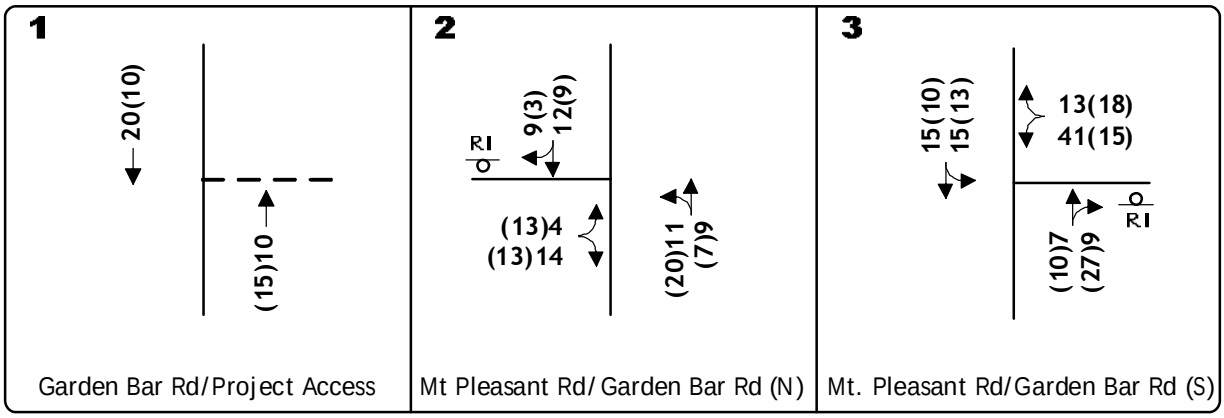
TABLE 3
EXISTING INTERSECTION LEVEL OF SERVICE

Intersection	Control	Weekday				Traffic Signal Warrants Met?	
		A.M. Peak Hour (7:00 to 9:00 a.m.)		P.M. Peak Hour (4:00 to 6:00 p.m.)			
		LOS	Average Delay (sec's per vehicle)	LOS	Average Delay (sec's per vehicle)	a.m. peak hour	p.m. peak hour
Mt Pleasant Road / Garden Bar Road (N)	SB Stop					No	No
EB left turn		A	7.3 sec	A	7.3 sec		
SB left+right turn		A	8.7 sec	A	8.8 sec		
Mt Pleasant Road / Garden Bar Road (S)	NB Stop						
EB left turn		A	7.4 sec	A	7.3 sec	No	No
NB left+right turn		A	8.9 sec	A	8.7 sec		

Existing Daily Traffic Volumes and Levels of Service

Current daily traffic volumes were counted on roads near the project in April 2007. Traffic counts were conducted over a seven day period and included both weekday and weekend volumes. The average volume for the five weekdays and the average of the two weekend days are reported in Table 4.





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EXISTING TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

2630-26.VSD 4/22/2008

figure 3

TABLE 4
EXISTING DAILY TRAFFIC VOLUMES AND LEVELS OF SERVICE

Road	From	To	Class	Pavement	Weekday		Weekend	
					Daily Volume	Level of Service	Daily Volume	Level of Service
Garden Bar Rd (N)	Mt Pleasant Rd	access	Mountainous Rural	<18’	285	B	260	A
Mt Pleasant Rd	Big Bend Rd	Garden Bar Rd (N)	Rolling Rural	>18’	375	A	310	A
Mt Pleasant Road	Garden Bar Rd (S)	Wally Allen Rd	Rolling Rural	>18’	910	B	710	B
Garden Bar Rd (S)	Mt Pleasant Road	Wise Rd	Rolling Rural	>18’	885	B	715	B
Mears Road	Mt Pleasant Road	Mears Place	Rolling Rural	>18’	377	A	314	A

Under the thresholds suggested by the Placer County General Plan with adjustments for roadway width as noted, the Level of Service on study area roads would range from LOS A to LOS B. This evaluation assumes the winding alignment of Garden Bar Road north of Mt. Pleasant Road should be classified as "mountainous", while other area roads are in "rolling" terrain.

Other Evaluation Criteria

Left Turn Channelization. The American Association of State Transportation and Highway Officials (AASHTO) has identified guidelines for the installation of left turn lanes in their publication *A Policy on Geometric Design of Highways and Streets*. These guidelines, which are presented in their Exhibit 9-75 bases the need for a left turn lane on the volume of traffic on the mainline road and the relative percentage of that traffic that turns.

Left turn lanes rarely exist on local roads at intersections near the project. Current volumes at the Mt Pleasant Road / Garden Bar Road intersections fall below guidelines for left turn channelization.

Analysis of the need for left turn lanes at the project's access on Garden Bar Road is a part of the impact evaluation. That evaluation will also consider the relationship between left turn access and sight distance along Garden Bar Road.

Minimum Sight Distance. Placer County has established minimum sight distance standards for intersections onto County roads. These standards generally conform to Caltrans requirements for corner sight distance and are summarized in Plate R-17 of the Placer County Design Standards. The minimum sight distance required for a 25 mph design is 250 feet and for a 35 mph design is 385 feet, while the required distance for 55 mph is 605 feet. The adopted Placer County design speed for Mt Pleasant Road is 35 mph. This suggests that sight distance of 385 feet (35 mph) should be provided. Development of a new access without adequate sight distance would constitute a potential safety impact.

Available sight distance was reviewed at key locations along the roads that will provide access to the project site. The sight distance at the two Garden Bar Road intersections on Mt Pleasant Road satisfies a 35 mph design.

Garden Bar Road Design Speed. Because much of Placer County's rural circulation system has evolved over the years, there are many locations where roadways fail to meet current design standards for horizontal or vertical alignment, shoulder width, etc. On Garden Bar Road, the primary existing design deficiencies are pavement width and the length of the radius of various horizontal and vertical curves. Technically, bringing local roads up to current design standards would require consistently lengthening curve radii to 35 mph design. There are many locations on the current alignment of Garden Bar Road that do not meet this design speed, as acknowledged in the Psomas Engineering evaluation of the road.

Pedestrian / Bicycle / Equestrian Facilities

Dedicated pedestrian and bicycle facilities are limited in this area of Placer County. The Placer County Regional Bikeway Plan (2002) notes the location of existing and planned bicycle facilities in the incorporated and unincorporated areas of Placer County. There are no designated facilities in the immediate area of the proposed project.

The existing portion of Hidden Falls Regional Park provides trails that are used by equestrians, recreational bicyclists and pedestrians. However these users typically haul their horses or mountain bicycles to the site.

Transit Facilities

Placer County Transit provides bus service in Placer County but not to the immediate area of this project. The nearest local service is the Taylor Road shuttle which has a stop in Penryn and provides connections to other local and regional transit services. Dial-a-Ride service is available to residents in the area of the proposed project.

PROJECT IMPACTS

The impacts associated with the proposed project have been evaluated based on the amount of traffic generated and added to study area roads

Project Traffic Characteristics

The proposed project is expected to effect the local environment in two ways. First, use of the park will generate users who are expected to drive to the site, and automobile, truck and bus traffic will be added to the rural roads that provide access to the site. The amount and direction of project traffic is expressed in terms of the projects potential *Trip Generation and Distribution.* Secondly, the project will be accompanied by improvements to Garden Bar Road between the project access and Mt Pleasant Road.

Trip Generation. The amount of new traffic associated with development projects is typically forecasted using information developed from recognized national sources. The Institute of Transportation Engineers (ITE) publication *Trip Generation, 7th Edition* is a source recognized by Placer County and Caltrans.

ITE data for the category of Regional Parks was reviewed. The reference notes that a wide variety of facilities and activities can be found in regional parks, and as a result, trip generation rates vary greatly and statistical correlation is poor. Table 5 identifies the average daily trip generation rates reported by ITE, as well as the range of rates reported for the sample data. Review of this data suggests that the ITE sample was drawn for observation of active parks, such as Elk Grove Regional Park and Maidu Park in Roseville which provide facilities for organized active events (i.e., sports fields). These rates are not judged to be applicable to the proposed project.

TABLE 5
TRIP GENERATION RATES

Land Use	Quantity	Trip Generation						
		Weekday Daily				Saturday		
		Average	Low	High		Average	Low	High
Regional Park	Acre	4.57	0.92	39.07		5.65	1.88	43.04

To provide a greater understanding of probable park use traffic counts were conducted at the existing park access off of Mears Drive. These counts were made during January through March and represent varying conditions in terms of weather. The counts conducted in January reflect colder weather and intermittent rain. The counts made in March represent clear weather conditions. Because these mechanical counts are based on the number of axels across pneumatic hoses, trailers towed to the site would be registered as part of an additional vehicle. Thus these counts may overstate the actual vehicle count slightly.

TABLE 6
TRAFFIC COUNTS AT EXISTING HIDDEN FALLS PARK ACCESS

Date	Day of week	Daily Volume (in + out)	Peak Hour Volume (in+out)			
			AM		PM	
			(7:00 to 9:00)	Highest Hour	(4:00 to 6:00)	Highest Hour
1/17	Thursday	-			11	11
1/18	Friday	97	4	8	18	18
1/19	Saturday	206	-	14	-	47
1/20	Sunday	171	-	22	-	32
1/21	Monday	96	1	17	7	21
1/22	Tuesday	65	3	9	6	14
1/23	Wednesday	43	2	5	5	10
1/24	Thursday	38	3	3	1	10
1/25	Friday	38	1	6	3	10
1/26	Saturday	91	-	15	-	19
1/27	Sunday	48	-	8	-	8
1/28	Monday	77	2	19	4	11
1/29	Tuesday	32	3	4	1	9
1/30	Wednesday	68	6	9	7	9
2/28	Thursday	92	3	9	13	16
2/29	Friday	169	5	24	15	29
3/1	Saturday	193	-	22	-	31
3/2	Sunday	305	-	39	-	51
3/3	Monday	95	1	14	15	16
3/4	Tuesday	148	18	23	17	18
3/5	Wednesday	124	7	18	13	24
3/6	Thursday	76	7	11	8	13
Highest Observation	***Weekday***	***169***	***18 (11 in 7 out)***	***24***	***18 (6 in 12 out)***	***29***
Highest Observation	***Weekend***	***305***	***-***	***39***	***-***	***51***

As shown in Table 6, the highest daily volume observed on a weekday was a count of 169 vehicles in and out. The highest daily volume on a weekend totaled 305 vehicles. The highest volume observed during weekday peak hours was 18 vehicles during both the a.m. and p.m. peak hour.

Trips Associated with Regular Use. The potential increase in activity at the site due to

the new project will be based on factors such as the length of new trails available and the configuration of the trail system. It is expected that longer trails will result in participants spending more time on the trail. Park staff suggests that with the implementation of the project, overall park use could increase to 2 to 2½ times the existing usage.

For this analysis it has been assumed that the project will result in additional traffic that is equal to 1½ times the highest current observation. Thus, as noted in Table 7 the project will add 255 weekday and 460 weekend trips to the study area street system. During the weekday commute hours the project could add 28 trips in the a.m. peak hour and 27 trips in the p.m. peak hour. During the highest hour on a weekend the project could add 77 trips to the area street system

TABLE 7
TRIP GENERATION FORECAST

Land Use	Trip Generation							
	Weekday					Weekend		
		AM		PM			Peak Hour	
	Daily	In	Out	In	Out	Daily	In	Out
Hidden Falls Regional Park	255	17	11	9	18	460	35	42

Special Events. It is recognized that the park could host organized special events that would attract guests in numbers beyond those expected for regular public use. Such events could include equestrian groups, high school cross country, etc. Project proponents suggest that up to 200 persons could be at the site at one time for these events.

The amount of vehicular traffic associated with special events and the distribution of that traffic would vary based on the nature of the event. For example, local high school cross country meets could bring together several teams, with participants and spectators totaling up to 200 persons. However, high school students would likely be bussed to the site. As a result, a 200 person event of this type would likely be served by 6 to 8 busses and perhaps 12 to 20 automobiles. The trip generation for this event would be less than that forecast for regular use of the site.

Trip Distribution. Having determined the number of trips that are expected to be generated by the project, it is necessary to identify the directional distribution of project-generated traffic. Based on discussions with park staff we understand that today the park caters primarily to western Placer County residents living in an area bounded by SR 49 on the east, SR 65 on the west and Rocklin –Roseville urban area to the south.

2000 Census tract population information for the districts surrounding the park site were reviewed for use as a basis for suggesting the regional distribution of project trips. Excluding urbanized Roseville and Rocklin, the study area would include Lincoln-Sheridan, Loomis. Penryn-Horseshoe Bar, Newcastle-Ophir, Auburn and north Auburn.

TABLE 8
TRIP DISTRIBUTION ASSUMPTIONS

Direction	Destination	Routes	Percentage of total
Northwest	Sheridan	Big Ben Road to McCourtney Road	15%
West	Lincoln	Garden Bar Road to Wise Road	17%
Northeast	North Auburn	Mt Pleasant Road, Mt Vernon Road to Joerger Road	22%
East	Auburn	Mt Pleasant Road to Mt Vernon Road	13%
Southeast	Newcastle / Penryn	Mt Pleasant Road to Wise Road and Gold Hill Road	9%
Southwest	Loomis , Rocklin	Garden Bar Road, Fowler Road to SR 193	24%
Total			100%

Project Trip Assignment. The assignment of project trips to the study area street system will reflect the location of planned parking facilities and the travel time between those facilities and regional trips destinations. Because planned trails can be accessed from both the existing parking facilities off of Mears Drive and via the new parking off of Garden Bar Road, the trips attracted to the facilities may make use of both entrances. To present a "worst case" evaluation of the impacts of this project to Garden Bar Road, 100% of the new traffic has been assumed to use the new entrance under the "existing plus project" conditions. Figure 4 identifies the assignment of project traffic to the local street system via the Garden Bar Road access.

However, if the project proceeds in phases as anticipated, initial use of the new park may occur before Garden Bar Road access is developed. Under those conditions a portion of the trip generation would occur and all of the traffic increase would use Mears Drive.

Planned Roadway Improvements

Development of Hidden Falls Regional Park will be accompanied by phased improvements to Garden bar Road in the area north of Mt Pleasant Road to the proposed access. The extent of these improvements is described in the *Hidden Fall Regional Park Traffic Safety Study (2007).*

Phased Improvements. Under the phased improvements program, public access via Garden Bar Road would initially be prohibited as no improvements to that road would have been made under Phase 1. Under Phase 2 Garden Bar Road would be improved to accommodate private automobiles and the access would be opened to the public. However, access for horse trailers would be prohibited, and vehicles with trailers would continue to use the Mears Drive access. Under Phase 3 vehicles with trailers would be permitted to use the Garden Bar Road staging area.

Phase 2 Work. The following improvements are part of Phase 2 work:

- An access road would be constructed between Garden Bar Road and the park property
- Garden Bar Road would be widened to an all weather 18 foot wide paved section
- Substandard vertical curves would be lengthened at five locations
- Warning signs would be installed at locations along Garden Bar Road to warn of tight radius curves that are not to be improved
- Guide signs directing the public to the park would be installed

Phase 3 Work. Under this phase Garden Bar Road would be subject to additional improvements:

- The road would be further widened to provide a minimum width of 20'all weather surface
- The horizontal alignment of the northern portion of the road would be improved to correct current deficiencies

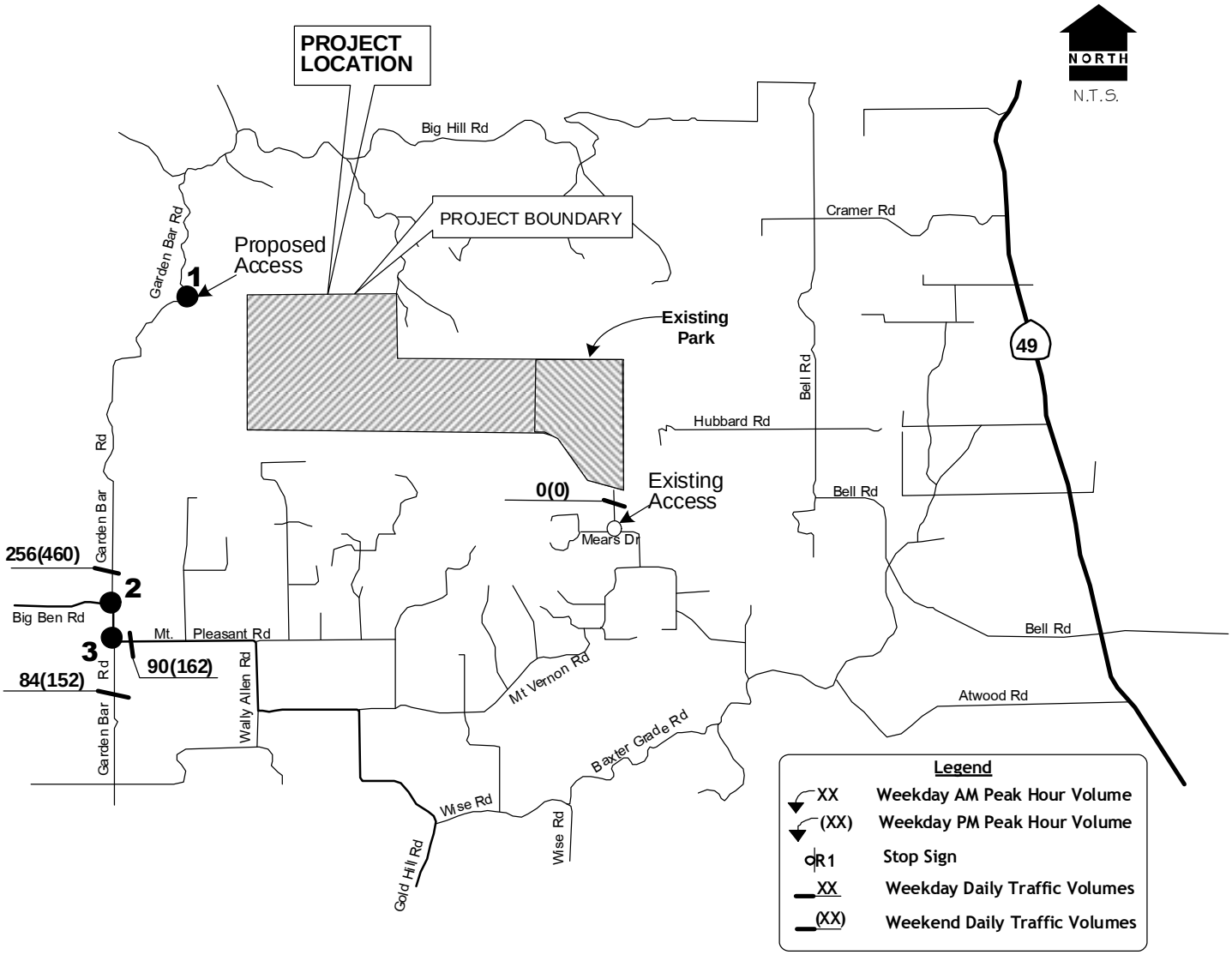
Existing Plus Project Traffic Conditions and Levels of Service

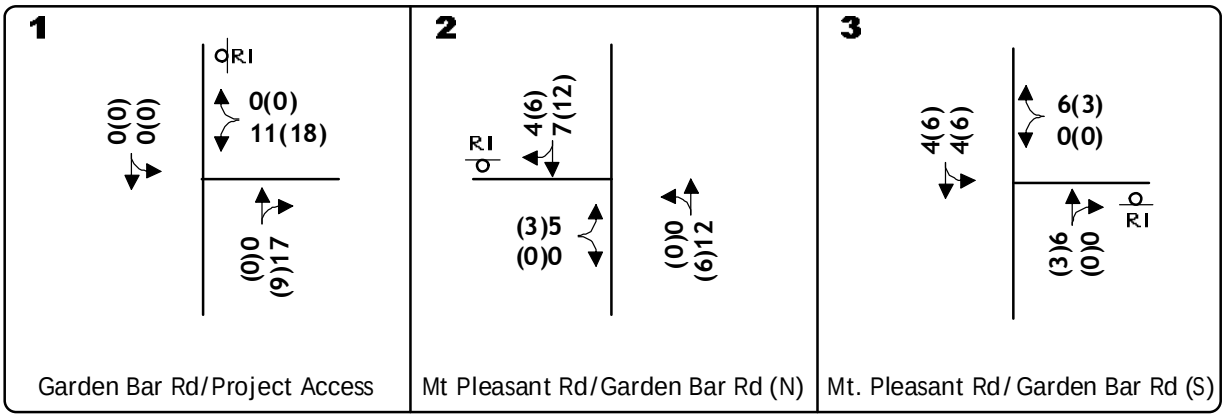
Figure 5 superimposes project trips onto the current background traffic volumes to create the "Existing plus Project" condition assuming all project traffic uses the Garden Bar Road access.

Intersection Level of Service. Table 9 identifies the Level of Service projected at the project's access onto Garden Bar Road and compares the existing and "plus project" Levels of Service at the other study intersections. As shown, the while the average length of delays may increase slightly, the addition of project traffic will have a negligible effect on Levels of Service occurring during peak hours at study intersections. LOS "A" conditions will remain. Review of projected volumes reveals that the addition of project traffic does not result in any change to previous conclusions regarding the need for traffic signals.

To provide a "worst case" assessment of Level of Service impacts, conditions accompanying the weekend peak hour of the facility were evaluated. This assessment was conducted by superimposing weekend peak hour traffic onto observed weekday a.m. traffic volumes. As summarized in the Appendix, study intersection Levels of Service remain at LOS A at this higher traffic volume level.

Existing Daily Traffic Volumes and Levels of Service. Table 10 identifies the daily traffic volumes added to study area roads if all the new traffic associated with the project chose to use Garden Bar Road access. As indicated, while "worse case" assumptions yield increases in traffic volumes that are similar in magnitude to current volume counts, resulting total volumes do not result in Levels of Service in excess of minimum Placer County standards (i.e., LOS C).





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PROJECT ONLY TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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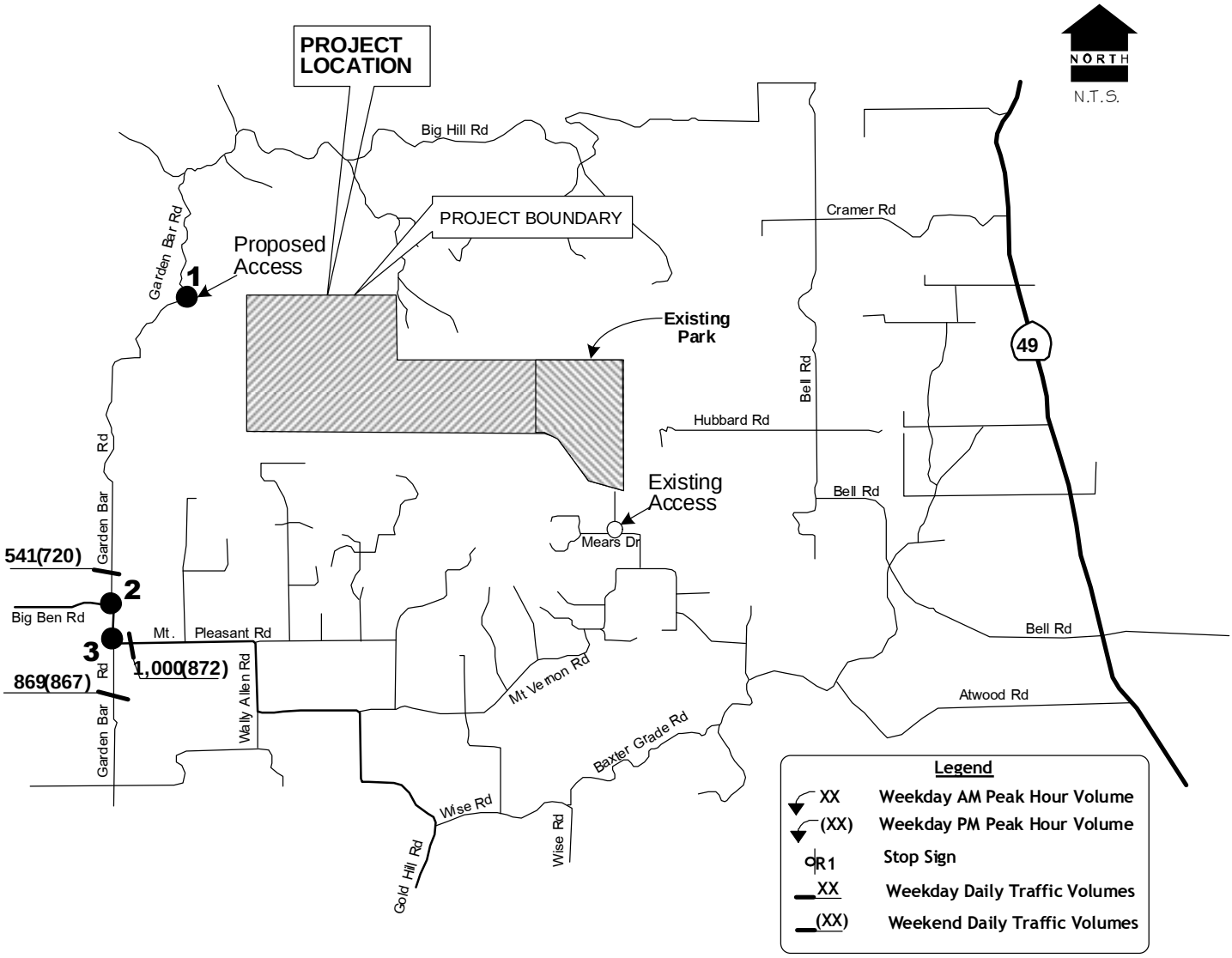
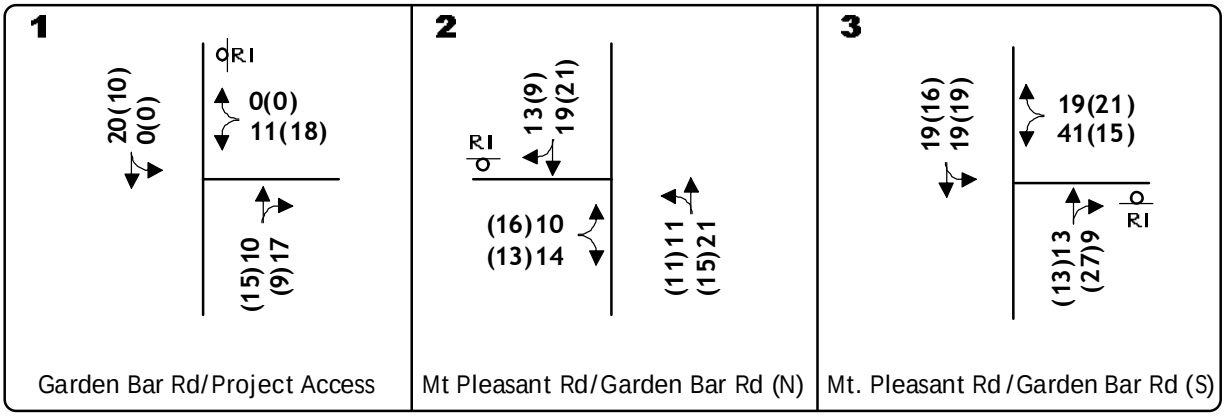
figure 4





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EXISTING PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

2630-26.VSD 4/22/2008

figure 5

TABLE 9
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

		Weekday								Traffic Signal Warrants Met?	
		AM Peak Hour (7:00 to 9:00 a.m.)				PM Peak Hour (4:00 to 6:00 p.m.)					
		Existing		Existing Plus Project		Existing		Existing Plus Project			
Intersection	**Control**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**AM Peak Hour**	**PM Peak Hour**
Garden Bar Rd / Access	WB Stop	-	-			-	-				
SB left turn				-	-			-	-	No	No
WB left+right turn				A	8.8 sec			A	8.8 sec		
Mt Pleasant Road / Garden Bar Road (N)	SB Stop									No*	No
EB left turn		A	7.3 sec	A	7.3 sec	A	7.3 sec	A	7.3 sec		
SB left+right turn		A	8.7 sec	A	8.8 sec	A	8.8 sec	A	8.9 sec		
Mt Pleasant Road / Garden Bar Road (S)	NB Stop									No*	No
EB left turn		A	7.4 sec	A	7.4 sec	A	7.3 sec	A	7.3 sec		
NB left+right turn		A	8.9 sec	A	9.1 sec	A	8.7 sec	A	8.8 sec		

TABLE 10
EXISTING PLUS PROJECT DAILY TRAFFIC VOLUMES AND LEVELS OF SERVICE

Road	From	To	Class	Weekday					Weekend				
				Existing		Existing Plus Project			Existing		Existing Plus Project		
				Daily Volume	LOS	Daily Volume		LOS	Daily Volume	LOS	Daily Volume		LOS
						Project	Total				Project	Total	
Project Access via Garden Bar Road													
Garden Bar Rd (N)	Mt Pleasant Rd	access	Mountainous Rural	285	A	256	541	B	260	A	460	720	B
Mt Pleasant Rd	Big Bend Rd	Garden Bar Rd (N)	Mountainous Rural	375	A	82	457	B	310	A	148	458	B
Mt Pleasant Road	Garden Bar Rd (S)	Wally Allen Rd	Mountainous Rural	910	B	90	1,000	C	710	B	162	872	B
Garden Bar Rd (S)	Mt Pleasant Road	Wise Rd	Mountainous Rural	885	B	84	869	B	715	B	152	867	B
Interim Access via Mears Drive Only													
Mears Road	Mears Place	Mt. Vernon Road	Mountainous Rolling	377	A	255	632	A	314	A	460	774	B

Safety / Access Evaluation

Sight Distance at Project Access. The available sight distance at the proposed project access was determined through a field review and compared to applicable Placer County standards.

As noted earlier, the adopted design speed on Garden Bar Road is 35 mph. Under Placer County guidelines this speed requires sight distance of 385 feet (Plate 17). This requirement exceeds the minimum safe stopping sight distance established by Caltrans for 35 mph (250 feet).

The planned north access is located along a tight curve on Garden Bar Road. The existing curve (80' radius) is to be replaced by a longer curve (200' radius).

Design Standards for balance of Garden Bar Road. The planned improvements to Garden Bar Road are presented in the *Traffic Safety Study for Garden Bar Road*. The improvements are intended to provide a minimum 18' traveled way along with and horizontal and vertical curve radii that are applicable to 35 mph and 25 mph are planned in the areas south and north of station 46+00, respectively. While recognizing that the 25 mph design does not meet the County's requirements for a Rural Secondary Road, the Safety Study notes:

Due to the nature of the existing roadway the standard for a rural secondary roadway is not considered appropriate for this setting and would result in unnecessary widening of the existing road and change in character of the roadway given the existing and future use levels. The County Fire Department's requirement is an 18 ft wide all-weather surface (see Figure 4) and is considered appropriate for Phase 3.

The key safety issue to be considered in this situation is consistency with the conditions on the overall circulations system. Hypothetically, a safety problem would exit if portions of a street are designed to a substantially lower design speed that others and motorists are surprised to encounter reduced conditions. In this case, the results of the overall improvement program envisioned in the Safety Study will be consistent with the quality of traffic flow on the balance of Garden Bar Road north of Mt Pleasant Road.

Thus, while many features of the improvement project do not conform to adopted County standards for minimum horizontal and vertical curves, with proper signage development of the planned improvements would improve safety and not exacerbate existing hazards.

One location that is of concern is the site access onto Garden Bar Road itself. Even with improvements, the access is located on a tight curve and sight distance could be limited. Advance signing in both directions noting the presence of the park access should be part of the final improvements project, and the need for an all-way stop should be reviewed as construction plans are prepared.

Need for Left Turn Lane into the Project Site. With development of the project a limited number of left turns will be made into the site from Garden Bar Road, and the number of left turns at other study intersections will increase slightly. However, resulting traffic volume would fall below the

thresholds presented in AASHTO guidelines. Based on forecast volumes left turn lanes would not be required at either intersection.

Impacts to Alternative Transportation Modes

Development of the project could have a minor incremental impact on the demand for transit services in this area of Placer County. However, the demands associated with this project would not be sufficient to require creating fixed route service. While fixed route service is not available, available Dial-a-Ride service is available. Based on the relative demand and available services, the project's impacts to transit are not judged to be significant.

Development of the project may incrementally increase the number of pedestrians and bicyclists using rural Placer County roads. Due to the distances involved most bicycle and pedestrian travel in this area is recreational in nature, and these modes are not regular commute options. While the project will provide on-site opportunities for cyclists, the trails are suitable for mountain bikes, rather than road cycles. Thus, it is unlikely that cyclists wishing to use the project's trails would choose to ride to the site.

Mitigations for "Existing Plus Project" Impacts

With implementation of planned improvements, development of the project alone does not result in traffic conditions in excess of adopted Level of Service standards. Thus, no mitigation measures are immediately required to maintain County Level of Service standards.

Installation of the planned improvements will result in a local circulation system which is better than that which exists today and is commensurate with the overall flow of traffic on Garden Bar Road. Elements of the plan do not meet minimum Placer County standards for 35 mph design. Modifications to the plan to achieve 35 mph design could be considered, but development of larger radius horizontal and vertical curves would result in considerable disruption to the areas along the roadway and would require substantial right of way acquisition. At the traffic volume levels anticipated public safety will not be compromised by the project and additional improvements to mitigate safety issues are not needed.

CUMULATIVE IMPACTS

The impacts of developing the proposed project have also been considered within the context of long-term future traffic conditions in this area of Placer County. The cumulative analysis accounts for future regional traffic growth as projected from review of historic traffic count records on study area roads.

Year 2025 Cumulative Traffic Conditions

Traffic Volume Forecasts. Long term traffic volume forecasts developed from Placer County's recently updated Year 2025 regional travel demand forecasting model and the SACOG regional traffic model were considered as possible bases for the cumulative analysis. However, review of the configuration of each traffic model revealed that each lacked the detail necessary to develop forecasts for roads such as Garden Bar Road and Mt Pleasant Road.

Historic Traffic Volume Records. Placer County Department of Public Works has intermittently collected daily traffic volume counts for rural roads. These counts go back as far as 1971 and provide a general indication of changes in traffic volumes over that time period. This data, along with the new traffic counts made for this study have been used through regression analysis to estimate the volume of traffic likely to occur on study area roads in the year 2027.

TABLE 11
BACKGROUND TRAFFIC GROWTH

Road	Post Mile	Location	Weekday Daily Volume			
			1971	1978	2007	2027
Garden Bar Rd	2.42	North of Mt. Pleasant Road	191	-	285	500
	1.14	South of Mt Pleasant Road	-	632	885	1,110
Mt Pleasant Rd	0.002	West of Garden Bar Road	-	266	385	540
	2.10	East of Garden Bar Road	-	361	910	1,125

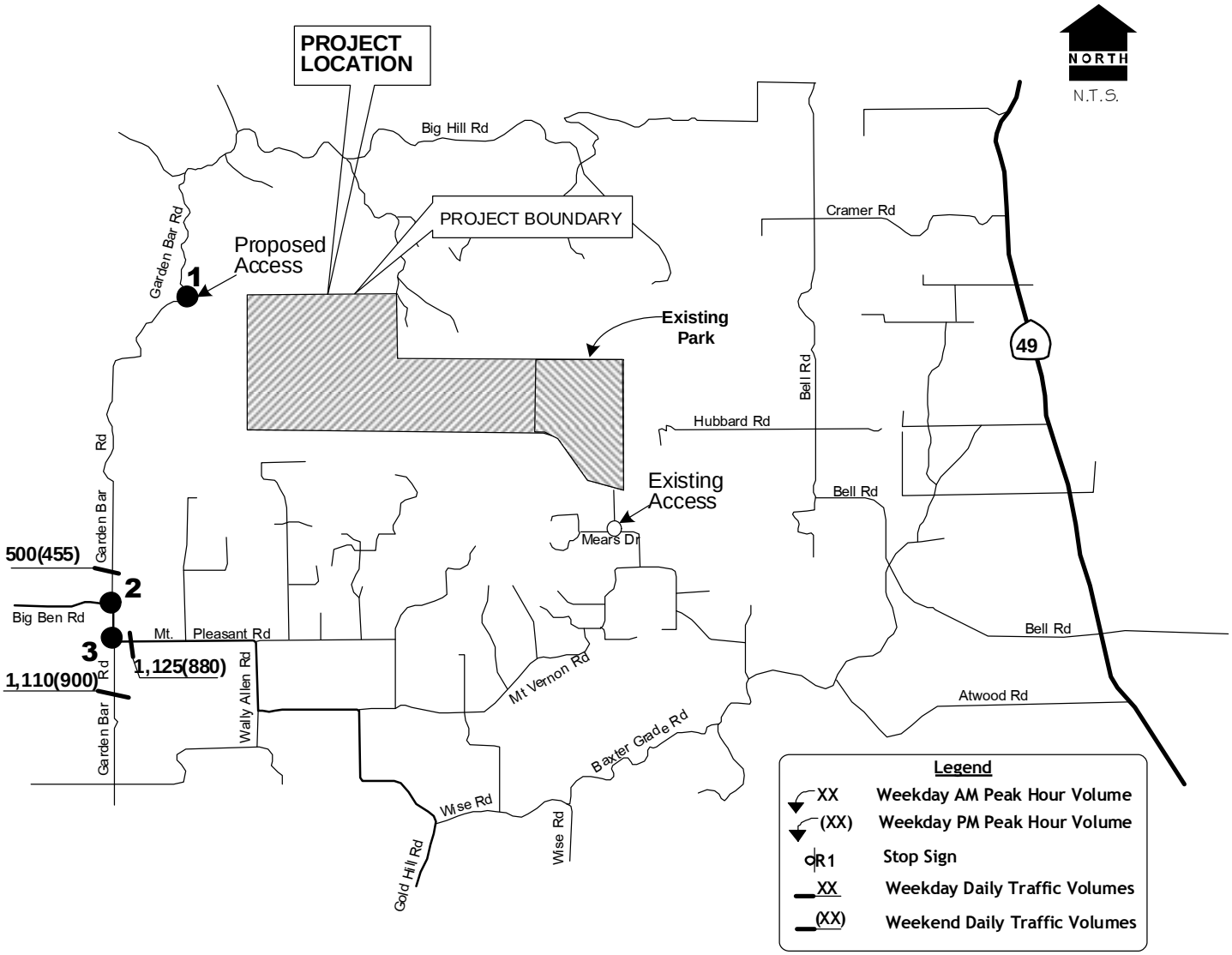
These daily traffic volumes have been employed to interpolate weekend traffic volumes and weekday peak hour intersection turning volumes, as noted in Figure 6.

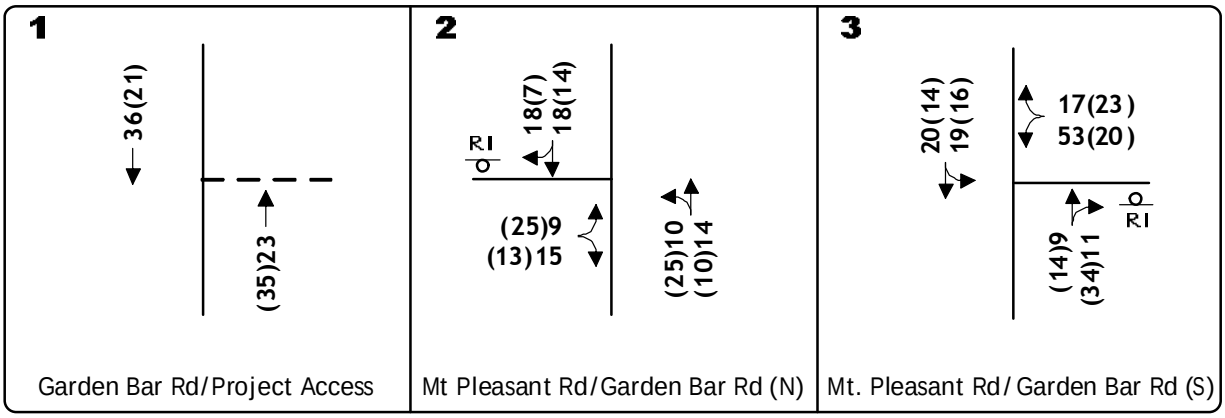
Future Improvements. There are no roadway improvements contemplated in the immediate vicinity of Hidden Falls Park.

Cumulative Impacts to County Roads. As noted in Table 12, with and without the proposed project the volume of traffic on most County roads will remain within the LOS C threshold identified in the General Plan. Mitigations to address the capacity of these roads are not needed.

Peak Hour Intersection Levels of Service. Current peak hour volumes were adjusted to future intersection turning movement volumes based on the relative growth rates implied by daily traffic volumes using methods described in the Transportation Research Board's (TRB's) NCHRP Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design* (refer to Appendix). Figure 6 presents baseline year 2027 cumulative traffic volume forecasts, while Figure 7 presents "Year 2027 Plus Project" traffic volumes that were developed by superimposing project trip onto the background condition. As noted in Table 13 all intersections will continue to operate at a Level of Service that meets Placer County's minimum standards (i.e. LOS C or better).

Table 13 presents peak hour Levels of Service at study intersections. As shown, all study intersections will meet adopted Level of Service standards.





YEAR 2027 NO PROPJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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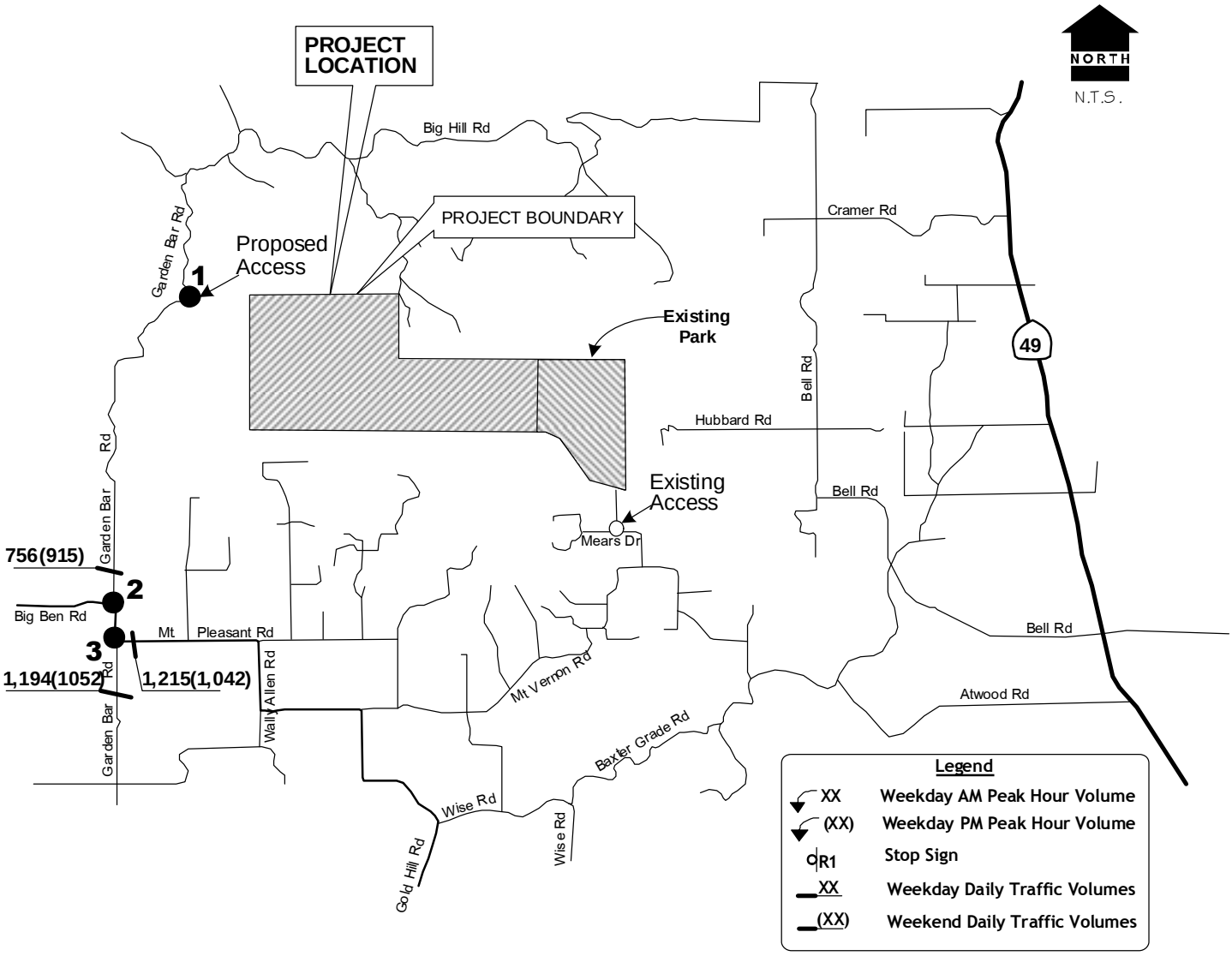
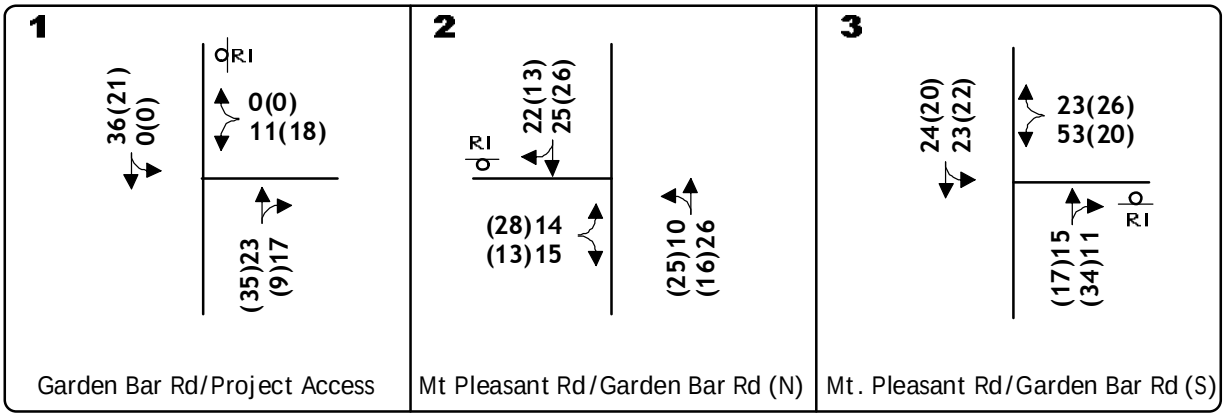
figure 6





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YEAR 2027 PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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figure 7

TABLE 12
YEAR 2027 CUMULATIVE DAILY TRAFFIC VOLUMES AND LEVELS OF SERVICE

				Weekday					Weekend				
				2027		2027 Plus Project			2027		2027 Plus Project		
				Daily	Level of	Daily Volume		Level of	Daily	Level of	Daily Volume		Level of
Road	**From**	**To**	**Class**	**Volume**	**Service**	**Project**	**Total**	**Service**	**Volume**	**Service**	**Project**	**Total**	**Service**
Garden Bar Rd (N)	Mt Pleasant Rd	access	Mountainous Rural	500	A	256	756	B	455	A	460	915	B
Mt Pleasant Rd	Big Bend Rd	Garden Bar Rd (N)	Mountainous Rural	540	A	82	622	B	435	A	148	583	B
Mt Pleasant Road	Garden Bar Rd (S)	Wally Allen Rd	Mountainous Rural	1,125	B	90	1,215	C	880	B	162	1,042	B
Garden Bar Rd (S)	Mt Pleasant Road	Wise Rd	Mountainous Rural	1,110	B	84	1,194	B-C	900	B	152	1,052	B

TABLE 13
CUMULATIVE YEAR 2027 INTERSECTION LEVELS OF SERVICE

		Weekday								Traffic Signal Warrants Met?	
		AM Peak Hour (7:00 to 9:00 a.m.)				PM Peak Hour (4:00 to 6:00 p.m.)					
		Existing		Existing Plus Project		Existing		Existing Plus Project			
Intersection	**Control**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**LOS**	**Average Delay (sec's per vehicle)**	**AM Peak Hour**	**PM Peak Hour**
Garden Bar Rd / Access	WB Stop	-				-					
SB left turn				-	-			-	-	No	No
WB left+right turn				A	9.0 sec			A	8.9 sec		
Mt Pleasant Road / Garden Bar Road (N)	SB Stop							A	7.4 sec	No*	No
EB left turn		A	7.3 sec	A	7.3 sec	A	7.4 sec	A	9.1 sec		
SB left+right turn		A	8.8 sec	A	8.9 sec	A	9.0 sec				
Mt Pleasant Road / Garden Bar Road (S)	NB Stop							A	7.4 sec		
EB left turn		A	7.4 sec	A	7.4 sec	A	7.3 sec	A	8.9 sec	No*	No
NB left+right turn		A	9.1 sec	A	9.3 sec	A	8.8 sec				