Technical Appendices Volume

Cypress Knolls

Tentative Tract Map and General Plan Amendment

Environmental Impact Report

Prepared for:
The City of Marina

August 2006

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Planning
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Cypress Knolls

Environmental Impact Report- Technical Appendices Volume

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Byron Buck & Associates

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Prepared by the Marina Coast Water District

and

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Water Resources and Environmental Consulting

March 22, 2006

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1.1 Project Description

The Cypress Knolls partners propose to construct a senior-oriented residential development for persons 55 years of age and over within the City of Marina's portion of the Ord Community service area of the Marina Coast Water District (MCWD) (Figure 1). The project site and surrounding lands were previously developed with multi-family, single family and other uses and supporting infrastructure, including portions of the Pacific Coast Highway. The MCWD provides the site location with water and sewer service.

The approximately 190-acre Project site currently contains 460 residential units in 230 duplex configurations. This current housing is vacant and will be demolished in order to accommodate this new residential development.

The Proposed project will utilize existing roads and infrastructure to the degree feasible. New interior streets within the residential area will be constructed (approximately 8,000 linear feet of street total) and a new intersection of Crescent Ave with the new Patton Parkway along the northern project boundary will be constructed.

Table 2-1 describes the proposed land uses in two phases that will have separate subdivision maps. Phase I comprises 540 residential units plus non-residential uses, including open space, parkland, administrative and support services and a community center. The Phase II development comprises 232 residential units and an assisted living facility.

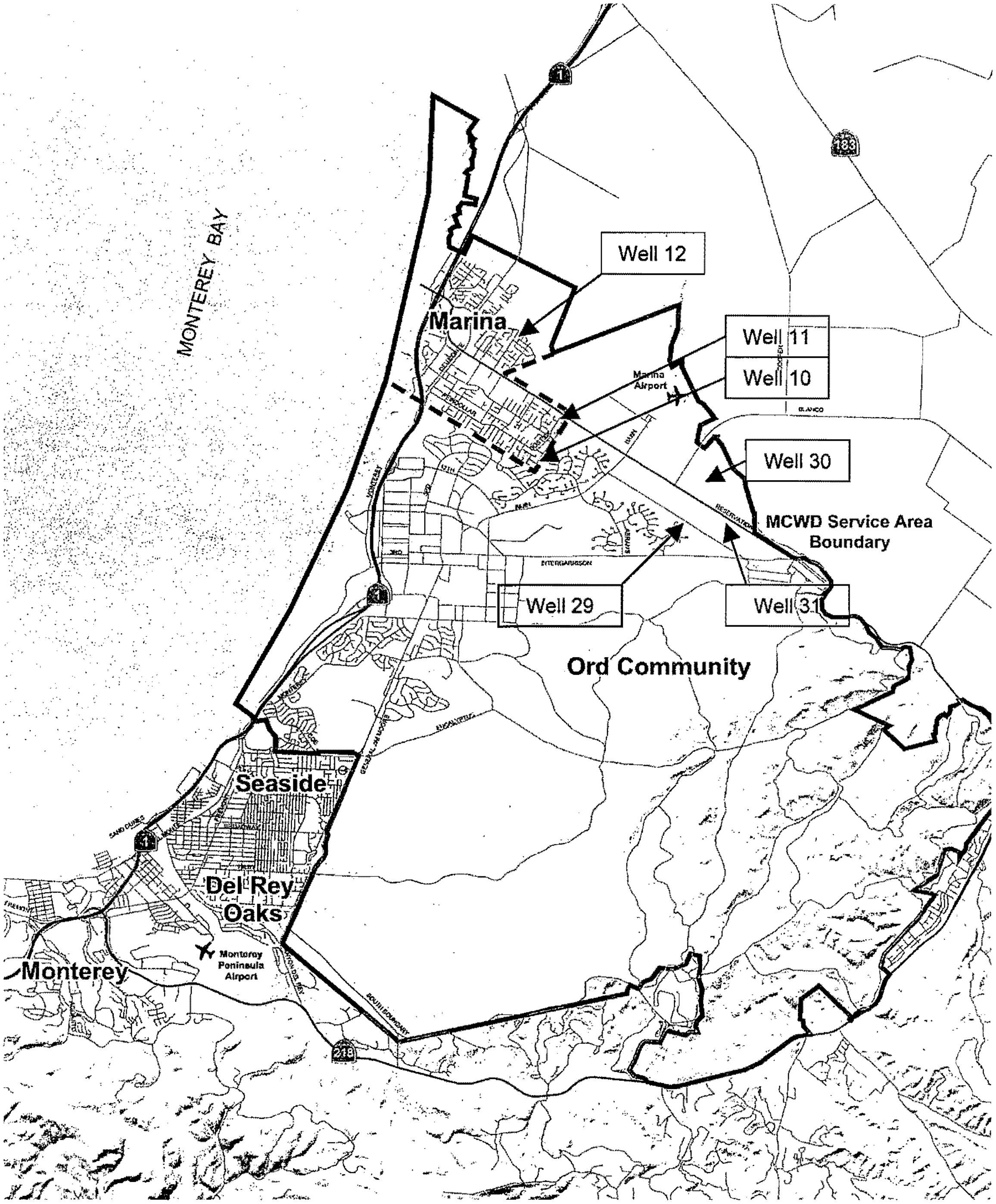

Figure 1-1
Marina Coast Water District Vicinity Map and Well Locations[1]

[1] Base map source RBF, Inc.

1.2 Purpose of Water Supply Assessment.

The City of Marina is required to consider this water supply assessment (Water Code section 10910 et. seq.) and written verification of supply (Government Code section 66473.7) as part of the review and approval process for the land use entitlements on the Project.

1.3 Requirements for Water Supply Assessments

On October 9, 2001 former Governor Gray Davis signed into law Senate Bills 610 (Costa) and 221 (Kuehl) (Chapters 643 and 642, respectively, Statutes of 2001) requiring the preparation of a water supply assessment in conjunction with project review under the California Environmental Quality Act (CEQA), and a written verification of water supply where a tentative subdivision map is proposed for approval. The general intent of SB 221 and 610 was to create additional assurance that certain new developments could be provided with a reliable supply of water. It also intended that existing users and others dependent on common sources of water affected by new development were informed of the development's effect on those supplies, and plans to maintain reliable supplies. The legislation also serves to better inform decision makers regarding the water supply implications of development.

SB 610 requires that a water supply assessment be prepared for certain developments, including residential developments in excess of 500 units, where an environmental impact report or negative declaration is being prepared under CEQA. The requirement adds a specific water supply assessment protocol for land use jurisdictions to follow and consider in evaluating the environmental impacts for a proposed project. In the present case, a Water Supply Assessment must be included in the Environmental Impact Report prepared for the proposed development. The City of Marina must determine, based on the entire record, whether water supplies projected in the water supply assessment will be sufficient to satisfy the demands of the proposed project in addition to existing and planned future uses over a twenty-year planning horizon.

SB 221 requires a city or county to include as a condition of approval of any tentative map, parcel map or development agreement for residential developments of 500 dwelling units or more, a requirement that a "sufficient water supply" be available. [2] Proof of this supply must be on the basis of a written verification from the public water system that will serve the development. A city or county may override this determination of a water supplier only if the city or county has substantial evidence that additional water supplies not accounted for by the water supplier are, or will be, available prior to completion of the subdivision.

1.4 Relationship of this Document to the Marina Coast Water District Urban Water Management Plan

The Urban Water Management Planning Act requires municipal water providers serving over 3,000 AF/Y of water or having 3,000 service connections to prepare plans (urban water management plans or UWMPs) on a five-year, ongoing basis. A UWMP must demonstrate the continued ability to provide water supplies for current and future expected development under normal, single dry and multiple dry year scenarios. These plans also require the assessment of urban water conservation measures and wastewater recycling. Pursuant to Section 10632 of the California Water Code, the plans must also include a water shortage

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[2] Under SB221, a "sufficient water supply" is defined as *"... the total water supply available during normal, single dry and multiple dry years within a 20-year projection that will meet the projected demand associated with the proposed subdivision, in additional to existing and planned future uses..."* (Government Code 66473.7(a)(2).) This does not mean that 100 percent of the development's normal or unrestricted water demand must be met 100 percent of the time, nor does it mean that the new development may not have any impact on the service level to existing customers of the water provider. A "sufficient water supply" may be found to exist for a proposed subdivision as well as for existing customers as long as an acceptable water supply can be estimated and planned for during a record drought (ACWA, 2002).

contingency plan outlining how water providers will manage water shortages of up to 50 percent of their normal supplies in a given year.[3]

MCWD adopted a revised UWMP in December of 2005. The 2005 UWMP projects demands for 25 years forward, five more than required by law, in order to allow for pending water supply assessment requests that may occur during the 2006-2010 period without having to update the UWMP or otherwise project another 20-year period. As provided for in the law, this water supply assessment incorporates by reference and relies upon many of the planning assumptions and projections of the 2005 UWMP in assessing the water demand of the proposed project relative to the overall increase in demands expected by MCWD. The 2005 UWMP does assume the development of the Cypress Knolls Project in evaluating the demands to be made on MCWD's water supplies, although proposed uses are more detailed allowing for a more refined water demand analysis. The 2005 UWMP finds a shortfall in supply even with planned supplies from an Augmentation project, total expected water demands based upon the plans of all land use jurisdictions served by MCWD exceed currently available and planned supplies through 2025.

2.0 Project Water Demands and Forecasting Methods

2.1 Project Water Demands

Tables 2-1 depicts projected average annual water demands for the Cypress Knolls project utilizing water use factors that are based upon local climate and geography for land uses proposed. The analysis recognizes that plumbing fixtures in new development will comply with current plumbing code standards, requiring low flow plumbing devices. MCWD modified its District Code in August 2005 to require additional conservation measures in the construction of new

[3] Like SB 610 and SB 221, specific levels of supply reliability are not mandated (i.e., whether a specific level of demand can be met over a designated frequency). Rather, the law provides that a specific level of reliability is a local policy decision of the water provider.

development and remodeling. These new requirements include incorporation of hot water recirculation systems and high efficiency clothes washers for residential units, and zero-use urinals for non-residential construction. New residential requirements may reduce average indoor per capita consumption by about 10 percent or about 4 percent overall for new residential construction. Residential water savings anticipated by these code revisions have been incorporated in this analysis.

Actual water demands will vary depending upon the ultimate mix of specific uses, water use behavior of the residents and property managers, and landscape development and maintenance practices. These estimates are based on long-term averages. In any given year, consumption is expected to vary year-to-year by as much as 7%, depending on weather and precipitation, with the greater use in drier years. During the first few years after any given phase of development occurs, expected water use would likely be higher for landscape uses as new landscape plantings require additional water to become established.

2.2 Forecasting Methodology

Legal requirements for water supply assessments do not specify a particular method to project usage nor are specific water use factors mandated for given land uses. Because water demand forecasts are estimates, not guarantees, with them come varying degrees of uncertainty. For example, for residential uses of the project an estimate of the persons per dwelling unit and irrigable area for

Table 2-1 Projected Water Demands

Cypress Knolls Senior Residential Project

			Water Distribution by Use category (%)				Water Demands AF/YR			
	Lot Size	No. Units	Person/	Xeriscape	Ornamentals	Turf	Total	Total	Total	Notes
Land Use	Sq. Ft		Unit	%	%	%	Interior	Exterior	Demand	
Residential										
Phase I										
Single Family	6,000	48	1.8	18%	9.5%	2.50%	5.13	1.36	6.48	Int. demand 53 g/pp/day
Single Family	5,500	231	1.8	18%	9.5%	2.50%	24.68	5.98	30.66	Int. demand 53 g/pp/day
Single Family	5,000	146	1.8	18%	9.5%	2.50%	15.60	3.44	19.03	Int. demand 53 g/pp/day
Townhome Lot	4,500	30	1.8	18%	9.5%	2.50%	3.21	0.64	3.84	Int. demand 53 g/pp/day
Apartments	4.57 ac	85	2.4	36%	7.0%	2.00%	12.11	0.71	12.82	Int. demand 53 g/pp/day
Total Phase I Res.							**60.72**	**12.11**	**72.84**	
Phase II										
Single Family	6,000	15	1.8	18%	9.5%	2.50%	1.60	0.42	2.03	Int. demand 53 g/pp/day
Single Family	5,500	84	1.8	18%	9.5%	2.50%	8.98	2.17	11.15	Int. demand 53 g/pp/day
Single Family	5,000	22	1.8	18%	9.5%	2.50%	2.35	0.52	2.87	Int. demand 53 g/pp/day
Townhome Lot	4,500	20	1.8	18%	9.5%	2.50%	2.14	0.42	2.56	Int. demand 53 g/pp/day
Apartments	1.66 ac	31	2.4	46%	7.0%	2.00%	4.42	0.26	4.67	Int. demand 53 g/pp/day
Assisted Living	3.78 ac	60	1.0	28%	30.6%	2.40%	8.06	1.96	10.03	Int. demand 120 g/p/day
Total Phase II Res.							**27.55**	**5.76**	**33.30**	
Non-Residential	acres or	Sq. ft. Building								
Phase I	sq. ft.	Coverage								
Support Services	4.25	6300		7.00%	90.0%	5%	0.04	6.27	6.31	
Open Space	28.57			1.50%	14.0%	15%	0.00	16.71	16.71	
Parklands	2.17			10.00%	50.0%	15%	0.00	2.44	2.44	
Right of Way	27.79			27.50%	14.0%	12%	0.00	14.17	14.17	
Community Center	7.82			50%	18.0%	12.0%		4.46	4.46	
Administration	1,500						0.18		0.18	
Residential Services	1,275						0.15		0.15	
Commercial	1,900						0.40		0.40	
Café/restaurant	2,500						1.86		1.86	Est. 64 seats
Beauty solon	850						0.12		0.12	
Activity rooms	3,500						1.05		1.05	
Indoor pool	5,000						1.00		1.00	
Total Phase I Non Res.							**4.8**	**44.1**	**48.9**	
Phase II										
Right of Way	5.51			20.0%	0.0%	0.0%		1.102	1.1	
Total Project Demand									**156.1**	

Demand factors: Residential Interior use 59 g/per person/day (MCWD Conservation Feasibiilty Study, adjusted for add'l actions; xeriscape - 0.0 af/acre; ornamental - 1.5 af/acre
Turf - 2.5 af/acre; Support services-.00021 af/sf; Administration and Residential Services .00012 af/sf; Commercial .00021 af/sf;
Restaurant - .029 af/seat; Beauty salon .059af /seat; Activity .0003 af/sf; Pool .02 af per 100 SF
Support services= maintenance storage building rated at 1 person daily indoor sanitary demand 40 g/pp/day

housing units and common areas has been provided by the project proponent. Irrigable area has been further subdivided to indicate areas of xeriscape-type (drought tolerant), ornamental landscaping and turf landscaping. Therefore, it is possible to define with higher accuracy the expected water use for landscaping for each type of housing as well as to disaggregate indoor and outdoor uses. The open space areas designated for "xeriscape" type (drought tolerant) landscaping will receive irrigation only to establish plantings. Supplemental irrigation for these plantings will be disconnected within three years of planting, resulting in no long term demands on the MCWD system for this land use.

The development is being planned with specified water conservation measures assumed in the design. The average annual water use per acre will be 0.82 acre-feet, which is extremely aggressive. Typical combined interior and exterior residential land uses statewide tend to use about the same amount of water per acre as if a crop were grown on the same amount of land which would be closer to 2.1 AF/acre based on the crop water demand for this location. The project proponents will need to assure the MCWD that the ultimate project design conforms to the parameters provided for this water supply assessment in order to minimize water use.
The MCWD will track actual usage of new developments and may adjust water use factors in the future as necessary to reflect actual use and to calculate account balances for land use jurisdictions' share of future water allocated to the redevelopment of the Ord Community.

3.0 Available Water Supply

3.1 Overall Supplies

MCWD, a county water district and public agency, is the purveyor of water for the former Fort Ord, also known as the Ord Community Service Area. MCWD's water supply is groundwater and water supplied by a small desalination plant, which is currently idled due to mechanical issues but considered an available supply as discussed in MCWD's 2005 UWMP. MCWD also has ongoing conservation programs and is pursuing plans and regulatory approvals to augment the supplies for the Ord Community through recycled water and or additional desalination as also discussed herein in Section 4.0. MCWD has contractual rights to a supply of recycled water from the Regional Water Treatment Plant operated by the Monterey Regional Water Pollution Control Agency.

The status of the groundwater basins, their management and current production of MCWD from the Salinas Basin and MCWD's legal entitlement to groundwater is discussed in detail in Chapter 2 of the 2005 Urban Water Management Plan. Also discussed in detail is the Salinas Valley Water Project, the regional plan to manage surface and groundwater for the Salinas Valley and its groundwater basin. Because MCWD's water source is groundwater from the Salinas River Groundwater Basin that has a large storage volume buffering yearly hydrologic variations. MCWD's total groundwater production constitutes less than 2% of annual Basin yield. MCWD's supplies do not vary significantly due to annual hydrology and do not significantly affect the availability of Basin groundwater to other users. As such normal, single dry, and multiple dry years are considered similar for water supply planning purposes.

3.2 FORA Groundwater Allocations

The MCWD provides potable water delivery and wastewater transmission services within the boundaries of the former Fort Ord Army Base, known as the Ord Community. The former Fort Ord Army Base lies to the southeast of the City of Marina and the current District boundaries. In 1991 the former Army base was downsized and realigned pursuant to the Defense Base Closure and Realignment Act of 1990, with closure in 1994. The base is being converted to civilian use under the guidance of the Fort Ord Reuse Authority (FORA), a public agency created for this purpose by the state of California. FORA's membership includes the land use jurisdictions encompassed by the former Fort Ord lands and others on the Monterey Peninsula. FORA is governed by a 13-member board with representatives from the following jurisdictions:

- City of Carmel
- City of Del Rey Oaks
- City of Marina
- City of Sand City
- City of Monterey

- City of Pacific Grove
- City of Salinas
- City of Seaside
- County of Monterey

In adopting a Final EIR, Reuse Plan, Development and Resources Management Plan and Master Resolution governing redevelopment of former Fort Ord lands to civilian uses, FORA agreed to constrain redevelopment on former Fort Ord lands by imposing a cap on the number of new residential housing units until the Reuse Plan is reassessed and by recognizing that the supply of Salinas Basin groundwater available to serve redevelopment, or reuse, projects is presently limited by a 1993 Annexation Agreement with the MCWRA. Under that 1993 Agreement, 6,600 AF/Y of Salinas Basin groundwater is available for use on Fort Ord lands. That total quantity of water is allocated between the Ord Community administered by FORA and the Ord Military Community administered by the U.S. Army, with FORA suballocating the Ord Community share of this Salinas Basin groundwater supply to its member land-use jurisdictions to support redevelopment projects at Fort Ord. The City of Marina is one of those member land-use jurisdictions that have an allocation from FORA of Salinas Basin groundwater to support development of reuse projects within the City. FORA manages these allocations through a Development and Resources Management Plan that has allocated supply and annually tracks use against the allocation. The Fort Ord Reuse Authority allocates an allotment of water supply to each land use jurisdiction. FORA's allotment to the City of Marina for its planned uses in Ord Community is set at 1,175 acre-feet of water per year (AF/Y). The City has been granted a loan of water of an additional 150 AF/Y from the FORA water reserve, bringing the total current water supply for the City of Marina in the Ord Community to 1,325 AF/Y.[4] The term of that loan is either for a period of five years, or when a water augmentation project is constructed, in essence making this a long-term allocation for practical purposes.

[4] See Appendix 1, Fort Ord Reuse Authority Letter of March 1, 2004.

3.3 Available Supply for the Cypress Knolls Project

In December 2003 MCWD prepared a water supply assessment for the Marina Heights Development, which was estimated to consume 349.5 AF/Y of the City's allocation. When considering then-existing demands from the Abrams/Preston Park housing area at 270 AF/Y[5] and 11.25 AF/Y for other existing uses, the City had a baseline projected consumption of 631 acre-feet for purposes of assessment against the FORA allocation, leaving a balance of 694 acre-feet of annual consumption available for use and allocation by the City against the FORA allocation of 1,325 AF/Y. MCWD staff and consultants have since reviewed the consumption patterns for existing uses in the Marina section of Ord and have noted a distinct downward trend in consumption attributed to conservation retrofit activity. In 2002 consumption was about 316 AF/Y which has been reduced to about 228 AF/Y as of 2005. Allowing for an annual fluctuation due to weather, the average of 2004 and 2005 consumption is used herein as a revised baseline water use for existing Marina uses (238AF/Y). This brings the balance of available allocatable water to 737.5, an increase of 43.5 AF/Y over previous assumptions in the Marina Heights and University Villages water supply assessments. –In January 2005, MCWD adopted a Water Supply Assessment and Written Verification for the proposed University Villages Specific Plan Development and Marina Community Partners Project (MCP). That Assessment projected an additional use for the Specific Plan and MCP Project of 856 AF/Y, exceeding the then currently available water supply by 162 AF/Y. The MCP Project is a project within the University Villages Specific Plan. That project alone was projected to consume 741 acre-feet. The City of Marina has notified the MCWD that in approving the University Villages project in May 2005, the City only allocated FORA water to the MCP component of then Plan and that it does not intend at this time to allocate a share of its current FORA allocation to projects within the Specific Plan not otherwise part of the MCP Project. Therefore, 124 AF/Y previously considered by MCWD as allocated from the City of Marina's supplies are now available for consideration in this Cypress Knolls water supply assessment. Additionally, with the adoption of the 2005 UWMP, the MCWD is now considering the existing desalination plant, currently idled due to the relatively high cost of operating the plant and an electrical pump mechanical issue that can be repaired if the plant's production capacity is

[5] MCWD Water, Wastewater Oversight Committee Report, 2003

needed, to be a supply that can be "available" within the meaning of Water Code section 10910 and Government Code section 66473.7~~.~~ contingent upon execution and performance of an agreement to provide financing for the existing desalination plant.

In addition to the 1,325 acre feet of FORA-allocated water that presently are available to the City of Marina, MCWD is undertaking the review and development of additional sources of supply, known as the "augmentation supply," that is projected to become available to MCWD during the 20-year planning horizon employed under this WSA as discussed further in section 4.0 and in detail in the 2005 UWMP. These augmentation supplies are being developed to provide support for development under the FORA reuse plan. Until final permit and regulatory approvals and capital outlay plans are completed, MCWD cannot consider this supply to be presently "available" within the meaning of SB 221 (see Cal Gov't Code § 66473.7(d)). However, MCWD does expect this water to become available within the twenty-five year time frame of the 2005 UWMP and within the context of SB 610 (Water Code § 10910-10915).[6] Allocation of this supply among the land use jurisdictions served by the MCWD has not been determined.

The City of Marina has an allocation from FORA of 1,325 AF/Y, including a 150 acre-foot loan.[7]~~.~~ As shown in Table 2-1 the proposed Cypress Knolls Project is expected to consume approximately 156 AF/Y. Existing and projected uses had resulted in a projected deficit of 162 acre-feet currently available for use within the City of Marina at the time of the adoption of the University Villages WSA. However, w~~W~~ith the availability of 124 AF/Y previously projected to be consumed in the University Villages Specific Plan, an increase of baseline water availability of 43.5 AF/Y as discussed above, and the consideration that renewed production from the existing desalination plant could be provided as necessary (300 AF/Y) and counted toward Ord Community supplies credited to the City of Marina, a remainder of ~~106~~ 149.5 AF/Y ~~is~~ would be available for further allocation in the City of Marina's portion of the Ord Community following the Cypress Knolls project, provided all the capacity of the existing desalination plant is earmarked for the City. This remainder is prior to the availability of any new water from MCWD's water supply augmentation project as described in Section 4.0 Table 6-1

[6] Adopted as Board Policy, September 28, 2005
[7] 2005 UWMP, Table 2-1 . p 2-6.

summarizes the current water availability status as a result of recent decisions and the effect of this project.

4.0 Water Augmentation

MCWD's water supply plans include utilizing recycled water or desalination to meet its future demands as identified in the Fort Ord Base Reuse Plan. These plans are further described in MCWD's Environmental Impact Report for the Regional Urban Water Augmentation Project, September 2004 (EIR). MCWD has identified a budget requirement for FY-03/04 through FY07/08 of approximately $80 million to assure reliable, high quality water is delivered to its customers in Marina and the Ord Communities. Part of this work assumes implementation of a future water augmentation alternative that will satisfy estimated needs of 2,400 AF/Y for redevelopment of the Ord Community and budget assistance from FORA for design and construction of the water augmentation project. A capital fund collected by FORA as part of its fees is estimated to generate approximately $37_million by 2015, which will be available to support a selected augmentation project. The augmentation project is discussed at length in the 2005 UWMP in Section 2.5 of that report beginning on page 2-21.

5.0 Water Conservation

Water conservation and MCWD's efforts to implement the Best Management Practices for Urban Water Conservation are discussed in Chapter 4 of the 2005 UWMP. Conservation effects on water demands are built into the demand forecasts for the MCWD and as such are not considered a separate component of supply.

The proposed Cypress Knolls project will be required to comply with current plumbing code requirements calling for low-flow plumbing fixtures and the MCWD's specific conservation requirements providing for additional water savings appliances and fixtures, further reducing indoor water consumption.

6.0 Water Supply Sufficiency Analysis

Based upon policy actions taken by the MCWD Board since the adoption of the University Villages Water Supply Assessment e.g., adoption of the 2005 UWMP and Marina's allocation of water only to the MCP component of the University Villages Specific Plan, the amount of water MCWD considered available in the Marina portion of the Ord service area of the MCWD has changed. Table 6-1 provides the sequencing and impacts of this change. Based upon the revised baseline water availability, there are sufficient supplies to accommodate the Cypress Knolls project within currently available supplies. However, as projected in the 2005 UWMP, even after the development of a 2,400 AF/Y water augmentation project, the Ord Community Service area is expected to be 2,548 AF/Y short of necessary supply at 2025. It is important to place this projected imbalance in perspective. Redevelopment of the former Fort Ord is only now beginning and the actual pace and form of redevelopment is expected to change over time. As this development proceeds and plans are modified, the MCWD will be updating its UWMP projections in five-year intervals. The relative uncertainty that the projected supply imbalance will actually materialize does not justify investment in specific plans to develop supplies beyond the planned water augmentation project at this time.

In the event of a finding that future supplies are insufficient to meet current and future expected demands, section 10911 of the Water Code requires the public water system to set forth its plans for acquiring additional supplies. Definitive plans exist to add 2,400 AF/Y of water supply to the MCWD system. Options for supply beyond that amount could include additional desalination capacity and/or water transfers of existing water entitlements in the Salinas Valley, the latter of which are in the exploratory discussion stage. Active coordination between the MCWD, land use jurisdictions and FORA will provide the communication necessary to allow water supply planning to proceed consistent with demonstrated needs.

7.0 Availability of Water Treatment and Delivery System Capacity

MCWD's current plans include upgrading the Ord Community wells and transmission network to accommodate the water capacity (vs. supply) needs for the Cypress Knolls development. In-tract distribution systems will be designed and constructed by the developer to accommodate necessary demand and fire flows for the project in accordance with District design standards. No treatment other than chlorination for maintenance of system disinfection is currently required.

Table 6-1 Summary of Available Water Supply vs. Projected Demand in AF/Y	
Available Supply Based on University Villages WSA	
City of Marina Ord Community Allocation	1,325.0
less Existing Use	631.0
less University Heights - Marina Community Partners portion	732.0
less University Heights - Specific Plan remainder	124.0
available water supply following adoption of University Villages WSA	**-162.0**
Revised Available Supply/Supply Additions	
Reduced Baseline Consumption	43.5
Current Desalination Plant (as needed)	300.0
Reallocation of University Villages - Specific Plan remainder	124.0
Revised baseline, available for allocation	305.5
Cypress Knolls Projected Demands	156.0
Supply Remaining for Future Allocation	**149.5**

8.0 Regulatory Permits Necessary for Supply Delivery

MCWD's local supplies are maintained under a public water supply permit from the State Department of Health Services. MCWD is exempt from local building codes with respect to construction of water treatment and delivery facilities. MCWD will have to secure about fifteen different government permits and authorizations (see Table 3.6.1 Required Agency Approvals and Permits, Regional Urban Water Augmentation Project EIR, reproduced herein as Table 8-1) to complete the supply augmentation project as discussed in Section 4.0 and for MCWD to be able to confirm the availability of this supply to serve new subdivisions under SB 221. Applications for such permits cannot be secured until further environmental review for the project is completed. Many of these permits are also discretionary on the part of the issuing agencies and as such would be necessary to be "approved" status before the augmentation supply could be considered available to serve new subdivisions for purposes of SB 221.

9.0 Effect on Agricultural and Industrial Users Not Supplied by the Marina Coast Water District but Reliant on the Same Sources

Agricultural users in the Salinas Valley generally rely on the same basin-wide supply from the Salinas Valley Groundwater Basin. These uses are taken into account in the basin planning of the Monterey County Water Resources Agency as part of developing a water balance for the Basin. Additional demands in the Marina and Ord Community area are not expected to affect agricultural users provided development and water demand within MCWD remains consistent with the MCWRA agreements.

10.0 Summary Water Supply Sufficiency Determination

Pursuant to Section 10910 of the California Water Code, and based on the foregoing analysis and representations by the project's proponents and the City of Marina, MCWD has determined that its currently projected water supplies including MCWD's existing 300 AFY desalination plant are sufficient to meet the projected annual water demands of existing and previously approved uses and the Cypress Knolls project during normal, single dry and multiple dry years during the next twenty years associated with the Cypress Knoll Project. However, as noted in the 2005 UWMP, even with the planned water augmentation project there is currently insufficient projected supply to provide for all the existing and planned demands expected by MCWD within the City of Marina's jurisdictional area of Ord Community.

Additional water supply continues to be a focus of MCWD as part of its long-term water supply planning.

Pursuant to California Government Code Section 66473.7, MCWD has determined based on the foregoing analysis and representations by the project's proponents and the City of Marina that it has sufficient currently available water supply including MCWD's existing 300 AFY

Table 8-1 Required Agency Approvals and Permits for Water Augmentation Project

TABLE 3.6-1
REQUIRED AGENCY APPROVALS AND PERMITS

Agency	Permit Name	Recycled Water Alternative		Desalination Alternative
		Pipelines	Surface Storage	
LOCAL AGENCIES				
Monterey County	Encroachment Permits (Public Works)	X	potential	X
	Well Drilling Permits (Environmental Health)	--	--	X
	Use Permits (Planning)	X	X	--
City of Marina	Coastal Development Permit	potential	--	X
	Building and Grading Permits	X	X	X
City of Seaside	Encroachment, Building/Grading Permits	X	X	--
Monterey Peninsula Water Management District	Water Distribution System Permit	potential	potential	potential
STATE AGENCIES				
Regional Water Quality Control Board	NPDES WDR Permit (or Permit Amendment)	--	--	X
	Water Reclamation Operations Permit	X	X	
	Construction Storm Water Permit	X	X	X
	Facility Operations Storm Water Permit	--	X	X
	Clean Water Act Section 401 Water Quality Certification or Waiver	X	X	X
CA Department of Health Services	Review and concurrence for Recycled Water Storage and Distribution	X	X	--
	Permit to Operate	--	--	X
CA Department of Fish and Game	Section 1601 Streambed Alteration Agreements	potential	--	--
	CA Endangered Species Act Section 2081 Permit	X	X	potential
CA Department of Parks and Recreation	Encroachment, easement or property acquisition for any project components	--	--	X
CA Coastal Commission	Coastal Development Permit	X	--	potential for appeal
CA Department of Transportation	Encroachment Permit	potential	--	potential
State Lands Commission	Encroachment Permit	potential	--	X
FEDERAL AGENCIES				
U.S. Fish & Wildlife Service, NOAA Fisheries	Biological Assessment; Federal Endangered Species Act Section 7 Consultation	potential	potential	potential
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit/Section 10	X	potential	potential
U.S. National Oceanic and Atmospheric Administration - Monterey Bay National Marine Sanctuary	Encroachment Permit and input into CCRWQCB NPDES WDR permit	--	--	X
U.S. Bureau of Reclamation	Approval of NEPA environmental documents and approval to allow the MRWPCA to permit connections to the reclamation plant for non-agricultural users	X	--	--

Source: Regional Urban Water Augmentation Project EIR desalination plant to serve the existing and previously proposed uses in addition to the Cypress Knolls project, within the City of Marina over the next twenty years. However, existing supplies and planned supplies are not sufficient to meet all existing and currently projected uses over the next twenty years. Additional water supply continues to be a focus of MCWD as part of its long-term water supply planning.

11.0 References

Association of California Water Agencies, Water Supply and Development A Users Guide to California Statutes Including AB 221 (Kuehl) & SB 610 Costa. 2002.

California Department of Water Resources. Monthly Average ETo Report. December 14, 2004.

Fort Ord Reuse Authority, Fort Ord Reuse Authority ("FORA") Allocation of Strategic Reserve, 10-23-98 Action. March 1, 2004.

Littleworth, Arthur L. and Garner, Eric L., California Water. 1996

Marina Coast Water District, Deep Aquifer Investigative Study, Water Resources & Information Management Engineering, Inc. May, 2003.

Marina Coast Water District, 2005 Urban Water Management Plan, December, 2005

Marina Coast Water District. Marina Coast Water District Assigned Water Use Factors for Determining Water Capacity Charges. May, 2003.

Marina Coast Water District, Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands (1996), document recorded in the Office of the Monterey County Recorder on August 7, 1996, at Reel 3404 Page 749

Marina Coast Water District, Memorandum of Agreement Between the United States of America and the Monterey County Water Resources Agency, Monterey County Agreement No. A-0604, September 21, 1993

Marina Coast Water District, Assignment of Easements on Former Fort Ord and Ord Military Community, County of Monterey, and Quitclaim Deed for Water and Waste Water Systems, Monterey County Recorder's document No. 2001090793, Re-recorded 11-7-2001 as Document No. 2001094583 to correct Exhibit C

Marina Coast Water District, Water/Wastewater Facilities Agreement between the Fort Ord Reuse Authority and Marina Coast Water District, March 13, 1998

Marina Coast Water District, Urban Water Conservation Feasibility Study, 2004.

Marina Coast Water District, Water, Wastewater Oversight Committee Report, 2003

Monterey County Water Resources Agency, Salinas Valley Water Project EIR, 1998.

Monterey Peninsula Water Management District, Commercial, Industrial and Governmental Projects (Non-Residential) Undated water use factors.

RBF, Inc. Comparison of Unit Water Demand & Wastewater Load Rates. Memorandum of January 16, 2004.

Appendix 1
FORA Letter re Allocation of Strategic Reserve

FORT ORD REUSE AUTHORITY
100 12TH STREET, BUILDING 2880, MARINA, CALIFORNIA 93933
PHONE: (831) 883-3672 FAX: (831) 883-3675
WEBSITE: www.fora.org

March 1, 2004

Michael Armstrong
Marina Coast Water District
11 Reservation Road
Marina, CA 93933

Re: Fort Ord Reuse Authority ("FORA") Allocation of Strategic Reserve, 10-23-98 Action

Dear Mr. Armstrong: Mike

At several recent public meetings we have heard a number of interpretations of the FORA Board of Directors' actions taken in October 1998 regarding the loan of water resources to local jurisdictions. This letter is intended to provide clarity with regard to those actions and to provide you with a specific reference for making water resource availability determinations, as required by state law.

Specifically, the FORA Board took action to authorize a loan of 150 acre foot per year ("afy") of water each to the cities of Del Rey Oaks, Marina, Seaside and the County of Monterey from the strategic reserve for interim use. In addition, in taking this action the FORA Board required that any jurisdiction borrowing the 150 afy from the strategic reserve commit to the rate-based capital cost of participation in the regional reclaimed water project or other augmentation program. As the Board adopted the 2001 Community Facilities District the commitment to this capital cost was affirmed.

The 1998 Board action assumed that this loan could take place upon the transfer of Economic Development Conveyance ("EDC") land to the individual jurisdictions for the express purpose of developing visitor serving, commercial or recreational projects. In this way, other resources could be redirected for housing, commercial, or other uses. The loan term of this borrowing is either for a period of 5 years or when an augmented water source becomes available for a similar purpose. In this sense, the loan is an "interim" borrowing – the resource is replaced by the augmentation supply once confirmed. The EDC property transfer trigger is just now occurring as FORA conveys properties to individual jurisdictions. I have enclosed the October 23, 1998 Board Report for your information.

I hope that this brief letter clarifies the actions taken by the FORA Board on October 23, 1998 and offers a basis for analyzing availability of resources to the FORA land use jurisdictions. Thank you for your ongoing support for the reuse of the former Fort Ord.

Sincerely,

Michael A. Houlemard, Jr.
Executive Officer

Enclosure

C: Dan Keen, City of Seaside
Tony Altfeld, City of Marina
Ron Langford, City of Del Rey Oaks
Nick Chiulos, Monterey County
Fred Meurer, City of Monterey

MARINA COAST WATER DISTRICT
5-YEAR ANNUAL CONSUMPTION REPORT BY LAND USE JURISDICTION

Report Modified: 4/14/2006
** Internal Use Only **

L⁻⁻ⁿ USE JURISDICTION	2001	2002	2003	2004	2005	*2006
* represents year to date consumption figures which have been billed to customers						
ORD COMMUNITY - ARMY						
Army - Ord						
Total Consumption (af)	47.94	50.39	63.63	62.18	37.32	5.05
No. of Connections	27	29	29	28	28	27
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
Army Construction Water - Ord						
Total Consumption (af)	0.00	0.00	0.07	21.72	20.88	0.29
No. of Connections	0	0	1	1	4	2
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
⁻, itch Park Army - Ord						
Total Consumption (af)	0.00	0.00	0.00	0.00	1.31	1.12
No. of Connections	0	0	0	0	72	114
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
Hayes Park Army - Ord						
Total Consumption (af)	4.00	6.20	3.03	2.26	98.03	15.45
No. of Connections	25	25	25	48	164	164
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
TOTALS FOR ORD COMMUNITY - ARMY						
Total Consumption (af)	**51.94**	**56.59**	**66.74**	**86.15**	**157.54**	**21.91**
⁻ORA Allocation (af)	**1,577**	**1,577**	**1,577**	**1,577**	**1,577**	**1,577**
Water Used (%)	**3%**	**4%**	**4%**	**5%**	**10%**	**1%**

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006

* represents year to date consumption figures which have been billed to customers

ORD COMMUNITY - MARINA

'brams Park - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	44.89	98.93	111.07	89.26	76.31	11.87
No. of Connections	179	219	226	226	226	224
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Cypress Knolls - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	0.00	0.00	0.00	0.00	0.00	0.00
No. of Connections	0	0	0	0	0	1
Land Use Agency Allocation	*0*	*0*	*0*	*0*	*0*	*0*
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	156	156	156	156	156	156

Marina - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	19.44	28.20	23.54	24.65	31.92	3.21
No. of Connections	19	35	34	35	44	41
..nd Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Marina Airport - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	18.05	13.26	7.62	6.11	5.36	1.12
No. of Connections	16	15	17	16	21	17
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Marina Construction Water - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	0.00	50.08	12.14	14.29	8.63	2.44
No. of Connections	0	5	7	10	11	5
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006
* represents year to date consumption figures which have been billed to customers						
Marina Heights - Ord						
Total Consumption (af)	0.00	0.00	0.00	0.00	0.00	0.00
No. of Connections	0	0	0	0	0	1
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	350	350	350	350	350	350
Preston Park - Ord						
Total Consumption (af)	144.48	126.58	132.41	122.91	105.71	19.22
No. of Connections	391	392	389	386	380	375
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
University Villages - Ord						
Total Consumption (af)	0.00	0.00	0.00	0.00	0.00	0.00
No. of Connections	0	0	0	0	0	1
Land Use Agency Allocation	*593*	*593*	*593*	*593*	*593*	*593*
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	732	732	732	732	732	732

TOTALS FOR ORD COMMUNITY - MARINA						
Total Consumption (af)	**226.86**	**317.04**	**286.79**	**257.22**	**227.92**	**37.87**
FORA Allocation (af)	**1,175**	**1,175**	**1,175**	**1,175**	**1,175**	**1,175**
Water Used (%)	**19%**	**27%**	**24%**	**22%**	**19%**	**3%**

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006

* represents year to date consumption figures which have been billed to customers

ORD COMMUNITY - MONTEREY COUNTY

ounty - Ord						
Total Consumption (af)	5.35	6.85	5.28	4.85	4.07	0.38
No. of Connections	5	5	5	6	6	6
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

County Construction Water - Ord						
Total Consumption (af)	0.00	0.66	0.16	0.00	0.00	0.00
No. of Connections	0	2	1	0	0	0
Land Use Agency Allocation	*0*	*0*	*0*	*0*	*0*	*0*
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

East Garrison - Ord						
Total Consumption (af)	0.00	0.00	0.00	0.00	0.00	0.00
No. of Connections	0	0	0	0	0	1
and Use Agency Allocation	470	470	470	470	470	470
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	470	470	470	470	470	470

TOTALS FOR ORD COMMUNITY - MONTEREY COUNTY						
Total Consumption (af)	**5.35**	**7.51**	**5.44**	**4.85**	**4.07**	**0.38**
FORA Allocation (af)	**560**	**560**	**560**	**560**	**560**	**560**
Water Used (%)	**1%**	**1%**	**1%**	**1%**	**1%**	**0%**

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006

* represents year to date consumption figures which have been billed to customers

ORD COMMUNITY - SEASIDE

y View Mobile Park - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	0.00	0.00	14.64	72.19	60.14	9.85
No. of Connections	0	0	223	223	223	223
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Seaside Golf Course - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	1.08	0.52	0.31	0.60	1.28	0.38
No. of Connections	1	1	1	1	6	6
Land Use Agency Allocation	*0*	*0*	*0*	*0*	*0*	*0*
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

School - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	120.70	121.23	110.12	113.86	114.17	15.92
No. of Connections	7	7	7	7	7	7
nd Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Seaside - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	3.12	3.08	3.13	3.96	3.73	0.56
No. of Connections	3	3	3	3	6	6
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Seaside Construction Water - Ord

	2001	2002	2003	2004	2005	*2006
Total Consumption (af)	0.00	4.01	36.90	21.46	5.03	0.70
No. of Connections	*0*	*5*	*19*	*17*	*9*	*4*
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006

* represents year to date consumption figures which have been billed to customers

Seaside Highlands - Ord

Total Consumption (af)	0.00	0.00	9.68	166.50	194.54	22.65
No. of Connections	0	0	111	326	392	380
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Seaside Highlands Soaper Field - Ord

Total Consumption (af)	0.00	0.00	0.00	24.26	18.35	1.21
No. of Connections	0	0	0	1	1	1
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

Sun Bay (300 units) - Ord

Total Consumption (af)	77.30	81.53	64.77	65.40	62.74	10.83
No. of Connections	300	300	300	300	300	300
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0

TOTALS FOR ORD COMMUNITY - SEASIDE

Total Consumption (af)	**202.19**	**210.37**	**239.53**	**468.23**	**459.98**	**62.09**
FORA Allocation (af)	**862**	**862**	**862**	**862**	**862**	**862**
Water Used (%)	**23%**	**24%**	**28%**	**54%**	**53%**	**7%**

LAND USE JURISDICTION	2001	2002	2003	2004	2005	*2006
* represents year to date consumption figures which have been billed to customers						
ORD COMMUNITY - UCMBEST						
C MBEST - Ord						
Total Consumption (af)	0.24	0.40	3.03	4.15	5.28	1.24
No. of Connections	2	2	3	3	3	3
Land Use Agency Allocation	0	0	0	0	0	0
Water Used (%)	0%	0%	0%	0%	0%	0%
MCWD WSA Allocation	0	0	0	0	0	0
TOTALS FOR ORD COMMUNITY - UCMBEST						
Total Consumption (af)	**0.24**	**0.40**	**3.03**	**4.15**	**5.28**	**1.24**
FORA Allocation (af)	**230**	**230**	**230**	**230**	**230**	**230**
Water Used (%)	***0%***	***0%***	***1%***	***2%***	***2%***	***1%***

RESOLUTION NO. 2005-129

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MARINA MAKING FINDINGS AND DETERMINATIONS PURSUANT TO CALIFORNIA WATER CODE SECTION 10911(c) AND CALIFORNIA GOVERNMENT CODE SECTION 66473(b)(3), AND RESERVING AND ALLOCATING WATER SUFFICIENT TO SERVE THE MCP DEVELOPMENT.

WHEREAS, the City Council of the City of Marina, California (the "City"), did on the 31st day of May, 2005, hold a duly-noticed public hearing, continued from the 17th day May 2005, to consider approval of the University Villages Specific Plan and related approvals consisting of a General Plan Amendment, Tentative Map, Design Review for Phase 1 Improvements, Tree Removal Permit, Zoning Map Amendment and a development agreement between the City and Marina Community Partners, LLC, covering the development of approximately 390 acres of the approximately 420 acre area covered by the Specific Plan controlled by Marina Community Partner, LLC (the "Development Agreement") (collectively, the "Project") (that portion of the Project controlled by Marina Community Partners, LLC, and to be developed in accordance with the Development Agreement is hereinafter referred to as the "MCP Development" and the remaining portion of the Project is referred to as the "Other UV Specific Plan Development"); and

WHEREAS, the Planning Commission of the City of Marina, California, did on the 5th day of May, 2005, hold a duly-noticed public hearing, continued from the 14th day of April, 2005 and a work session, on the 23rd day of April 2005, recommend approval, subject to conditions, of the University Specific Plan and other entitlements; and

WHEREAS, said University Villages Specific Plan has complied with the requirements of the California Environmental Quality Act of 1970, California Public Resources Code section 21000 et seq., in that the City of Marina has prepared and certified the University Villages Specific Plan Environmental Impact Report (SCH No. 2004091167); and

WHEREAS, the city has been allocated 1,325 acre feet of potable water annually under the Fort Ord Reuse Plan adopted by the Fort Ord Reuse Authority ("FORA") to serve property within the City that is also within the Fort Ord Reuse Plan planning area (the "FORA Allocation"); and

WHEREAS, in connection with the preparation of the University Villages Specific Plan Environmental Impact Report, on October 18, 2004 the City requested the Marina Coast Water District ("MCWD") to prepare a water supply and demand assessment and written verification of sufficient supply in compliance with Sections 10910 through 10912, inclusive, of the Water Code, and Sections 65867.5 and 66473.7 of the Government Code, respectively, to evaluate whether sufficient potable water will be available to serve the water demands associated with the Project, including, but not limited to, the MCP Development to be developed by Marina Community Partners, LLC, and its successors and assigns, under the Development Agreement (the "University Villages WSA"); and

WHEREAS, acting on the City's request, the MCWD did prepare the University Villages WSA, attached hereto as Exhibit A, which document was approved by the MCWD's governing body, in accordance with California Water Code section 10910(g)(1), following public hearings held on the 12th day of January 2005 and continued to the 26th day of January 2005; and

WHEREAS the University Villages WSA has been considered by the City, along with those documents included in the administrative recorded and listed on the attached Exhibit B, and a true and correct copy thereof included in the University Villages Specific Plan Environmental Impact Report, in accordance with California Water Code sections 10911(b-c).

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Marina, as follows:

1. That the above recitations are true and correct, incorporated herein by this reference, and constitute findings of the City Council in this matter;

2. That, in accordance with California Water Code section 10911(c) and in light of those considerations set forth in the attached Exhibit B and Exhibit B-1, the City Council hereby finds that, based on the entire record, projected water supplies will be sufficient to satisfy the demands of the Project, in addition to existing and planned future uses;

3. That, in accordance with California Government Code section 66473.7(b)(3) and in light of those considerations set forth in the attached Exhibit B and Exhibit B-1, the City Council hereby finds that, based on the entire record, in addition to overstating the Project's and the MCP Development's water demands, the University Villages WSA failed to account for additional water supplies that are, or will be, available prior to completion of the MCP Development subdivision that will satisfy the requirements of Government Code section 66473.7.

4. The City Council determines that the evidence in the records constitutes substantial evidence to support the actions taken and findings made in this Resolution.

5. That the City Council does hereby irrevocably reserve and allocate 593 acre feet annually of the FORA Allocation to that 390 acre portion of the Project covered by the Development Agreement and controlled by Marina Community Partner's LLC, it successors and assigns, to serve the MCP Development;

6. That the allocation of water under this resolution is deemed to be sufficient to meet the water demands associated with the full build-out of the MCP Development in a manner consistent with the Specific Plan and the Development Agreement, as described in the attached Exhibit B.

PASSED AND APPROVED by the City Council at a regular meeting of May 17, 2005 and continued to May 31, 2005, by the following vote

AYES, COUNCIL MEMBERS: Gray, Morrison, Wilmot, McCall and Mettee-McCutchon
NOES, COUNCIL MEMBERS: None
ABSENT, COUNCIL MEMBERS: None

Ila Mettee-McCutchon, Mayor

ATTEST:

Joy P. Junsay, City Clerk/Secretary

<u>EXHIBIT A</u>

Draft 1-26-05

Water Supply Assessment and Written Verification of Supply

Proposed
University Villages
Specific Plan Development
and
Marina Community Partners Project

Prepared by the Marina Coast Water District

and

Byron Buck & Associates
Water Resources and Environmental Consulting

January 26, 2005

Contents

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List of Tables

1.0 Introduction and Purpose of Report

1.1 Project Description

The City of Marina is proposing to adopt the University Villages Specific Plan encompassing development plans on approximately 429 acres of the former Fort Ord within the City of Marina (the Specific Plan). The Specific Plan area development is bounded on the west by Highway 1, to the south and east by California State University Monterey Bay, and is adjacent to other portions of the City on the north and east (see Figures 1-1 and 1-2). The development is centered around a mixed use Village Center proposed by Marina Community Partners (MCP) and consisting of retail, commercial, visitor serving and residential uses (the MCP Project). The land uses proposed by the Specific Plan, and the MCP Project specifically, all as considered in this water supply assessment and written verification of supply, are shown in Table 1-1.

It is expected that the Specific Plan and the development entitlements required for the MCP Project (i.e., tentative subdivision map, development agreement and related approvals) will be adopted at roughly the same time following certification of the pending environmental impact report (EIR). Accordingly, this assessment analyzes the proposed development at two levels. The first level is that portion of the Specific Plan encompassing only the MCP Project. The second level includes all development under the Specific Plan, including both the MCP Project and other development in the Specific Plan (i.e., but not part of the MCP Project). In this way, the assessment can address the entire Specific Plan consistent with the scope of the pending environmental impact report for the Specific Plan, as required under Cal. Water Code § 10910, et seq., and address specific requirements relative to providing a written verification of supply for the subdivision proposed to implement the MCP Project (Cal. Gov't Code section 66473.7 (b)(1).)

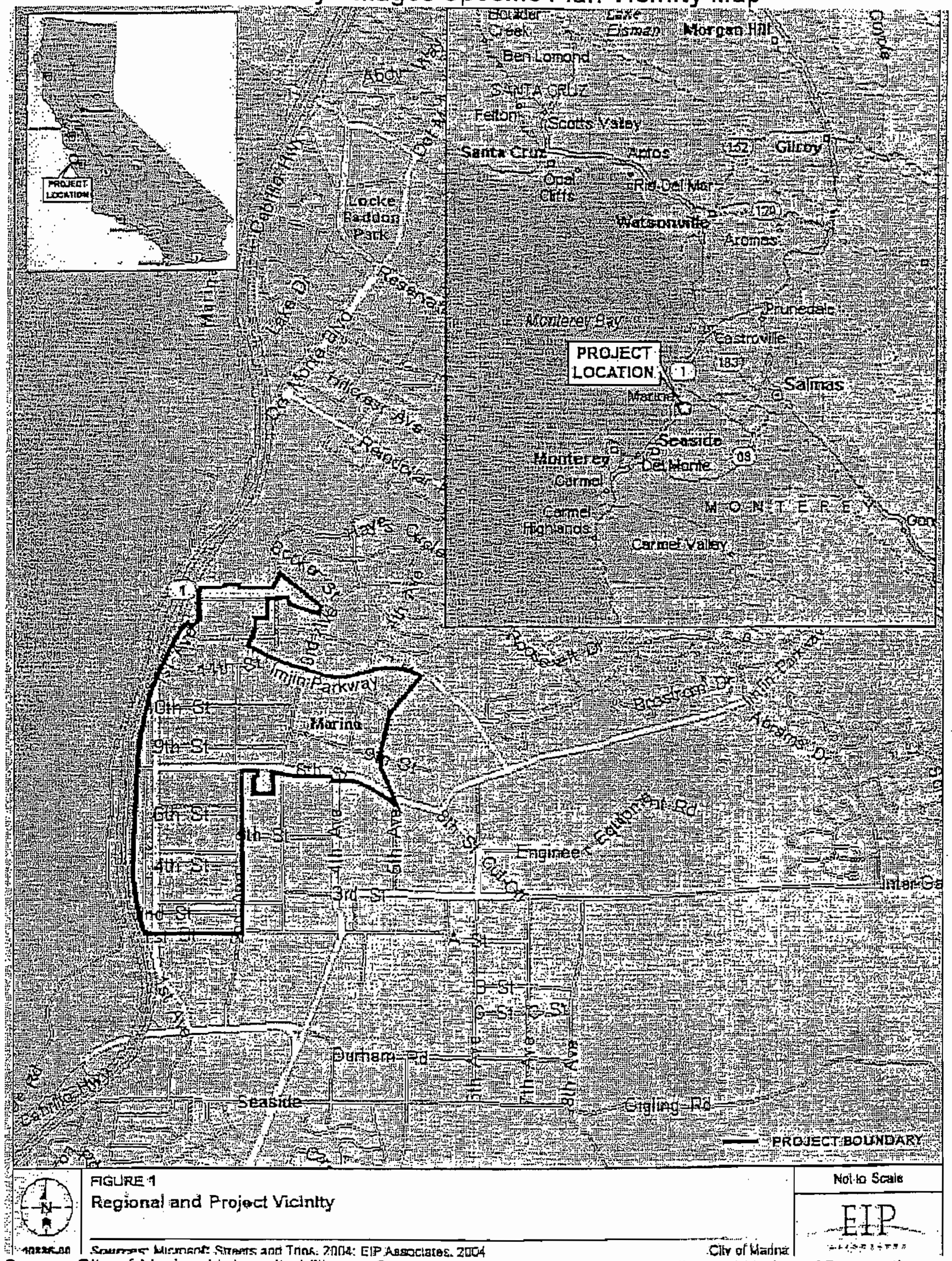
Table 1-1

Proposed University Villages Specific Plan	
Land Use	Units of Measure
MCP Project	
Commercial/Industrial	
Office Related/Light Ind.	750,000 sq. ft
Retail (non-food related)	528,000 "
Service Uses	40,000 "
Restaurants Fast Food	30,000"
Restaurants Full Serve	57,725 "
Grocery	55,000 "
Cinema	35,000 "
Full Service Hotel	350 rooms
Limited Service Hotel	150 rooms
Residential	
Single Family Units	**Dwelling units**
Carriage	126
Small Lot Alley	242
Small Lot Standard	131
Standard Lot	115
Multi Family	
Townhomes – mixed use	24
Townhomes – live/work	139
Duet - mkt alley	352
Apartments	108
Common Areas	
Parks and Open Spaces	27acres
Other Specific Plan Development (new)	
Transit Related	17.5 acres
Elementary School	11.3 acres
Recreational	20.4 acres
Church	1.5 acres
Fire Station	3.3 acres

Source: Marina Community Partners, LLC and City of Marina

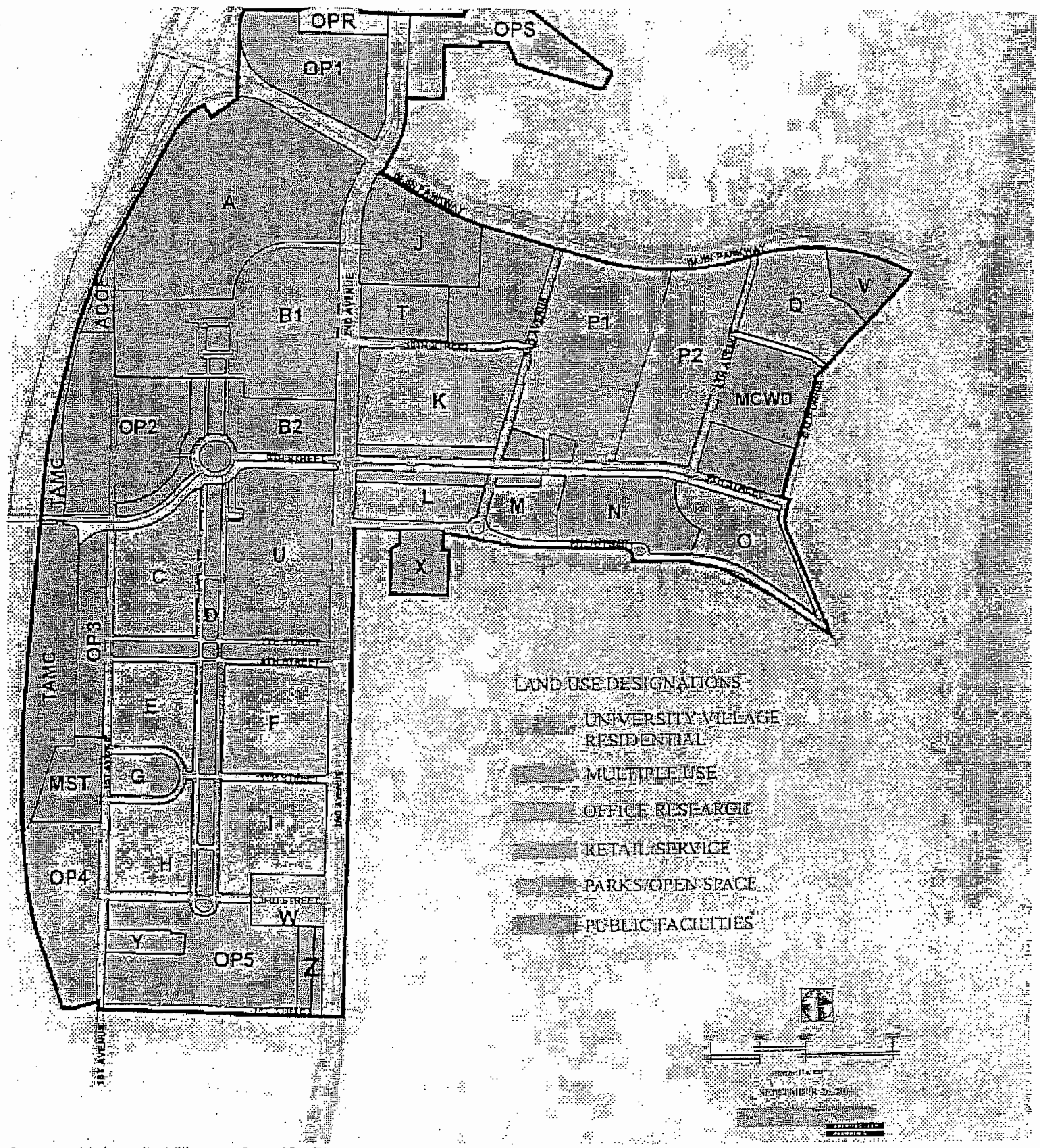
Figure 1-1

University Villages Specific Plan Vicinity Map



Source: City of Marina University Villages Specific Plan Environmental Checklist and Notice of Preparation, Sept. 2004

Figure 1-2
University Villages Specific Plan Land Uses



Source: University Villages Specific Plan

1.2 Purpose of Water Supply Assessment.

The City of Marina is required to consider this water supply assessment (Water Code section 10910 et. seq.) and written verification of supply (Government Code section 66473.7) as part of the review and approval process for the Specific Plan and the MCP Project. On October 18, 2004 the City requested the Marina Coast Water District (MCWD), as the public water supplier for the proposed development area, prepare this assessment and verification to analyze the availability of supplies to support the Specific Plan in general and the MCP project specifically.

1.3 Requirements for Water Supply Assessments

On October 9, 2001 former Governor Gray Davis signed into law Senate Bills 610 (Costa) and 221 (Kuehl) (Chapters 643 and 642, respectively, Statutes of 2001) requiring the preparation of a water supply assessment in conjunction with project review under the California Environmental Quality Act (CEQA), and a written verification of water supply where a tentative subdivision map is proposed for approval. The general intent of SB 221 and 610 was to create additional assurance that certain new developments could be provided with a reliable supply of water. It also intended that existing users and others dependent on common sources of water affected by new development were informed of the development's effect on those supplies, and plans to maintain reliable supplies. The legislation also serves to better inform decision makers regarding the water supply implications of development.

SB 610 requires that a water supply assessment be prepared for certain developments, including residential developments in excess of 500 units, where an environmental impact report or negative declaration is being prepared under CEQA. The requirement adds a specific water supply assessment protocol for land use jurisdictions to follow and consider in evaluating the environmental impacts for a proposed project. In the present case, a Water Supply Assessment must be included in the Environmental Impact Report prepared for the proposed Specific Plan. The City of Marina must determine, based on the entire record, whether water supplies projected in the water supply assessment will be sufficient to satisfy the demands of the Specific Plan, in addition to existing and planned future uses.

SB 221 requires a city or county to include as a condition of approval of any tentative map, parcel map or development agreement for residential developments of 500 dwelling units or more, a requirement that a "sufficient water supply" be available. [1] Proof of this supply must be on the basis of a written verification from the public water system that will serve the development. In the present case, because subdivision and other project-level entitlements are being fully considered only for the MCP Project at this time, this analysis evaluates the sufficiency of water supply under SB 221 for the MCP project specifically (and not the Specific Plan as a whole).

Development on the former Fort Ord is currently limited by a settlement agreement pursuant to the adoption of the Final EIR for the Base Reuse wherein FORA has agreed to constrain development on former Fort Ord lands to that which could be supported with specified existing and future water allocations. FORA manages these allocations through a Development and Resources Management Plan that has allocated supply and annually tracks use against allocation. The Fort Ord Reuse Authority (FORA) allocates an allotment of water supply to each land use jurisdiction. FORA's allotment to the City of Marina for its planned uses on the former Fort Ord is set at 1,175 acre-feet per year. The City has been granted a loan of water of an additional 150 acre-feet per year

[1] Under SB221, a "sufficient water supply" is defined as "... *the total water supply available during normal, single dry and multiple dry years within a 20-year projection that will meet the projected demand associated with the proposed subdivision, in additional to existing and planned future uses...*" (Government Code 66473.7(a)(2).) This does not mean that 100 percent of the development's *unrestricted* water demand must be met 100 percent of the time, nor does it mean that the new development may not have any impact on the service level to existing customers of the water provider. A "sufficient water supply" may be found to exist for a proposed subdivision as well as for existing customers as long as an acceptable water supply can be estimated and planned for during a record drought (ACWA, 2002).

from the FORA water reserve, bringing the total current water supply for the City of Marina on the former Fort Ord to 1,325 acre-feet.[2] The term of that loan is either for a period of five years, or when a water augmentation project is constructed, in essence making this a long-term allocation for practical purposes.

In December 2003 the District prepared a water supply assessment for the Marina Heights Development, which was estimated to consume 349.5 acre-feet per year of the City's allocation. When considered with existing demands from the Abrams/Preston Park housing area at 270 acre-feet per year and 11.25 acre-feet per year for other existing uses, the City has a currently available amount of water for future projects of 694.25 acre-feet per year.

In addition to the 1,325 acre feet of water that presently are available to the City of Marina, the District is undertaking the review and development of additional sources of supply, known as the "augmentation supply," that could become available to the District during the 20-year planning horizon employed under this WSA as discussed further in section 4.0. Under FORA's plans and the existing settlement agreement limiting development of the former Fort Ord essentially through restrictions on water supply, these augmentation supplies may be developed and provided to support development under the FORA reuse plan. No portion of the augmentation supply will become available to City until it has been "allocated" by FORA, though it is reasonable to assume that the City will receive some fair share of this supply. Due to uncertainty associated with the augmentation supply, the District does not consider this supply to be presently "available" within the meaning of SB 221 (see Cal Gov't Code § 66472.7(d)). Although a water supply verification may rely on projected supplies that are not currently available, such reliance must be based upon a number of evidentiary factors (e.g., written contracts, capital outlay programs, etc.) that are not present in the case of the augmentation supply.,. Nonetheless, SB 610 does require the District to identify for the City of Marina its plans for securing such additional supplies (see Cal. Water Code § 10911 (a)) to allow the City to make a

[2] See Appendix 1, Fort Ord Reuse Authority Letter of March 1, 2004.

determination, based upon all of the evidence in the record, as to whether the total "projected" supplies will be available to serve its planned growth. This identification is required when a water provider finds its water supplies are insufficient to meet projected demands, as is in the present case relative to currently available supplies.

1.4 Relationship of this Document to the Marina Coast Water District Urban Water Management Plan

The Urban Water Management Planning Act requires municipal water providers serving over 3,000 acre-feet per year of water (1 acre-foot = 325,900 gallons) or having 3,000 service connections to prepare plans (urban water management plans or UWMPs) on a five-year, ongoing basis. A UWMP must demonstrate the continued ability to provide water supplies for current and future expected development under normal, single dry and multiple dry year scenarios. These plans also require the assessment of urban water conservation measures and wastewater recycling. Pursuant to Section 10632 of the California Water Code, the plans must also include a water shortage contingency plan outlining how water providers will manage water shortages of up to 50 percent of their normal supplies in a given year.[3]

The District's most recent Urban Water Management Plan (UWMP) was adopted in December of 2001 and is being updated. As provided for in the law, this water supply assessment incorporates by reference and relies upon many of the planning assumptions and projections of that UWMP in assessing the water demand of the proposed project relative to the overall increase in demands expected by the District. The UWMP does assume the level of development contemplated in the Specific Plan and the Project in evaluating the demands to be made on the District's water supplies, although water demands for this project are more refined in this analysis. Like this water supply assessment, the UWMP

[3] Like SB 610 and SB 221, specific levels of supply reliability are not mandated (i.e., whether a specific level of demand can be met over a designated frequency). Rather, the law provides that a specific level of reliability is a local policy decision of the water provider.

found a shortfall in supply to meet all of Marina's then-projected demands through 2020. Additionally, recent information relative to the state of the groundwater supply relied upon by the District has been updated as noted in section 3.0.

2.0 Project Water Demands

2.1 Water Demands and Project Conservation Features

Tables 2-1 and 2-2 depict projected average annual water demands utilizing water use factors that are based upon local climate and geography for land uses proposed in the Specific Plan. The sources for water use factors are noted in the table. The analysis recognizes that plumbing fixtures in new development will comply with current plumbing code standards, requiring low flow plumbing devices. Actual water demands will vary depending upon the ultimate mix of specific uses within broadly described non-residential use classes, water use behavior of the residents and property managers, and the ultimate landscape development and maintenance practices. These estimates are based on long-term averages. In any given year, consumption is expected to vary year-to-year by as much as 7 percent, depending on weather and precipitation, with the greater use in drier years. During the first few years after any given phase of development occurs, expected water use would likely be higher for landscape uses as new landscape plantings require additional water to become established. Because the District's water source is groundwater from the Salinas River Groundwater Basin that has a large storage volume buffering yearly hydrologic variation, the District's supplies do not vary significantly due to annual hydrology, with the District's total demands forming less than 2% of annual Basin yield. As such normal, single dry, and multiple dry years are considered similar for planning purposes.

The proposed MCP project includes water conservation features beyond those required under current plumbing code and MCWD's policies and procedures, that will further reduce demands on water. For example, the project will utilize evapotranspiration-based irrigation controllers, also known as SMART or ET based controllers, for all new common area, commercial and residential landscapes. Provided irrigation delivery systems are properly designed and maintained, these irrigation controllers account for the exact amount of water necessary for irrigation by utilizing either pre-programmed irrigation schedules set to local irrigation demands or by obtaining real-time irrigation needs based on local California Irrigation Management Information Stations (CIMIS).[4] The controllers may also be equipped with precipitation sensors that will shut off systems during rain events. Systems utilized for larger landscapes will be able to sense system malfunctions and shut down broken irrigation systems, further saving water, which could have been wasted as a result of broken sprinkler heads, water lines and the like. Irrigation savings of 13 percent over standard controller-based systems are expected based on local sampling where these controllers are in operation and experience in other applications. The MCP project will also provide all new housing units with high-efficiency washing machines that use about one-third less water per laundry load than conventional machines (10-22 gallons per day depending on type of housing unit). The development will also plumb new residential units with either hot water recirculation devices or tankless hot water heaters, which may reduce overall water use by 2 percent or more.

2.2 Forecasting Methodology

Legal requirements for water supply assessments do not specify particular method to project usage nor are specific water use factors mandated for given land uses. Because water demand forecasts are estimates, not guarantees, with them come varying degrees of uncertainty. For example, at the specific plan level, many specific non-residential land uses may be allowable under local zoning codes under the general land use designations of retail/services, multiple use, or office/research. Detailed knowledge of specific uses at a tentative map level of detail at this stage of planning typically is unavailable and as such, actual use will vary depending upon the actual development that takes place. For residential uses the MCP Project includes a plot plan level detail for each of the housing units. Therefore, it is possible to define with higher accuracy the expected water use for landscaping for each type of housing. In addition, for both non-residential and residential land uses throughout the Specific Plan, sufficient detail exists in the proposed plan to make credible estimates based on disaggregating indoor from outdoor uses, rather than using gross factors based only on units of development which typically include an estimate of both indoor and outdoor uses.

The District will track actual usage of new developments and may adjust water use factors as necessary to reflect actual use and to calculate account balances for land use jurisdictions' share of future water allocated to the redevelopment of Fort Ord, as discussed in Section 3.3, Groundwater Management.

2.3 Forecast Comparisons

As noted in Section 2.2, applicable law establishes no prescribed methodology for forecasting water demands, and considerable discretion must be exercised in converting generalized land use forecasts into water demand forecasts for purposes of water supply assessments. It is therefore useful to evaluate the primary forecast in Tables 2-1 and 2-2 in comparison with other, more general forecast methodologies for the purpose of comparing results and gaining perspective on the primary forecast.

Two methods are used here for comparison purposes. The first method utilizes a per capita consumption factor based on population. The second estimates total use based upon a single factor for total water use for newly urbanized areas that includes a mix of uses on a per- acre basis.

Under the first comparative approach, Marina's current per capita demand, which is about 0.12 acre-feet per year is employed based upon 2003 population and

Table 2-1

University Villages Specific Plan Residential and Common Area Water Demand Projection

University Villages Development	No. Units	Lot Size Sq.Ft.	Lot Size Ac.	Person/ Unit	Interior Demand Gallons per Day	% Irrigable Area	Turf %	Ornamental %	Water Demands In AF/Y: Total Interior	Water Demands In AF/Y: Total Exterior	Water Demands In AF/Y: Total Demands	Notes
									unit demands			Ornamentals @1.5 af/ac turf at 2.1 af/acre
Residential Uses												
Single Family												
Live-Work Townhome	139	1740	0.04	1.5	98.2	30%	0%	100%	0.11	0.02	17.78	Int. demand @125% reflecting live/work
Duet	352	2250	0.05	1.5	78.5	40%	40%	60%	0.09	0.04	43.82	
Small Lot Alley	242	3088	0.07	2	104.7	40%	30%	70%	0.12	0.05	39.91	
Small Lot Standard	131	3800	0.09	3	157.1	40%	50%	50%	0.18	0.06	31.28	
Carriage	126	4760	0.11	3	157.1	40%	60%	40%	0.18	0.08	32.39	
Standard Lot	115	5750	0.13	3	157.1	50%	60%	40%	0.18	0.12	34.35	
Multi Family										lot demand		
Mixed Use Townhome	24		11	1.5	78.5	10%	25%	75%	0.09	1.82	3.93	
Apartments	108		3	2	104.7	10%	25%	75%	0.12	0.50	13.16	
	1129											
								Total Residential Demands			218.42	
Common Areas						acres						
Parks and Open Spaces												
University Villages Project (MCP)						19.2					23.6	Per landscape architect open space
Other Specific Plan Parcels						8.1					9.0	analysis
									Total Open Space		32.8	

Table 2-2 University Villages Specific Plan Development - Non Residential Demand Projection

Marina Community Partners Development

Planning Area	Land Use	Parcel Size	Bldg. Size In sf.	Interior SF. Demand Fac.	Interior Demands	Irrigable Area	Percent Turf	Percent Ornamental	Turf Demand	Ornamental Demand	Total Ext. Demand	Total Demand In AF/YR	Factors and Notes
A	Total Planning Area	30.6				16.3	20%	80%	6.426	18.36	24.79	24.79	2.1 ETo turf, 1.5 Ornamental
	Retail		365,000	0.00004	15.40							15.40	MCWD Actual Averages
	Restaurant		20,000	0.001167	23.33							23.33	MPWMD factor
	Fast Food Restaurant		16,500	0.038/seat	43.89							43.89	MPWMD factor
J	Total Planning Area	9.6				4.8	50%	50%	5.04	3.6	8.64	8.64	2.1 ETo turf, 1.5 Ornamental
	Gas Station/store		3,000	0.00004	0.75							0.75	Store plus 0.105af/pump@6 pumps
	Grocery Store		55,000	0.00039	21.45							21.45	MCWD Factor
	Service		6,000	0.00034	2.06							2.06	Avg. of MCWD factors
	Retail Shops		17,000	0.00004	0.68							0.68	MCWD Actual Averages
B1	Total Planning Area	22.7				11.36	20%	80%	4.767	13.62	18.39	18.39	2.1 ETo turf, 1.5 Ornamental
	Retail		114,000	0.00004	4.56							4.56	MCWD Actual Averages
	Restaurant		15,000	0.02/seat	17.50							17.50	MPWMD factor
	Fast Food Restaurant		10,000	0.038/seat	26.60							26.60	MPWMD factor
	Cinema (1760 seats)		35,000	0.0012/seat	2.10							2.10	MPWMD factor
	Service		25,000	0.00034	8.58							8.58	Avg. of MCWD factors
	Office (above retail)		10,000	0.00012	1.20							1.20	MCWD Factor
V	Total Planning Area	3.6				1.8	20%	80%	0.756	2.16	2.92	2.92	2.1 ETo turf, 1.5 Ornamental
	Retail		12,000	0.00004	0.48							0.48	MCWD Actual Averages
	Restaurant		5,000	0.02/seat	5.83							5.83	MPWMD factor
	Fast Food Restaurant		2,000	0.038/seat	5.32							5.32	MPWMD factor
	Service		5,500	0.00034	1.89							1.89	Avg. of MCWD factors
OP1	Total Planning Area	11.0				5.5	50%	50%	5.775	4.125	9.90	9.90	2.1 ETo turf, 1.5 Ornamental
	Hotel		350 rooms	0.17000	59.50							59.50	MCWD Factor
	Retail		1,000	0.00004	0.04							0.04	MCWD Actual Averages
	Restaurant		12,725	0.02/seat	14.85							14.85	MPWMD factor
T	Total Planning Area	4.9				2.5	50%	50%	2.625	1.875	4.50	4.50	2.1 ETo turf, 1.5 Ornamental
	Hotel		150 rooms	0.17000	25.50							25.50	MCWD Factor
OP2	Office/light ind.	15.7	253,000	0.00012	30.36	7.9	20%	80%	3.318	9.48	12.80	43.16	MCWD Factor
OP3	Office/cultural	5.2	82,000	0.00012	9.84	2.6	20%	80%	1.092	3.12	4.21	14.05	MCWD Factor
OP4	Office light ind.	10.6	170,000	0.00012	20.40	5.3	20%	80%	2.226	6.36	8.59	28.99	MCWD Factor
OP5	Office light ind.	15.3	245,000	0.00012	29.40	7.7	20%	80%	3.234	9.24	12.47	41.87	MCWD Factor
Z	Total Planning Area	2.1				1.1	20%	80%	0.462	1.32	1.78	1.78	2.1 ETo turf, 1.5 Ornamental
	Retail		8,500	0.00004	0.34							0.34	MCWD Actual Averages
	Service		5,000	0.00034	1.72							1.72	Avg. of MCWD factors
	Restaurant		5,000	0.02/seat	5.83							5.83	MPWMD factor
	Fast Food Restaurant		1,500	0.038/seat	3.99							3.99	MPWMD factor
Totals		131.2			383.4				35.7	73.3	109.0	492.4	

Other Specific Plan Development (new uses only)

	Parcel Size	Lot Coverage	Interior SF. Demand Fac.	Interior Demands	Irrigable Area	Percent Turf	Percent Ornamental	Turf Demand	Ornamental Demand	Total Ext. Demand	Total Demand In AF/YR	Factors and Notes
Monterey-Salinas Transit (MST)	4.3	15%	0.0001	2.81	1.075	0%	100%	0	1.61	1.61	4.42	BBA (bus transit related)
Trans. Agency of Mo.Co. (TAMC)	13.2	15%	0.0001	8.62	3.3	0%	100%	0	4.95	4.95	13.57	BBA (undefined transit related)
Marina Coast WD (MCWD)	11.3	25%	0.0003	36.92	5.65	60%	40%	7.12	3.39	10.51	47.43	MCWD (as elementary school)
US Army Corps of Engineers (ACOE)	2.0	n/a										No change in existing use
City Marina PBC Parcel 8th St. **	17.4	10%	0.0002	15.16	8.7	15%	20%	2.74	2.61	5.35	20.51	MCWD (public/rec. play fields)
City Marina PBC Parcel 3rd St.	3.0	35%	0.0002	9.16	0.75	20%	80%	0.32	0.90	1.22	10.36	MCWD (public/rec. center)
Goodwill Industries	6.0	n/a										No change in existing use
Young Nak Church	1.5	14%	0.0001	0.88	0.725	50%	50%	0.78	0.54	1.31	2.19	MCWD (proposal in process)
Co. of Monterey	1.7	n/a										
City of Marina - fire station site	3.3	35%	0.0003	15.09	0.825	20%	80%	0.35	0.99	1.34	16.43	MCWD (fire station)
Total Out Parcels	63.7			88.64						26.28	114.8	

**85% irrigable area artificial turf

water demands.[5] The proposed Specific Plan is expected to provide housing for 2,739 residents as well as provide permanent employment for 3,700-4,700 people per year.[6] Utilizing current per capita demands for residential populations in the City of Marina, the range of expected employment, and assuming a rate of half the per capita rate for employment population, results in water demands from about 670-740 acre-feet per year for the Specific Plan project.

By way of comparison, a detailed study of water use factors by Montgomery Watson Harza analyzed mixed urban land use in the newly developing City of Roseville (near Sacramento) utilizing consumption rates of water per acre of development. That study shows an average use of 3.61 acre-feet per acre for housing densities similar to this Specific Plan; 2.67 acre-feet per acre for multiple use properties; and 2.91 acre-feet per acre for office uses, and 1.99 acre-feet annually for public facilities. Based on the Specific Plan project about 369 acres of new development, less backbone roadways, will be developed. Using the specific demand factors developed by Montgomery Watson Harza, and adjusting for data that shows Sacramento's irrigation demands are 54 percent higher than on the coast near Marina, projected water use for the Specific Plan project would consume about 864 acre-feet.[7]

The results of the three types of forecast are shown in Table 2-3.

Table 2-3
Comparison of Water Demand Forecasts in AF/Y Specific Plan Project

Primary Forecast	Per Capita Forecast	Single Factor Forecast
856	670-740	864

Based upon the above, the forecasted demand of 856 acre-feet per year of expected demand for the Specific Plan appears conservative and reasonable.

[5] City of Marina Service Area
[6] Marina Villages Specific Plan
[7] Irrigation demand differences based upon California Irrigation Management System annual average irrigation demands and estimates of irrigated areas.

3.0 Available Water Supply

3.1 Overall Supplies

The District, a county water district and public agency, is the purveyor of water for the former Fort Ord, also known as the Ord Community Service Area. The District's water supply is groundwater and water supplied by a small desalination plant, which is currently idled due to mechanical issues. The District is considering rehabilitating this plant concurrent with evaluations of expanding desalinated supplies with a larger plant. As discussed in the District's Urban Water Management Plan, the District also has ongoing conservation programs and is pursuing plans and regulatory approvals to augment the supplies for the former Fort Ord through recycled water and or additional desalination as also discussed herein in Section 4.0. The District has contractual rights to a supply of recycled water from the Regional Water Treatment Plant operated by the Monterey Regional Water Pollution Control Agency.

3.2 Groundwater Supplies

Almost all of potable water for the District comes from wells developed in the Salinas Valley groundwater basin. This basin underlies the Salinas Valley from San Ardo in the south to the coast of Monterey Bay and is divided into five hydrologically linked subareas. These areas are the Pressure, East Side, Forebay, Arroyo Seco and Upper Valley areas (Figure 3-1). The Pressure sub-area from which the District draws its supplies consists of what has been historically thought of as three main aquifers: an upper aquifer known as the upper or 180-Foot aquifer, a middle or 400-Foot aquifer, and a deeper aquifer, known as the deep or 900-Foot aquifer. While originally thought to be geologically confined in the Marina area, meaning there was no physical connection between the aquifers allowing flow between them, recent stratigraphic analyses have indicated that these aquifers are connected hydraulically, with water from the upper aquifers recharging the deep aquifer. Additionally, analyses have concluded the deep or 900-Foot aquifer is in reality a series of aquifers, not all of which are hydraulically connected. [8]

In June 2002, a contaminant called trichloroethylene (TCE), a cleaning solvent, was detected in one of the three water supply wells at the former Fort Ord. TCE levels detected are below the Maximum Contaminant Levels (MCL) above which water may not be served for potable uses. The contamination is coming from abandoned landfills near Imjin Road that were formerly used by the Army, but are now closed. The Army has responded to the landfill contamination problem by installing extensive groundwater cleanup systems to remove the contamination and prevent its further migration. The Army has also been monitoring groundwater quality at the former Fort Ord for a number of years to better understand the location and movement of groundwater contamination caused by the closed landfills.

The amount of TCE in the one well was 0.53 to 0.81 parts per billion. State and federal safe drinking water standards allow MCL for TCE of 5.0 parts per billion, or approximately one full magnitude higher than detected. Detection of TCE, even at the low concentration levels, was reported by the District, as required by law, to the California Department of Health Services (DHS). No additional action was deemed necessary by the DHS because the concentration levels are well below the MCL of 5.0 parts per billion. Both the District and the Army regularly monitor the former Fort Ord wells to see whether traces of TCE continue to exist.

The District is continuing to monitor the affected well, and all other wells, for TCE and/or any other contaminants on a regular basis. Any changes in contaminant plume migration due to increased pumping levels in other parts of the aquifers from which the District draws its water will be monitored and appropriate actions taken. The District maintains close coordination with the U.S. Army Corps of Engineers who manages groundwater cleanup efforts on the former Fort Ord.

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[8] WRIME, Deep Aquifer Investigative Study, May 2003, pg. 2-32.

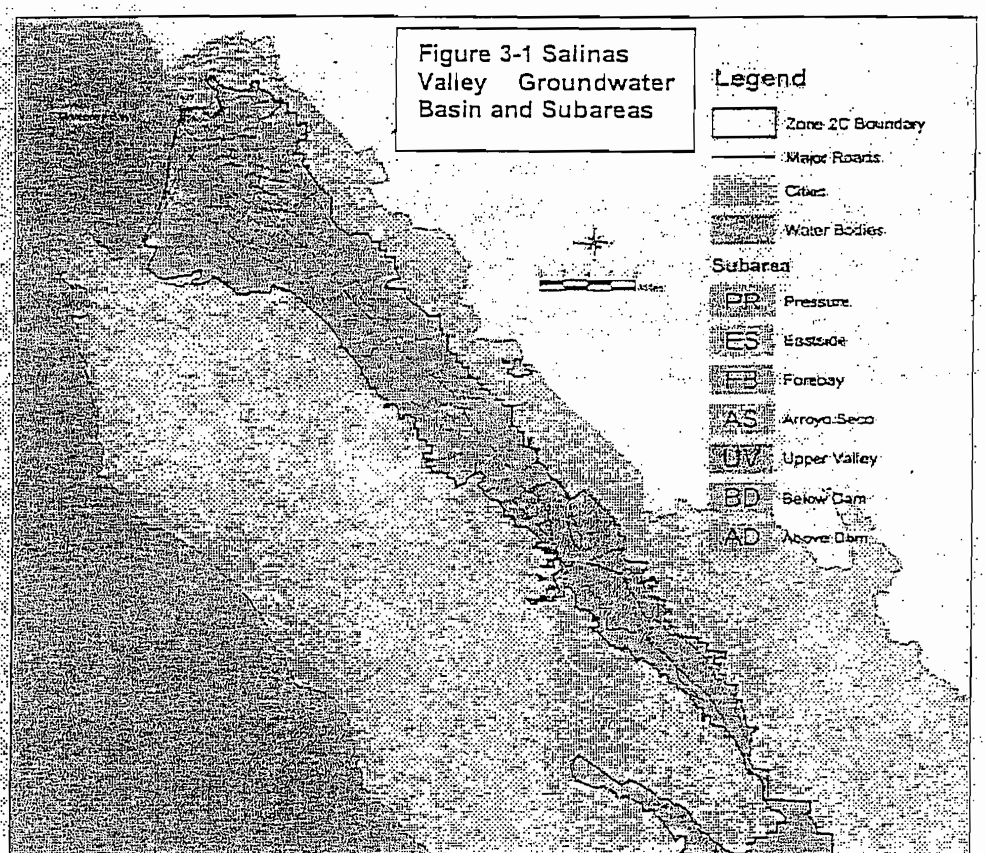


Figure 3-1 Salinas Valley Groundwater Basin and Subareas
Legend
Zone 2C Boundary
Major Roads
Cities
Water Bodies
Subarea
PR
Pressure
ES
Eastside
FB
Forebay
AS
Arroyo Seco
UV
Upper Valley
BD
Below Dam
AD
Above Dam

Figure 3-1

The District's 2004 Annual Water Quality Report fully describes mandated test results at all of its wells.

The Salinas Basin is also suffering from nitrate contamination, a pollutant coming primarily from animal confinement activities (dairies, feedlots) and from irrigated agriculture sewage treatment plant effluent and septic tanks. This contamination is a concern, particularly in upper reaches of the 180-Foot aquifer. Many contaminated wells exceed the state health standard of 45mg/l (milligrams per liter) of Nitrate as NO_3. Nitrate levels in the 400-Foot aquifer are low due to intervening clay layers between the 180 and 400-Foot aquifers. No nitrate problems are evident in or in the vicinity of any of the District's wells.

Total basin groundwater demands are approximately 463,000 acre-feet per year, and the basin is overdrafted by an estimated 9,000 acre-feet annually.[9] [10] The amount of overdraft has decreased in recent years and is expected to be eliminated for the Basin as a whole through the implementation of the Salinas Valley Plan as described in section 3.5. Groundwater withdrawals by the District to serve the City of Marina and the Fort Ord service areas are shown in Table 3-1. Water has been produced from groundwater here for many years, with the District's assumption of this production in the City of Marina beginning in 1960. The former Fort Ord produced as much as about 6,000 acre-feet from the 180 and 400' aquifers beginning in the 1960's. Other than the District, only a small number of wells tap the deep aquifer, some of which also draw from the middle aquifer. Prior to receiving recycled water, there were agricultural lands in the Castroville area that received water supplies from the deep aquifers. These agricultural wells are currently idle but remain part of the monitoring network

[9] Personal communication re update on Salinas Valley Water Project progress, Curtis Weeks, General Manager MCWRA, 10/04

[10] The Urban Water Management Planning Act requires that for basins that have not been adjudicated, information be presented as to whether the State Department of Water Resources has identified the basin as overdrafted. The latest DWR statement on California's groundwater resources Bulletin 118 Update 2003 did not identify whether any particular basin was in overdraft citing funding limitations and lack of direction from the Legislature to make such findings as part of the Bulletin 118 process. The bulletin states at page 97 that "groundwater management is a local responsibility, therefore the decision whether a basin is in a condition of overdraft is the responsibility of the local groundwater or water management agency."

overseen by the Monterey County Water Resources Agency (MCWRA), manager of the Salinas Groundwater Basin.

Table 3-1 District Groundwater Production (AFY) 1998-2003

Calendar Year	City of Marina	Ord Community*
1998	2160	n/a
1999	2241	2396
2000	2300	2371
2001	2285	2228
2002	2306	2137
2003	2185	2146
2004	2185	2421

- *Ord Community figures include water that was used in the City of Marina's portion of the Ord Community.*

Seawater intrusion into the upper and middle aquifers of the coastal Pressure sub-area has been documented since the 1940s and is continuing (see also Marina Coast UWMP, 2001). A chloride concentration of 500 mg/l is the short-term EPA Secondary Drinking Water Standard for chloride and is used as a measure of impairment of water. The line of chloride concentration of 500 mg/l water is therefore used as the basis for determining the seawater intrusion front (Figures 3-2 and 3-3). Seawater intrusion has forced the District to close its Marina wells in the upper and middle aquifers and resulted in drilling of new wells in the deep aquifer. The former Fort Ord's original shallower groundwater wells in the Salinas Basin were located closer to the coast. These wells also progressively suffered from advancing seawater intrusion and new wells were constructed further inland in the Pressure sub-area, and completed in the upper and middle aquifers.

Recent preliminary findings regarding the deep aquifers in the former Fort Ord area indicate that pumping from the deep aquifers can affect the rate of seawater intrusion in the middle and upper aquifers as the deep aquifers' sources of recharge include these overlying aquifers. In other words, while abandonment of wells in the upper and middle aquifers for wells in the deep aquifers can assure potable supplies, they do not halt the landward progression of seawater intrusion. According to the Deep Aquifer Investigative Study, WRIME, May 2003, increased pumping of the deep aquifers is expected to increase the rate of seawater intrusion in the middle and upper aquifers. Among other issues, this study analyzed the increasing flow rate of landward movement of seawater into the freshwater aquifers (groundwater flow across the coast) or seawater intrusion. It found that as pumping in the deep aquifers increased, the landward flow of groundwater increased. The report assessed these increases based upon fixed multipliers of pumping over baseline conditions. Total baseline pumping for the analysis was set at 4,800 acre-feet per year and multipliers of two to five-fold the baseline pumping were modeled. Expected pumping increases as described in the UWMP from 2000 to the year 2020 is about 6,100 acre-feet per year or about 2.14 times baseline modeled pumping. Based on interpretation of the outputs of the model, at this rate of pumping the landward flow of seawater is estimated to increase by about 675 acre-feet annually at 2020 if expected UWMP demands are realized.

Growth in the City of Marina's portion of the former Fort Ord was expected to reach 1,444 acre-feet of water use per year as anticipated in the 2001 UWMP, exceeding the City's allocation from FORA, noted then at 1,175 acre-feet per year. The Specific Plan represents a portion of this expected growth in demand. This demand will proportionally increase the rate of seawater intrusion and the need for the District to invest to protect its supply from this intrusion.

3.3 Groundwater Management

Two regional water management agencies have jurisdiction within the former Fort Ord. The Monterey County Water Resources Agency (MCWRA) is responsible for regulation and supply of water from the Salinas Groundwater Basin. The Monterey Peninsula Water Management District (MPWMD) is responsible for regulation and supply of water from the Seaside Groundwater

Basin. The District relies only on groundwater from the Salinas Groundwater Basin to supply water to Marina Area lands and the Ord Community.

Figure 3-2 Seawater Intrusion Upper (180') Aquifer, 2003

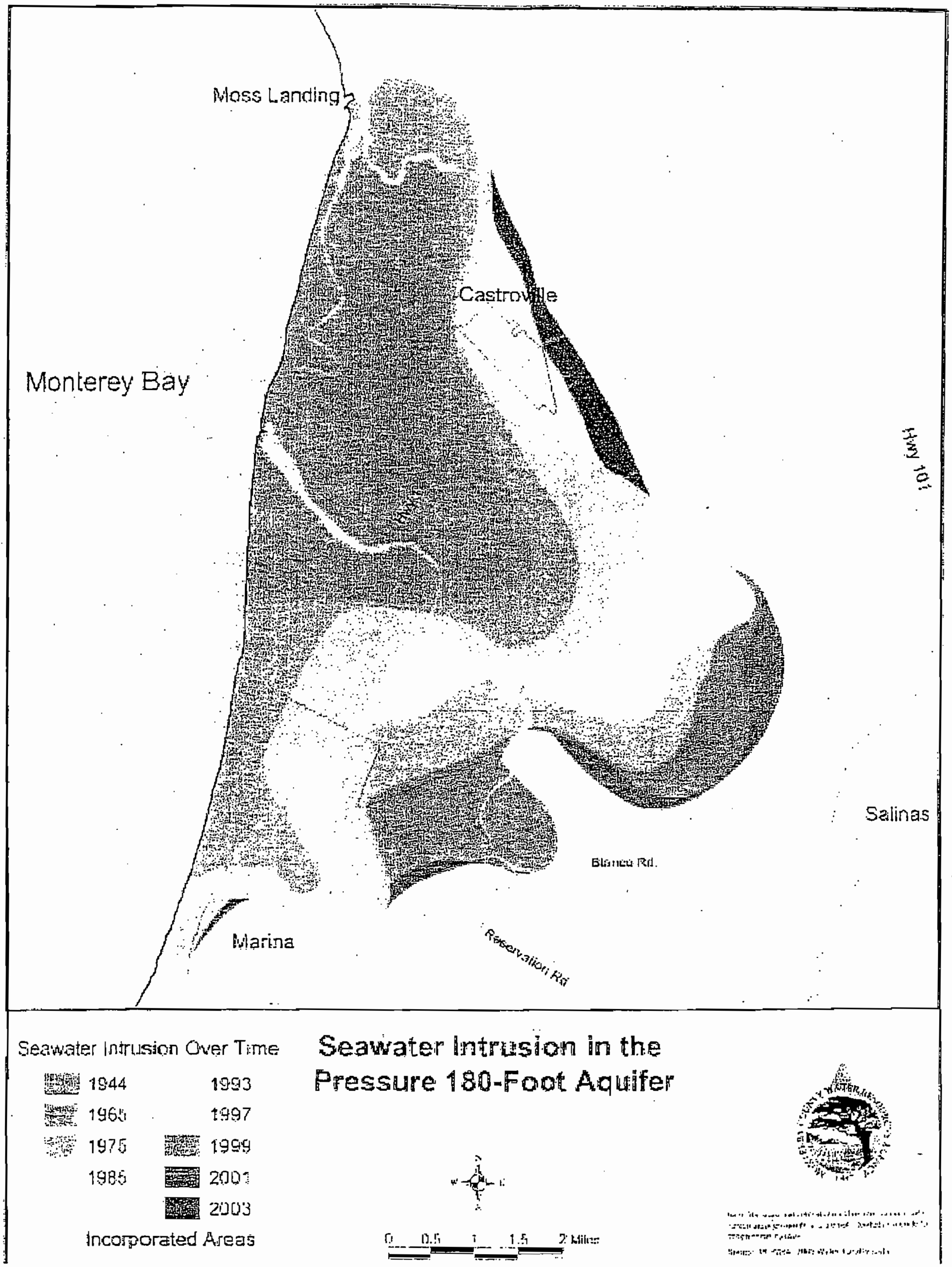
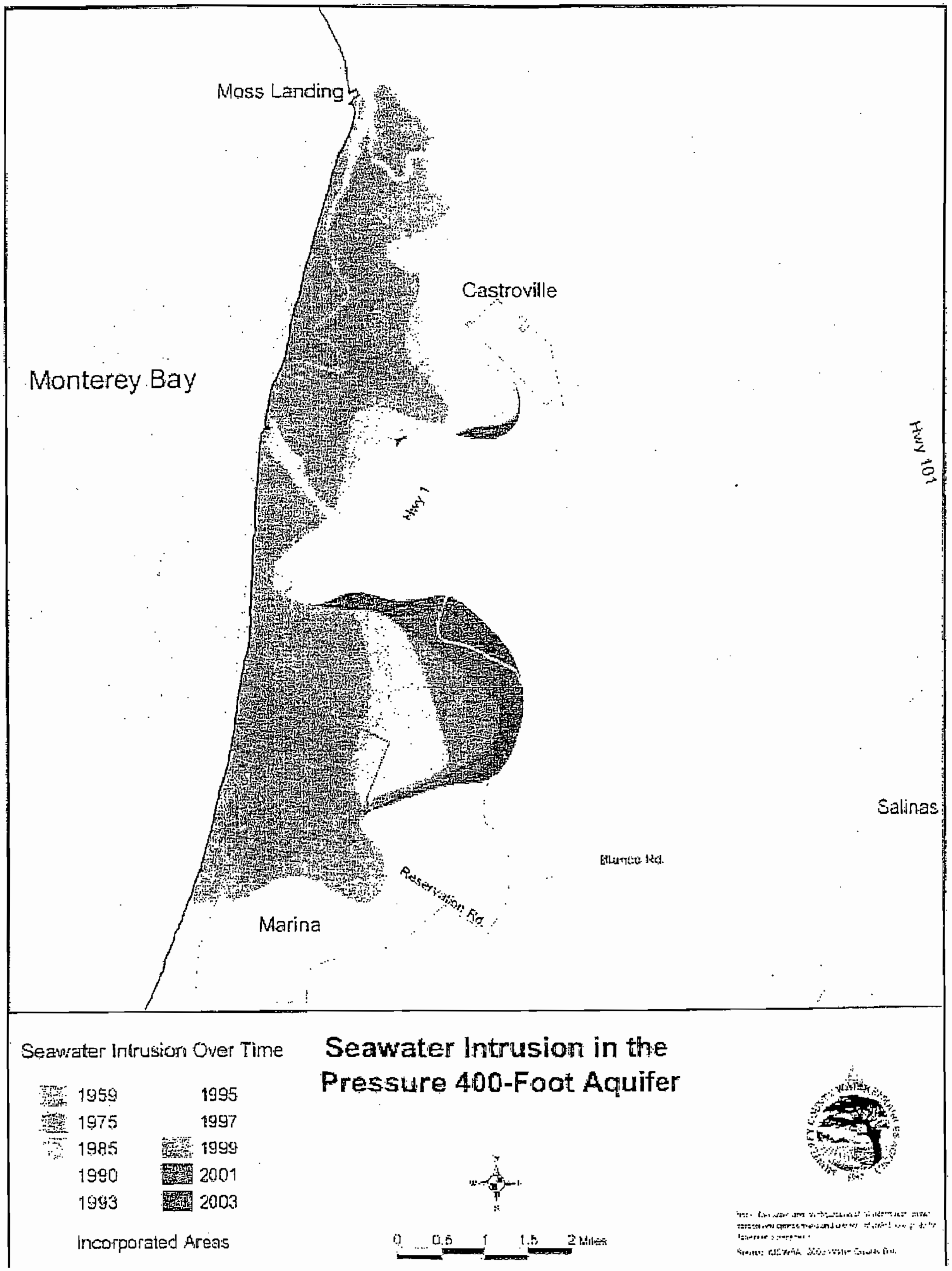

Moss Landing
Castroville
Monterey Bay
Hwy 101
Salinas
Blanco Rd.
Marina
Reservation Rd
Seawater Intrusion Over Time
1944
1965
1975
1985
1993
1997
1999
2001
2003
Incorporated Areas
Seawater Intrusion in the
Pressure 180-Foot Aquifer
0 0.5 1 1.5 2 Miles

Figure 3-3 Seawater Intrusion Middle (400') Aquifer, 2003



As noted above, the potable water supply at the former Fort Ord is from the Pressure subarea of the Salinas Groundwater Basin. The southwestern portion of the Salinas Groundwater Basin underlies the northern and southeastern segments of the former Fort Ord. The Seaside Groundwater Basin underlies the southwest portion of the former Fort Ord.

Both the Army and the District have agreements with the MCWRA, which allow the District to participate in the MCWRA's basin management planning process. Under the terms of the agreements, former Fort Ord lands and the District's Marina service area were annexed into MCWRA Zone 2 and 2A. The Army's agreement for the former Fort Ord allows for a combined annual withdrawal of up to 5,200 acre-feet per year from the 180-Foot and 400-Foot aquifers, with an additional annual withdrawal of up to 1,400 acre-feet per year from the deep aquifers, totaling 6,600 acre-feet, or about the historic demand from Army uses at Fort Ord. The groundwater available to the Ord Community is allocated by the FORA among the land use or land owning jurisdictions as shown in Table 3-2. This table also indicates available groundwater supply to the Marina area outside the Ord Community, under the "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" dated March 1996, for a maximum withdrawal of potable water of 3,020 acre-feet per year, except as otherwise provided in the Agreement.

Additionally, two major private properties, the Armstrong Ranch and the Lonestar property have the contractual right to be annexed to the MCRWA and have groundwater agreements available for use on those properties as noted in Table 3-2. As of the date of this Assessment, neither of these two properties have annexed to the District.

3.4 University Villages Specific Plan Demands and MCP Project Demands vs. FORA Groundwater Allocations and City of Marina Development Plans

The City of Marina has an allocation from FORA of 1,325 acre-feet per year, that includes a 150 acre-foot loan, as shown in Table 3-2. The proposed MCP Project is expected to consume approximately 732 acre-feet per year. Additional development within the Specific Plan (see Table 2-2 – Other Specific Plan Development and Table 2-1 – Common Areas Other Specific Plan Parcels) is expected to consume about 124 acre-feet per year, bringing total expected demand for the Specific Plan to about 856 acre-feet per year. Existing and previously planned uses as described in Section 1.3, result in about 694 acre-feet available for use within the City of Marina. This leaves the City deficient approximately 162 acre-feet for the Specific Plan overall, and 38 acre-feet deficient for the MCP Project alone.

Until such time as the augmentation supply described in Section 4.0 becomes available, the City must assign water to development in the Ord Community within its FORA water allocation of 1,325 acre-feet per year. This is the maximum amount of water that the District may presently serve to City uses on the former Fort Ord in compliance with its agreements with the MCWRA and others relative to the former Fort Ord lands. For this reason, the District can only approve connections in the Ord Community up to the point FORA allocations are projected to be exhausted, or until other water resources can be secured and allocated.

Table 3-2
Water Supply Currently Available to Marina Coast Water District

Fort Ord Reuse Authority Allocation (groundwater)	Annual Acre-feet Allotment or supply
City of Marina[11]	1,325
City of Seaside	862
CSU Monterey Bay	1,035
University of California MBEST Center	230
City of Del Rey Oaks	75
City of Monterey	65
Monterey County	560
US Army	1,577
County/State Parks	45
City of Marina (Sphere)	10
Allowance for line losses (10%)	578
FORA Strategic Reserve	281
Rounded subtotal	**6,600**
Marina Coast Water District by Agreement with MCWRA (groundwater)	3,020
Armstrong Ranch (groundwater)	920
Lonestar Property (groundwater)	500
Subtotal groundwater	**11,040**
MCWD Desalination Plant (temporarily idle)[12]	300
Total	11,340

3.5 Regional Groundwater Management Planning

The MCWRA prepared a basin-wide plan, known as the Salinas Valley Water Project, to continue addressing water supply issues in the Salinas Valley groundwater basin. The plan's objectives are:

- Halting seawater intrusion.

[11] With 150 acre-foot loan from FORA Strategic Reserve

[12] Permitted supply which could be restored

- Continuing conservation of winter flows for recharge of the Salinas Valley basin through summer releases.
- Providing flood protection.
- Improving long-term hydrologic balance between recharge and withdrawal.
- Providing a sufficient water supply to meet water needs through the year 2030.

The Project includes operation and maintenance of the Nacimiento and San Antonio reservoirs, modification of the spillway at Nacimiento Dam, and installation of a rubber inflatable dam on the Salinas River to allow for capture of about 10,000 acre-feet of dry weather flows to be made available in lieu of groundwater pumping for irrigation.

The Project anticipates that current demands on the basin will decline by about 20,000 acre-feet annually by 2030 due to urban and agricultural conservation efforts, conversion of agricultural lands and some crop shifting.[13] This overall decline is expected to occur despite a near doubling of the population served by the Salinas Valley groundwater basin, from 188,949 in 1995 to 355,829 in 2030. This population growth will increase urban demands by about 40,000 acre-feet per year. Additional water to balance basin recharge with withdrawals will be provided through capture and diversion of reservoir releases down the Salinas River, otherwise lost to the ocean; additional recycled water from the Monterey County Recycled Water Projects; and modification of the spillway at Nacimiento Reservoir, which will allow reoperation of this reservoir and the San Antonio Reservoir, producing the additional system yield. In total, by 2030 an additional yield of 37,000 acre-feet per year is expected. Funding for the Salinas Valley Water Project under a special property assessment was subject to a public vote under Proposition 218 on April 8, 2003. Parcel ballots were returned with an 85 percent weighted voting of assessed valuation voting yes, far greater than the majority plus 1 percent required for approval. The Project is proceeding through

[13] Salinas Valley Plan 1998, p. 3-15

the permit and final design process with projections for completion by the end of 2005.

While over the long term the Salinas Valley Water Project should help achieve overall balance in the Salinas Valley groundwater basin by balancing supply and demand, local seawater intrusion may remain a problem for the District and other coastal areas where localized withdrawals are exceeding localized recharge into the Basin. The District must continue to manage this problem by investing in studies and monitoring efforts to better characterize the coastal groundwater aquifers and their reliability as a supply source and considering options for the Ord well field to protect and sustain its reliable access to groundwater, including relocation of wells further inland from the intrusion front.

3.6 Groundwater Legal Entitlement

The MCWRA holds appropriative rights to waters impounded and released from the Nacimiento and San Antonio Reservoirs to recharge the Basin. These waters provide much of the recharge for the Basin. Under the agreements discussed in Section 3.3, MCWRA has legally committed 11,040 acre feet per year of MCWRA's appropriative rights to use within the MCWD service areas and sphere of influence. Annexation of the District's service area within the zone of benefit for water from the Nacimiento (Zone 2) and San Antonio (Zone 2A) Reservoirs owned by MCWRA gives the District the right to use such water for the benefit of the annexed lands.

In addition, the District has an appropriative right common to public utilities and municipalities to use "surplus" water in excess of the needs of overlying landowners who pump from the basin, and to establish prescriptive rights (*See Los Angeles v. San Fernando (1975) 14 Cal 3rd. 199, 294*). (See also *California Water*, p.51). The District's appropriative rights to water, together with the District's contractual rights to water, should enable the District to reliably supply water within the District's service area over the next 20 years for total demands that remain within these appropriative and contractual rights.

4.0 Water Augmentation

As described in the UWMP, the District's water supply plans include utilizing recycled water, desalination or other new supplies to meet its future demands as identified the Fort Ord Base Reuse Plan. These plans are further described in the District's Environmental Impact Report for the Regional Urban Water Augmentation Project, September 2004, incorporated herein by reference. The District currently has identified a budget requirement for FY03/04 through FY 07/08 of approximately $60 million to assure reliable and high quality water is delivered to its customers in Marina and the Ord Communities. Part of this work assumes future water augmentation alternatives that will satisfy estimated needs of 2,400 acre-feet per year for full development of the former Fort Ord and budget assistance from FORA for construction of the water augmentation project. A capital fund collected by FORA as part of its fees is estimated to generate about $19 million by 2015, which will be available to support a selected augmentation project.

Until such time as the preferred Augmentation Project has been selected, specific plans for development of the additional 2,400 acre-feet of water have been developed, permits for development of the supply secured and FORA has allocated such supply among the jurisdictions on the former Fort Ord, the District will not consider this supply to be "available" in its written verifications of supply under SB221.. This supply is expected to be on-line from between six and ten years from now. It is expected that should this supply materialize, FORA will allocate a portion of that supply to the City of Marina, which would increase their available supply proportionally. For purposes of the assessment under SB 610, and to assist the City to determine whether projected water supplies will be sufficient based on the entire record under Water Code section 10911(c), the District will include water from the Augmentation Project in its projected supplies for its conclusion to satisfy Water Code section 10910(h) when it has designated a project and a funding method for the project and has rights and permits to access, use and deliver water from that project. In accordance with Water Code section 10911(a), the District advises the City that the timeframes and financing, permitting, and approval requirements to develop additional water for the Ord Community from (1) rehabilitating the District's existing desalination facility (300 acre feet per year), (2) utilizing the District's existing recycled water entitlement without developing storage (300 acre feet per year), and (3) utilizing a portion of the groundwater reserved to the Marina area outside the Ord Community and to apply water from any of those sources to the project likely would be less than for the complete, 2,400 acre feet per year Augmentation Project.

If recycled water is planned for a development area, the District will require its use for all recreational and common irrigated open space areas within the development in accordance with Marina Coast Water District Code § 4.28.030, Recycled Water Service Availability. No recycled water service is expected to be available for the proposed University Villages Specific Plan development at this time. If recycled water becomes available, then it would be used for non-potable uses for the development.

5.0 Water Conservation

Water conservation and the District's efforts to implement the Best Management Practices for Urban Water Conservation are discussed in the UWMP. Conservation effects on water demands are built into the demand forecasts for the MCWD and as such are not considered a separate component of supply.

The proposed MCP project will be required to comply with current plumbing code requirements calling for low-flow plumbing fixtures reducing indoor water consumption. MCP has also committed to providing ET based irrigation controllers, high efficiency washing machines and tankless hot water heaters in the development. The project's smaller lot sizes and higher density will also tend to minimize outdoor water use compared to larger lot sizes.

6.0 Water Supply Sufficiency Analysis

The projected demands of both the Specific Plan and the MCP project alone exceed the currentlv available supply as summarized in Table 6-1. The District is also aware of other plans within the City to develop additional properties, including the Cypress Knolls residential and retail development, elementary and secondary schools, the Monterey Peninsula College Satellite campus and the airport business park. Full development of these plans is also beyond the water supply the District can make available to the City under current conditions.

Table 6-1 Summary of Currently Available Water Supply vs. Projected Demands	
Base Available Supply	694 acre-feet
University Villages (Partners Project) Total Demands	732 acre-feet
University Villages Specific Plan Other Uses and Open Space	124 acre-feet
Total Specific Plan Projected Demand	856 acre-feet
Net Shortfall	162 acre-feet

There are also longstanding concerns that localized groundwater withdrawals will, over the long term, exceed the localized capacity of the groundwater basin and lead to further seawater intrusion and loss of potable supply at the District's wells (UWMP p.2-9). Due to findings of the Deep Aquifer Study and an enhanced understanding of the mechanisms at work in the groundwater basin, there is enhanced awareness that increased pumping in the Marina and Ord Community areas resulting from new development such as the proposed project is likely to exacerbate the continued seawater intrusion and speed the rate of water quality degradation. The District and all the FORA jurisdictions represented under the FORA have recognized the need to invest in the District's water supply system and the inevitable need to respond to seawater intrusion. Accordingly, the District's current Capital Improvement Program includes development of new water supply well(s) away from the seawater intrusion front, and rehabilitation of wells 31 and 29. A new monitoring well in the deep aquifer is also being constructed.

The District will continue to monitor groundwater and develop better information on the rate of seawater intrusion. This information will support additional planning and capital programming in order to assure supply reliability is not outstripped by growing demands. This may require additional investment in the water system not already under development or planning.

7.0 Availability of Water Treatment and Delivery System Capacity

The District's current plans under its Water Supply Master Plan for upgrading the Ord Community wells and transmission network accommodate the water capacity (vs. supply) needs for the University Villages Specific Plan development. On-site distribution systems will be designed to accommodate necessary demand and fire flows for the project in accordance with District design standards. No treatment other than chlorination for maintenance of system disinfection is required.

8.0 Regulatory Permits Necessary for Supply Delivery

The District's local supplies are maintained under a public water supply permit from the State Department of Health Services. The District is exempt from local building codes with respect to construction of water treatment and delivery facilities. The District will have to secure about fifteen different governmental permits and authorizations (see Table 3.6.1 Required Agency Approvals and Permits, Regional Urban Water Augmentation Project EIR reproduced herein as

Table 8-1) to accomplish the supply augmentation project as discussed in Section 4.0 and for the District to be able to confirm the availability of this supply under SB 221. Applications for such permits have not been made, as the preferred altemative has not been selected. Many of these permits are also discretionary on the part of the issuing agencies and as such would be necessary to be in approved status before the augmentation supply could be considered available.

Table 8-1 Required Agency Approvals and Permits for Water Augmentation Project

TABLE 3.6-1
REQUIRED AGENCY APPROVALS AND PERMITS

Agency	Permit Name	Recycled Water Alternative: Pipelines	Recycled Water Alternative: Surface Storage	Desalination Alternative
LOCAL AGENCIES				
Monterey County	Encroachment Permits (Public Works)	X	potential	X
	Well Drilling Permits (Environmental Health)	–	–	X
	Use Permits (Planning)	X	X	–
City of Marina	Coastal Development Permit	potential	–	X
	Building and Grading Permits	X	X	X
City of Seaside	Encroachment, Building/Grading Permits	X	X	–
Monterey Peninsula Water Management District	Water Distribution System Permit	potential	potential	potential
STATE AGENCIES				
Regional Water Quality Control Board	NPDES WDR Permit (or Permit Amendment)	–	–	X
	Water Reclamation Operations Permit	X	X	
	Construction Storm Water Permit	X	X	X
	Facility Operations Storm Water Permit	–	X	X
	Clean Water Act Section 401 Water Quality Certification or Waiver	X	X	X
CA Department of Health Services	Review and concurrence for Recycled Water Storage and Distribution	X	X	–
	Permit to Operate	–	–	X
CA Department of Fish and Game	Section 1601 Streambed Alteration Agreements	potential	–	–
	CA Endangered Species Act Section 2081 Permit	X	X	potential
CA Department of Parks and Recreation	Encroachment, easement or property acquisition for any project components	–	–	X
CA Coastal Commission	Coastal Development Permit	X	–	potential for appeal
CA Department of Transportation	Encroachment Permit	potential	–	potential
State Lands Commission	Encroachment Permit	potential	–	X
FEDERAL AGENCIES				
U.S. Fish & Wildlife Service, NOAA Fisheries	Biological Assessment; Federal Endangered Species Act Section 7 Consultation	potential	potential	potential
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit/Section 10	X	potential	potential
U.S. National Oceanic and Atmospheric Administration - Monterey Bay National Marine Sanctuary	Encroachment Permit and input into CCRWQCB NPDES WDR permit	–	–	X
U.S. Bureau of Reclamation	Approval of NEPA environmental documents and approval to allow the MRWPCA to permit connections to the reclamation plant for non-agricultural users	X	–	–

Source: Regional Urban Water Augmentation Project EIR

9.0 Effect on Agricultural and Industrial Users Not Supplied by the Marina Coast Water District but Reliant on the Same Sources

Agricultural users in the Salinas Valley generally rely on the same basin-wide supply from the Salinas Valley Groundwater Basin. These uses are taken into account in the basin planning of the Monterey County Water Resources Agency as part of developing a water balance for the Basin. Additional demands in the Marina and Ord Community area are not expected to affect them provided development and water demand within the District remains consistent with the MCWRA agreements.

10.0 Summary Water Supply Sufficiency Determination

Pursuant to Section 10910 of the California Water Code, and based on the foregoing analysis, the District has determined that its currently- projected water supplies are insufficient to meet the projected annual water demands during normal, single dry and multiple dry years during the next twenty years associated with the Specific Plan project or the MCP Project individually, in addition to other planned demands expected by the District within the City of Marina's jurisdictional area of the former Fort Ord. If the criteria discussed in Section 4 were satisfied, which likely could occur more quickly for rehabilitating the existing desalination facility and for utilizing the District's existing recycled water entitlement without storage and for utilizing a portion of the groundwater currently reserved to the Marina area outside of the Ord Community, the District could conclude that projected supplies would be sufficient to meet the needs of both the MCP project and the Specific Plan. If the City of Marina adopted enforceable restrictions to prevent the Marina Heights project from exceeding the 292 acre feet per year currently allocated by the City, the District could conclude that projected supplies would be sufficient to meet the needs of the MCP project.

Pursuant to California Government Code Section 66473.7, the District has determined based on the foregoing analysis that it does not have sufficient water supply available within the FORA allocation to serve the proposed MPC project development's needs alone. If the City of Marina adopted enforceable restrictions to prevent the Marina Heights project from exceeding the 292 acre feet per year currently allocated by the City, the District could conclude that it does have sufficient water to serve the needs of the MCP project.

11.0 References

Association of California Water Agencies, Water Supply and Development A Users Guide to California Statutes Including AB 221 (Kuehl) & SB 610 Costa. 2002.

California Department of Water Resources. Monthly Average ETo Report. December 14. 2004.

Fort Ord Reuse Authority, Fort Ord Reuse Authority ("FORA") Allocation of Strategic Reserve, 10-23-98 Action. March 1, 2004.

ISC Group, Inc., Marina University Villages Landscape Water Use. December 2004.

Littleworth, Arthur L. and Garner, Eric L., California Water. 1996

Marina Coast Water District, Deep Aquifer Investigative Study, Water Resources & Information Management Engineering, Inc. May, 2003.

Marina Coast Water District, 2001 Urban Water Management Plan, December 5, 2001

Marina Coast Water District. Marina Coast Water District Assigned Water Use Factors for Determining Water Capacity Charges. May, 2003.

Marina Coast Water District, Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands (1996), document recorded in the Office of the Monterey County Recorder on August 7, 1996, at Reel 3404 Page 749

Marina Coast Water District, Memorandum of Agreement Between the United States of America and the Monterey County Water Resources Agency, Monterey County Agreement No. A-0604, September 21, 1993

Marina Coast Water District, Assignment of Easements on Former Fort Ord and Ord Military Community, County of Monterey, and Quitclaim Deed for Water and Waste Water Systems, Monterey County Recorder's document No. 2001090793, Re-recorded 11-7-2001 as Document No. 2001094583 to correct Exhibit C

Marina Coast Water District, Water/Wastewater Facilities Agreement between the Fort Ord Reuse Authority and Marina Coast Water District, March 13, 1998

Marin Municipal Water District. Watering Index. www.marinwater.org/wateringindex.html. 2004

Monterey County Water Resources Agency, Salinas Valley Water Project EIR. 1998.

Monterey Peninsula Water Management District, Commercial, Industrial and Governmental Projects (Non-Residential) Undated water use factors.

Montgomery Watson Harza. Task 1 Unit Demand Factors Revision, memo from Ping Chen to Marshall Davert, October 23, 2002.

RBF, Inc. Comparison of Unit Water Demand & Wastewater Load Rates. Memorandum of January 16, 2004.

Appendix 1
FORA Letter re Allocation of Strategic Reserve

FORT ORD REUSE AUTHORITY
[illegible] STREET, BUILDING [illegible], MARINA, CALIFORNIA [illegible]
PHONE: (831) [illegible] · FAX: (831) [illegible]
WEBSITE: www.fora.org

March 1, 2004

Michael Armstrong
Marina Coast Water District
11 Reservation Road
Marina, CA 93933

Re: **Fort Ord Reuse Authority ("FORA") Allocation of Strategic Reserve, 10-23-98 Action**

Dear Mr. Armstrong: Mike

At several recent public meetings we have heard a number of interpretations of the FORA Board of Directors' actions taken in October 1998 regarding the loan of water resources to local jurisdictions. This letter is intended to provide clarity with regard to those actions and to provide you with a specific reference for making water resource availability determinations, as required by state law.

Specifically, the FORA Board took action to authorize a loan of 150 acre feet per year ("afy") of water each to the cities of Del Rey Oaks, Marina, Seaside and the County of Monterey from the strategic reserve for interim use. In addition, in taking this action the FORA Board required that any jurisdiction borrowing the 150 afy from the strategic reserve commit to the rate-based capital cost of participation in the regional reclaimed water project or other augmentation program. As the Board adopted the 2001 Community Facilities District the commitment to this capital cost was affirmed.

The 1998 Board action assumed that this loan could take place upon the transfer of Economic Development Conveyance ("EDC") land to the individual jurisdictions for the express purpose of developing visitor serving, commercial or recreational projects. In this way, other resources could be redirected for housing, commercial, or other uses. The loan term of this borrowing is either for a period of 5 years or when an augmented water source becomes available for a similar purpose. In this sense, the loan is an "interim" borrowing – the resource is replaced by the augmentation supply once confirmed. The EDC property transfer trigger is just now occurring as FORA conveys properties to individual jurisdictions. I have enclosed the October 23, 1998 Board Report for your information.

I hope that this brief letter clarifies the actions taken by the FORA Board on October 23, 1998 and offers a basis for analyzing availability of resources to the FORA land use jurisdictions. Thank you for your ongoing support for the reuse of the former Fort Ord.

Sincerely,

Michael A. Houlemard, Jr.
Executive Officer

Enclosure

C: Dan Keen, City of Seaside
Tony Altfeld, City of Marina
Ron Langford, City of Del Rey Oaks
Nick Chiulos, Monterey County
Fred Meurer, City of Monterey

EXHIBIT B

Finding 1:

In accordance with California Water Code section 10911(c), the City hereby determines, based on the entire record, that projected water supplies will be sufficient to satisfy the demands of the Project, in addition to existing and planned future uses.

Finding 2:

In accordance with California Government Code section 66473.7(b)(3), the City Council hereby determines, based on the entire record, additional water supplies not accounted for by the Marina Coast Water District ("MCWD") in its WSA issued for the University Villages Specific Plan are, or will be, available prior to completion of the MCP Development subdivision that will satisfy the requirements of Government Code section 66473.7.

Evidence in Support of Findings:

Background

Following its determination that the Project is subject to the requirements of SB 610 (California Water Code section 10910 *et seq.*), and SB 221 (California Government Code section 66473.7), the City identified the Marina Coast Water District (MCWD) as the relevant public water system that may supply water for the Project and, on October 18, 2004 requested MCWD to prepare a water supply assessment and written verification of supply to determine whether projected water supplies will be sufficient to serve the Project and the MCP Development, in addition to existing and planned future uses, as required by Water Code section 10910 and Government Code section 66473.7.

Pursuant to Water Code section 10910(g), on January 26, 2005 , MCWD approved the Water Supply Assessment and Written Verification of Supply for the Proposed University Villages Specific Plan Development and Marina Community Partners Project ("University Villages WSA"). The University Villages WSA concluded that the MCP Development is, according to MCWD, expected to consume approximately 732 acre-feet of water per year ("AFY"). The University Villages WSA also concluded that additional development within the University Villages Specific Plan area is expected to consume approximately 124 AFY, bringing total expected water demand for the entire Project to approximately 856 AFY. The University Villages WSA estimated that of the City's existing 1,325 AFY water allocation from the Fort Ord Reuse Authority ("FORA") to the City of Marina for use on the former Fort Ord, approximately 694 AFY remains available to serve Fort Ord development within the City's jurisdictional boundaries. Accordingly, the University Villages WSA determined that (1) there is 162 AFY shortfall in water supplies necessary to serve buildout of the Project, and (2) there is a 38 AFY shortfall in water supplies necessary to serve the MCP Development.

Water Code section 10911(c) requires the City to make its own determination, based on substantial evidence in light of the entire record, whether there is a sufficient projected water supply available to satisfy the demands of the Project, in addition to existing and planned future uses. When considered in light of the entire record, the City concludes that such water supply is available because, as explained below, (1) appropriate water demand factors for the Project indicate that the Project will consume less water than that amount assumed by the University Villages WSA, and (2) the planned MCWD Regional Urban Water Augmentation Project (Augmentation Project) will, when implemented, provide an additional 2,400 AFY for uses on the former Fort Ord, the City's share of which will be sufficient to serve the Project water demand, in addition to existing and planned uses. On May 26, 2004 MCWD approved the Notice of Determination for the Augmentation Project Final EIR, previously certified on October 27, 2004.

Revised Demand Factors

Based on the information and analysis contained in *Information Sources, Procedures and Comparisons, Water Demand Estimates for the University Villages Project, Marina, California,* prepared by RBF Consulting (the "RBF Report"), it is apparent that that water demand factors used by MCWD and incorporated into the University Villages WSA to determine the overall water demand associated with both the Project and the University Villages Specific Plan area are inappropriate because they do not reflect actual planned demand for the Project and the University Villages Specific Plan.

There are several errors in the water demand methodology relied upon in the University Villages WSA. First, as explained in the RBF Report, the University Villages WSA's methodology for calculating exterior non-residential water demand estimates is inaccurate because it calculates unit water demands as "Interior SF Demand Fac" by multiplying a unit factor by the proposed interior square footage for each land use. Second, the University WSA determines a Total Demand in acre feet per year for the exterior water demand on a Total Planning Area basis. The University Villages WSA roughly adopts the Project projections for percent turf and ornamental coverages, although the Project actually makes individual estimates of the exterior water demands based on the planned parcel acreage proposed for each land use. Third, in connection with estimating exterior water demand, the University Villages WSA evenly applies these values throughout the planning area, thus eliminating independent consideration of exterior water demand on per parcel basis. In short, the WSA assumes that, as to exterior water demands, one size fits all.

RBF's analysis (or the "project analysis," as described in the RBF Report), on the other hand, determines exterior water demands on a per parcel basis, adjusted for planned recycled water usages. This figure is subtracted from total water demands for each land use based on the unit water demands recommended by MCWD's own guidelines to determine interior water usages. By individualizing exterior demands based on planned parcel acreages for each land use, the RBF analysis provides a more accurate estimate of actual water demands associated with the Project. Based on the demand factors described in the RBF Report, the Project will have an estimated overall water demand of 701 AFY, rather than the 856 AFY demand assumed by the University Villages WSA, as shown on the attached Exhibit B-1. Based on the demands factors described in the RBF Report, the MCP Development portion of the Project will have an estimated overall water demand of 593 AFY, rather than the 732 AFY assumed by the University

Villages WSA. Table 1, below, compares current available supply against the total overall water demand (based on demand factors set forth in the RBF Report) of (1) existing uses within the City's portion of former Fort Ord, (2) approved uses within City's portion of former Fort Ord (i.e., the Marina Heights project), and (3) the MCP Development. According to Table 1, when appropriate demand factors are implemented, it is projected that the City has sufficient available potable and or recycled water to serve the MCP Development, in addition to existing and approved uses on the City's portion of former Fort Ord, and the residual net surplus amount of 187 AFY could supply the remainder of the Project (which requires 108 AFY) or such other priority uses as determined by the City Council.

Table 1 **Summary of Currently Available Water Supply vs. Projected Demands of the MCP Development, Existing Uses and Approved Uses Based on Demand Factors Set Forth in the RBF Report**	
Total Available Supply	1,325 AFY
Less Total Demand of Existing Development on Fort Ord Within City	(253 AFY)
Less Total Demand of Approved Marina Heights Project	(292 AFY)
Less Total Demand of MCP Development	(593 AFY)
Net Surplus of Available Supply	187 AFY

Table 2, below, compares the 187 AFY net surplus available supply, as shown in Table 1, above, against the Other UV Specific Plan Development and the total projected demands of future planned uses within the City's portion of the former Fort Ord, which projected demands are more fully described on the attached Exhibit B-1.

Table 2 **Summary of Net Surplus Available Supply vs. Projected Demands of the Other UV Specific Plan Development and Planned Future Uses Within City's Portion of Former Fort Ord Based on Demand Factors Set Forth in the RBF Report**	
Total Net Surplus of Available Supply	187 AFY
Less Total Demand of Cypress Knolls Project	(148 AFY)
Less Other UV Specific Plan Development	(108 AFY)
Less Total Demand of Airport Business Park Project	(155 AFY)
Less Total Demand of Airport Area Golf Course	(420 AFY)
Less Total Demand of Other Planned Development (see Exhibit B-1)	(229 AFY)
Net Supply Deficit	(873 AFY)

As demonstrated in Tables 1 and 2, above, current available supplies are sufficient to serve the MCP Development, in addition to existing and approved uses on the City's portion of the Former Fort Ord, and the residual net surplus amount of 187 AFY could supply the remainder of the Project (which requires 108 AFY) or such other priority uses as determined by the City Council. When other planned future uses are considered, however, current available supplies are insufficient to meet total overall demands. To accommodate the projects identified in Table 2, the City must rely on reasonably foreseeable planned future water supplies to serve the Project, in addition to existing and planned future uses, in accordance with and as permitted by Water Code sections 10910 and 10911.

Augmentation Project Background

The Augmentation Project is being developed to supply an additional 2,400 AFY of water to be used by MCWD to serve the water demands of future buildout of the former Fort Ord. The Augmentation Project is necessary to meet the quantified water demand requirements of the Fort Ord Reuse Plan, as implemented by FORA and as evaluated in the FORA Reuse Plan EIR. The development of a potable water supply to augment Fort Ord's groundwater allocation has been a centerpiece of the plans to reuse former Fort Ord since, at least, the September 1993 execution of *Agreement No. A-06404: Agreement between the United States of America and the Monterey County Water Resources Agency Concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency* (the "MCWRA Annexation Agreement").

The MCWRA Annexation Agreement sets forth the terms of the annexation of the Fort Ord property into the Monterey County Water Resources Agency's ("MCWRA") Salinas Valley Groundwater Special Benefit Zones 2 and 2A. The MCWRA Annexation Agreement limits groundwater withdrawals from the Salinas Basin for the purpose of serving Fort Ord uses to 6,600 AFY. Under the agreement, this limitation must remain in place until a project to provide future water supplies to former Fort Ord that do not rely on groundwater is implemented. The MCWRA Annexation Agreement also anticipates developing future supplies cooperatively, with another water agency, such as MCWD, developing future water supplies through the implementation of a smaller scale project, such as the 2,400 AFY Augmentation Project.

In 1996, MCWRA, MCWD, the Monterey Regional Water Pollution Control Agency ("MRWPCA"), the City, the owners of the Armstrong Ranch and the owners of the Lonestar property (the "Lonestar Property") entered into the *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* (the "MCWD Annexation Agreement"). Pursuant to Section 4 of the MCWD Annexation Agreement, the Armstrong Ranch, Lonestar Property and the MCWD service area were annexed into MCWRA's Salinas Valley Groundwater Special Benefit Zones 2 and 2A. Section 5.1 of the MCWD Agreement limits MCWD's authority to withdrawal potable groundwater from the Salinas Basin to 3,020 AFY until MCWD develops augmented water supplies, such as those supplies to be developed under the Augmentation Project. Sections 5.1, 5.5 and 6.10 of the MCWD Annexation Agreement requires the parties to prepare a plan, such as the Augmentation Project, for the development of a long-term water supply to MCWD's service area, including Fort Ord.

In June 1997, the final *Fort Ord Reuse Plan* (the "Reuse Plan") was adopted by FORA. The heart of the Reuse Plan is a set of goals, objectives, policies and programs to be implemented by FORA and each of the three land use jurisdictions initially taking title and/or approving development within the Fort Ord property. Pursuant to section 3.11.5.4(d) of the Reuse Plan, development beyond the limits defined in the Reuse Plan's Residential Development Program will be allowed only upon the augmentation of existing water supplies. To formulate the necessary water supply augmentation, the Reuse Plan requires FORA to continue to actively participate in and support the development of reclaimed water supply sources by MCWD and the MRWPCA to ensure adequate water supplies for the Fort Ord property. The Reuse Plan also authorizes FORA to investigate and provide appropriate augmentation of the potable water supplies to assure the long-range water supplies for the planned uses on the Fort Ord property.

On June 20, 2000, the United States Army and FORA entered into an economic development conveyance agreement (the "EDC Agreement") pursuant to which the Fort Ord property's water rights were transferred from the Army to FORA, pursuant to the federal Base Closure Act, and which authorizes FORA to transfer portions of the Fort Ord property to its member jurisdictions. The EDC Agreement contains several provisions relative to water supplies and systems for the Fort Ord property. Pursuant to section 5.03 of the EDC Agreement, FORA -- and its successors and assigns -- are required to cooperate with MCWD, MCWRA and grantees of the Fort Ord property "to establish and apply a fair process to ensure that all grantees of the former Fort Ord property will be provided an equitable supply of the water at the former Fort Ord."

In 2002, a multi-tiered alternatives analysis was conducted by MCWD that considered twenty-nine potential alternative water supply alternatives to meet the objectives of the Augmentation Project. Through that analysis, MCWD and a Technical Advisory Committee comprised of representatives of the MRWPCA, FORA, the Monterey Peninsula Water Management District, the Carmel Area Wastewater District, MCWRA and the U.S. Army evaluated the 29 potential alternatives and recommended two of the most viable augmentation alternatives that could be implemented by MCWD: seawater desalination and recycled water. Both of these recommended alternatives were the subject of a detailed engineering feasibility study conducted by MCWD. On October 27, 2004, MCWD certified the Augmentation Project EIR, which document evaluates the environmental impacts associated with the seawater desalination project, recycled water project and hybrid project future water supply alternatives.

The seawater desalination alternative contemplates construction of a new 3,000 AFY desalination facility in the area currently occupied by MCWD's existing desalination plant. The proposed desalination project would replace MCWD's existing desalination plant and produce at least 2,400 AFY of water. In addition to a new or expanded desalination plant, this alternative would require the construction of two radial-arm collection wells, two disposal wells, seawater intake and brine disposal pumps and associated pipelines.

The recycled water alternative provides 3,000 AFY of recycled water which would be used by MCWD for the irrigation of landscaping and open space within its service area, thus freeing up proportional amounts of groundwater for potable uses. The recycled water alternative requires the construction of a 63-acre recycled water storage reservoir, a distribution system consisting of approximately 200,000 linear feet of 6- to 24-inch diameter main and lateral pipelines, operational storage tanks and associated pumps and a connection to the Salina Valley Reclamation Project facility. MCWD is also considering implementing a hybrid alternative which would combine aspects of the recycled water alternative and seawater desalination alternative while maintaining the Augmentation Project goal of producing at least 2,400 AFY of augmentation supplies to serve buildout of former Fort Ord under the FORA Reuse Plan.

On May 25, 2005 the MCWD board adopted Resolution No. 2005-27 which, among other things, approved the Regional Water Augmentation Project Plan, consisting of the Augmentation Project, the Engineering Feasibility Report and the Final EIR for the Augmentation Project.

While no particular alternative was adopted, the MCWD approved a course of action that will result in one of the three alternatives being adopted and implemented.

MCWD currently has identified a budget requirement for fiscal year 03/04 through fiscal year 07/08 of approximately $60 million to assure that reliable and high quality water is delivered to its Fort Ord customers. A capital fund collected by FORA as part of its development fee program is estimated to generate approximately $19 million by 2015, which funds will be available to support implementation of the Augmentation Project. The Project will be included in this fee program.

City's Reliance on the Augmentation Project Water

Pursuant to Water Code section 10911(a), if, as a result of its assessment, MCWD concludes, as it did in the University Villages WSA, that its water supplies are, or will be, insufficient, MCWD must provide to the City its plans for acquiring additional water supplies. This information is contained in Section 4.0 of the University Villages WSA, which indicates that MCWD expects the Augmentation Project will be on-line within six to ten years. If, as here, a water supply assessment concludes that *available* supplies are insufficient to serve the project, in addition to other planned uses, Water Code section 10911(a) requires the water supply assessment to include "plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop such future supplies." Such plans may include, but are not limited to, (i) the estimated cost and proposed financing methods related to the acquisition and development of additional supplies, (ii) a description of the federal, state and local permits necessary for acquiring and developing additional supplies, and (iii) estimated timeframes for the acquisition of additional supplies.

A lead agency's reliance on planned, but unconfirmed, future water supplies was recently determined to comply with the requirements of CEQA by the California Court of Appeal. In *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova (Vineyard Area Citizens)* 2005 Cal. App. LEXIS 349, the Court upheld an EIR prepared for the proposed Sunridge Specific Plan, covering a 6,015-acre mixed-use project located in the Sunrise Douglas and Sunridge areas of unincorporated Sacramento County (and now within the City of Rancho Cordova).

As is the case with the University Villages EIR, the EIR for the 22,500 unit Sunridge Specific Plan project included a detailed analysis of the regional water demand and the supplies available to serve that demand. The proposed long-term water supply for the planning area included a mix of existing groundwater entitlements and unconfirmed, but planned, future surface water deliveries. Much of the Sunridge Specific Plan EIR's analysis of proposed future surface water supplies was based on the multi-jurisdictional *Water Forum Plan*, a significant water policy project that evaluates water resources and future water supply needs of the Sacramento metropolitan region and the environmental impacts associated with developing future water supplies.

The *Vineyard Area Citizens* court held that an EIR provides an adequate analysis of water supply issues if the EIR identifies and analyzes potential water supply sources even though the final availability of those water sources is not yet confirmed. Citing a similar ruling in *Napa Citizens for Honest Government v. Napa County Board of Supervisors*, the court stated that "[s]uch an approach makes sense as a practical matter. To hold otherwise would require each project covered by the *Water Forum Plan* to revisit all of the issues addressed in that massive collaborative effort each time a new project was proposed. ... Such an approach would be wasteful and even possibly counterproductive."

Like the future *Water Forum Plan* supplies relied upon by the lead agency in the *Vineyard Area Citizen's* case, the Augmentation Project is a multi-jurisdictional water supply project that, over the course of several years, has been subject to numerous studies, public meetings, and a full environmental analysis, as documented in the certified Augmentation Project EIR. The Augmentation Project has been budgeted by MCWD and development fees are being collected by FORA to help fund the Augmentation Project facilities. The Project will be included in this fee program. Further, as noted above, the MCWD approved the Regional Water Augmentation Project Plan, thus approving the implementation of one of the three alternatives discussed above. In light of the various contractual commitments to developing a viable augmentation supply, the detailed planning and analysis already conducted for the Augmentation Project, the multi-jurisdictional need and support for the Augmentation Project, the MCWD's recent approval of the plan, and the participating jurisdictions' efforts to ensure funding for the Augmentation Project, and in light of relevant case law and statutory mandates, the City hereby determines that it is appropriate to consider the future Augmentation Project water supplies when making its determination whether there will be sufficient projected water supplies to serve the Project, in addition to planned and future uses, as required by Water Code section 10911(c).

Water Supply Reliability Assessment Assuming the Augmentation Project

As noted above, pursuant to section 5.03 of the EDC Agreement, FORA - and its successors and assigns - are required to cooperate with MCWD, MCWRA and grantees of the Fort Ord property "to establish and apply a fair process to ensure that all grantees of the former Fort Ord property will be provided an equitable supply of the water at the former Fort Ord." Based on the facts that (1) that the Augmentation Project will produce at least 2,400 AFY of potable and/or reclaimed water to serve the Fort Ord property as provided in MCWD's own approvals, and (2) that FORA will likely allocate Augmentation Project water in accordance with the allocation percentages historically used by FORA to allocate the 6,600 of Salinas Basin groundwater among the various member jurisdictions participating in the Fort Ord Reuse Plan (as adjusted to account for those member jurisdictions that likely would not receive future allocations), then it is estimated that the City will be allocated approximately 39 percent of the 2,400 AFY of Augmentation Project water (i.e., 936 AFY) for use on the City's portion of the Fort Ord property. Table 3 below compares total currently available supply and future supplies reasonably anticipated to accrue to the City from the Augmentation Project against total projected water demands of existing, planned and future uses on the City's portion of the former Fort Ord property, based on demand factors as set forth in the RBF Report.[1]

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[1] MCWD owns and operates a seawater desalination plant located at its former wastewater treatment plant site on Reservation Road between Dunes Drive and Monterey Bay. The plant has a production capacity of approximately 300 AFY, assuming an on-line factor of 90 percent. The desalination plant is part of MCWD's distribution system

Table 3 **Summary of Currently Available Water Supply and Augmentation Supply vs. Projected Demands of Existing, Planned and Future Use on City's Portion of Former Fort Ord, Based on Demand Factors Set Forth in the RBF Report[2]**	
Total Available Supply Plus City Share of Augmentation Water Supply	2,261 AFY
Less Total Demand of Existing Development on Fort Ord Within City	(253 AFY)
Less Total Demand of Approved Marina Heights Project	(292 AFY)
Less Total Demand of MCP Development	(593 AFY)
Less Total Demand of Cypress Knolls Project	(148 AFY)
Less Demand of Other UV Specific Plan Development	(108 AFY)
Less Total Demand of Airport Business Park Project	(155 AFY)
Less Total Demand of Airport Area Golf Course	(420 AFY)
Less Total Demand of Other Planned Development (see Exhibit B-1)	(229 AFY)
Net Existing and Future Water Supply Surplus	63 AFY

As shown in Table 3, above, when the City's estimated share of the Augmentation Supply is considered in addition to currently available existing supplies, there is a sufficient potable water supply to serve the Project, in addition to planned and existing uses.

Additional Documentation

In addition to the information contained or referenced in the University Villages WSA and University Villages EIR, the City has reviewed and considered the following documents as part of its water supply sufficiency determination made pursuant to Water Code section 10911(c):

- Marina Coast Water District 2001 Urban Water Management Plan, December 12, 2001;
- Marina Coast Water District Deep Aquifer Study, May 2003;
- Marina Coast Water District Regional Urban Water Augmentation Project Alternatives Analysis, March 31, 2003;
- MCWD Regional Urban Water Augmentation Project FORA Board Meeting Presentation, April 11, 2003;
- Marina Coast Water District Regional Urban Water Augmentation Project Engineering Feasibility Study Report; August 2003;

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for its Marina service area, which is interconnected with the Fort Ord water distribution system. The existing desalination plant is currently off-line, but can be rehabilitated and made operational at fairly minimal costs. If the Augmentation Project is delayed for any reason, then future development (including the Project) could finance the repair and operation of the desalination plant in order to serve development on the City's portion of the former Fort Ord. On May 25, 2005 the MCWD board directed staff to consider selling or transferring water rights from the immobilized desalination plant to the City. As a result, this water source may be available to provide augmented water to the City.

[2] Water Code section 10910 and Government Code section 66473.7 require a description of the water provider's supply reliability and vulnerability to shortage for an average water year, a single dry year and multiple dry years. Such an analysis is most clearly relevant to systems that are supplies by surface water. Since the supply discussed herein is either desalinated water, recycled water or groundwater, short and medium-term hydrologic conditions over a period of less than five years usually have little bearing on water availability.

- Marina Coast Water District Notice of Preparation of EIR for the Regional Urban Water Augmentation project, August 21, 2003;
- Marina Coast Water District Public Scoping Meeting presentation on the Regional Urban Water Augmentation Project, September 8, 2003;
- Marina Coast Water District Groundwater Inventory and Status Report; March 18, 2004;
- Marina Coast Water District Groundwater Inventory and Status Report Presentation to the MCWD Board; March 24, 2004;
- Marina Coast Water District Regional Water Augmentation Project Final Environmental Impact Report (SCH# 2003081142), certified October 27, 2004;
- Marina Coast Water District Resolution No. 2005-27, entitled "Resolution of the Board of Directors Approving a Plan for the MCWD Regional Water Augmentation Project and the Notice of Determination for he Regional Water Augmentation Project," approved on May 25, 2005.
- Information Sources and Procedures Used In The Preparation of Water Demand Estimates for the University Villages Project, on or about April 2004 as updated, prepared by RBF Consulting ;
- Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands by and between the City of Marina, Marina Coast Water District, Monterey County Water Resources Agency, J.G. Armstrong et. all and RMC Lonestar, August 7, 1996;
- Memorandum of Agreement between the United States Army and the Monterey County Water Resources Agency;
- Annexation Assembly and Evaluation Report for the Annexation of Fort Ord by the Monterey County Water Resources Agency, September 9, 1993;
- Agreement No. A-06404: Agreement between the United States of America and the Monterey County Water Resources Agency Concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, September 21, 1993;
- Settlement Agreement and General Release by and between the Sierra Club and the Fort Ord Reuse Authority, November 30, 1998;
- A Resolution of the Fort Ord Reuse Authority, Amending Section 1.01.050 and Adding Chapter 8 to the Fort Ord Reuse Authority Master Resolution, Relating to Base Reuse Planning and Consistency Determinations;
- Implementation Agreement by and between the Fort Ord Reuse Authority and the City of Marina, May 1, 2001;
- Memorandum of Agreement Between the United States of America, Acting By and Through The Secretary of the Army, United States Department of the Army and The Fort Ord Reuse Authority for the Sale of Portions of the Former Fort Ord Located in Monterey County, California, June 20, 2000.
- Fort Ord Reuse Plan; June 13, 1997;
- Fort Ord Reuse Plan Final Environmental Impact Report (SCH# 96013022), certified June 13, 1997;
- Salina Valley Water Project Final Environmental Impact Report.
- American Water Works Association Manual of Water Supply Practices, M22, Sizing Water Service Lines and Meters;
- American Water Works Association Research Foundation Residential Water Use Summary, AAWARF Residential End Uses of Water Study, 1999;

- Water Demand Forecasts Methodology for California Water Planning Areas - Work Plan and Model Review Final Prepared for the Cal-Fed bay Delta Program, July 29, 2003;
- Residential Indoor Water Conservation Study: Evaluation of High Efficiency Indoor Plumbing Fixture Retrofits In Single-family Homes in the East Bay Municipal Utility District Service Area, July 2003;
- Water Use Classification of Landscape Species: A Guide to the Water Needs of Landscape Plants, L. Costello and K. Jones, University of California Cooperative Extension, April 1, 1994
- Marina Coast Water District 2002-05 Board Meeting Agendas and Minutes

EXHIBIT B-1

ANNUAL DEMANDS

PROJECT		Build Out Interior	Build Out Exterior	Build Out Total	2004 Interior	2004 Exterior	2004 Total	2005 Interior	2005 Exterior	2005 Total	2006 Interior	2006 Exterior	2006 Total	2007 Interior	2007 Exterior	2007 Total
Marina Heights	Projected Demand	225	67	292							37	9	45	83	34	117
University Villages	Projected Demand	460	133	593				0	0	0	0	0	0	183	51	234
Other University Villages Specific Plan Demands	Projected Demand	89	20	108				1	1	2	1	1	2	16	1	17
Airport Area Golf Course	Projected Demand	56	364	420												
Airport Business Park	Projected Demand	148	6	155												
Cypress Knolls	Projected Demand	121	27	148							31	5	36	47	10	58
Other Projects: Parks	Projected Demand	0	50	50										0	0	0
Equestrian Center	Projected Demand	0	27	27												
Potential High School	Projected Demand	31	17	49												
Potential K-8 School	Projected Demand	19	7	26												
Monterey Peninsula College Satellite Campus	Projected Demand	26	7	33												
Public Senior Center	Projected Demand	43	0	43												
Lumberman's	Projected Demand	1	0	1										1	0	1
Imjin Partners	Projected Demand	2	0	2												
Existing Ord Community	Projected Demand	194	59	253	194	59	253	194	59	253	194	59	253	194	59	253
TOTAL		1416	785	2198	194	59	253	195	60	255	263	74	337	523	156	680
FORA Allocation				1325												
	Overage			873												

PROJECT		2008 Interior	2008 Exterior	2008 Total	2009 Interior	2009 Exterior	2009 Total	2010 Interior	2010 Exterior	2010 Total	2011 Interior	2011 Exterior	2011 Total
Marina Heights	Projected Demand	135	46	181	187	58	245	225	67	292	225	67	292
University Villages	Projected Demand	276	80	356	368	106	474	383	114	497	415	122	536
Other University Villages Specific Plan Demands	Projected Demand	31	3	34	68	13	81	79	20	99	79	20	99
Airport Area Golf Course	Projected Demand							0	360	360	56	364	420
Airport Business Park	Projected Demand							30	1	31	59	3	62
Cypress Knolls	Projected Demand	65	15	80	81	19	100	106	25	132	121	27	148
Other Projects: Parks	Projected Demand	0	0	0	0	0	0	0	50	50	0	50	50
Equestrian Center	Projected Demand												
Potential High School	Projected Demand							31	17	49	31	17	49
Potential K-8 School	Projected Demand				10	3	13	10	3	13	19	7	26
Monterey Peninsula College Satellite Campus	Projected Demand							26	7	33	26	7	33
Public Senior Center	Projected Demand							43	0	43	43	0	43
Lumberman's	Projected Demand	1	0	1	1	0	1	1	0	1	1	0	1
Imjin Partners	Projected Demand	2	0	2	2	0	2	2	0	2	2	0	2
Existing Ord Community	Projected Demand	193	59	252	193	59	252	193	59	252	193	59	252
TOTAL		703	203	906	908	262	1169	1130	724	1854	1271	743	2014

PROJECT		2012 Interior	2012 Exterior	2012 Total	2013 Interior	2013 Exterior	2013 Total	2014 Interior	2014 Exterior	2014 Total	2015 Interior	2015 Exterior	2015 Total
Marina Heights	Projected Demand	225	67	292	225	67	292	225	67	292	225	67	202
University Villages	Projected Demand	415	122	536	460	133	593	460	133	593	460	133	593
Other University Villages Specific Plan Demands	Projected Demand	89	20	108	89	20	108	89	20	108	89	20	108
Airport Area Golf Course	Projected Demand	56	364	420	56	364	420	56	364	420	56	364	420
Airport Business Park	Projected Demand	89	4	93	119	5	124	148	6	155	148	6	155
Cypress Knolls	Projected Demand	121	27	148	121	27	148	121	27	148	121	27	148
Other Projects: Parks	Projected Demand	0	50	50	0	50	50	0	50	50	0	50	50
Equestrian Center	Projected Demand										0	27	27
Potential High School	Projected Demand	31	17	49	31	17	49	31	17	49	31	17	49
Potential K-8 School	Projected Demand	19	7	26	19	7	26	19	7	26	19	7	26
Monterey Peninsula College Satellite Campus	Projected Demand	26	7	33	26	7	33	26	7	33	26	7	33
Public Senior Center	Projected Demand	43	0	43	43	0	43	43	0	43	43	0	43
Lumberman's	Projected Demand	1	0	1	1	0	1	1	0	1	1	0	1
Imjin Partners	Projected Demand	2	0	2	2	0	2	2	0	2	2	0	2
Existing Ord Community	Projected Demand	193	59	252	193	59	252	193	59	252	193	59	252
TOTAL		1310	744	2054	1385	757	2142	1415	758	2172	1415	785	2199

Recycled Water Demand	
Year	Factor Based
2005	1.31
2006	3.71
2007	33.90
2008	66.47
2009	113.67
2010	569.52
2011	574.27
2012	575.52
2013	576.77
2014	578.02
2015	604.65

Marina Heights			
			Recycled Demand
	Common Area		14.63
Year	Units		
2006	172	16%	2.40
2007	215	20%	2.99
2008	241	23%	3.36
2009	244	23%	3.40
2010	178	17%	2.48
2011	0	0%	0.00
Total	1050	100%	14.63

University Villages			
			Recycled Demand
	Common Area		25.87
	Commercial Exterior		63.22
	Total		89.09
Year	Units		
2007	360	29%	25.93
2008	387	31%	27.87
2009	383	31%	27.58
2010	107	9%	7.71
2011	0	0%	0.00
2012	0	0%	0.00
2013	0	0%	0.00
Total	1237	100%	89.09

Other UV-SP Demands		
		Total
	All Exterior	19.72
Year		Recycled Demand
2005	5%	1.31
2006	0%	0.00
2007	0%	0.00
2008	5%	1.34
2009	40%	10.51
2010	25%	6.56
2011	0%	0.00
2012	0%	0.00
Total	75%	19.72

Airport Area Golf Course		
		Recycled Demand
	Hotel Exterior	3.90
	Total	3.90
Year		
2010		363.90
	Total	363.90

Airport Business Park		
		Recycled Demand
	Commercial Exterior	6.26
Year		
2010		1.25
2011		1.25
2012		1.25
2013		1.25
2014		1.25
2015		
	Total	6

Cypress Knolls		
		Recycled Demand
	Commercial Exterior	
2007	1.27	
2009	2.22	3.49

Other Developments		
		Recycled Demand
	Parks	49.90
	K-8 School	6.99
	Equestrian Center	26.64
	Monterey Penninsula College	6.59
	High School	17.47
	Total	107.58
Year		
2007		0.00
2008		0.00
2009		3.49
2010		73.95
2011		3.49
2012		0.00
2013		0.00
2014		0.00
2015		26.64
		107.58

Existing Ord Community - All Residential
No Recycled Water Uses Identified

MARINA HEIGHTS

Total Project Demands: 292 AFY

Interior	Exterior
225	67

RESIDENTIAL

Product Type	Number of Lots	Lot Size	Demand Factors (Marina Heights WSA)	Projected Demands	% Irrigable Area	Irrigable Area Per Lot (acres)	Total Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Exterior Unit Demand	Exterior Demand	Total Projected Demands	Projected Interior Demands
Interior															
Townhomes	*102 total units*														
~1 Bed, 1 Bath	34 units	0.05 ac	0.25 af/year/unit	8.5 AFY	40%	0.020	0.68	15%	85%	0.0055	0.0117	0.0173	0.59	8.50	7.91
~2 Bed, 1.5 Bath	34 units	0.05 ac	0.25 af/year/unit	8.5 AFY	40%	0.020	0.68	15%	85%	0.0055	0.0117	0.0173	0.59	8.50	7.91
~3 Bed, 2 Bath	34 units	0.05 ac	0.25 af/year/unit	8.5 AFY	40%	0.020	0.68	15%	85%	0.0055	0.0117	0.0173	0.59	8.50	7.91
Cottages	*188 total units*														
~ 1 Bed, 1 Bath	7 units	0.06 ac	0.25 af/year/unit	1.75 AFY	45.00%	0.027	0.19	20%	80%	0.0100	0.0149	0.0250	0.17	1.75	1.58
~2 Bed, 1.5 Bath	8 units	0.06 ac	0.25 af/year/unit	2 AFY	45.00%	0.027	0.22	20%	80%	0.0100	0.0149	0.0250	0.20	2.00	1.80
~2 Bed, 2 Bath	82 units	0.06 ac	0.25 af/year/unit	20.5 AFY	45.00%	0.027	2.22	20%	80%	0.0100	0.0149	0.0250	2.05	20.50	18.45
~ 3 Bed, 2 Bath	91 units	0.06 ac	0.25 af/year/unit	22.75 AFY	45.00%	0.027	2.47	20%	80%	0.0100	0.0149	0.0250	2.27	22.75	20.48
Single-Family Residential (small)	*337 total units*														
~3 Bed, 2.5 Bath	169 units	0.11 ac	0.25 af/year/unit	40.75 AFY	45.00%	0.052	8.73	30%	70%	0.0286	0.0249	0.0535	9.05	40.75	31.70
~4 Bed, 3 Bath	168 units	0.11 ac	0.25 af/year/unit	40.5 AFY	45.00%	0.052	8.68	30%	70%	0.0286	0.0249	0.0535	8.99	40.50	31.51
Single-Family Residential (large)	*338 total units*														
~3 Bed, 2.5 Bath	169 units	0.14 ac	0.25 af/year/unit	40.75 AFY	45.00%	0.062	10.48	30%	70%	0.0344	0.0299	0.0642	10.86	40.75	29.89
~4 Bed, 3 Bath	169 units	0.14 ac	0.25 af/year/unit	40.75 AFY	45.00%	0.062	10.48	30%	70%	0.0344	0.0299	0.0642	10.86	40.75	29.89
Estate Units	*85 total units*														
~3 Bed, 3.5 Bath	28 units	0.14 ac	0.5 af/year/unit	14 AFY	50.00%	0.069	1.93	35%	65%	0.0445	0.0308	0.0754	2.11	14.00	11.89
~4 Bed, 3.5 Bath	28 units	0.14 ac	0.5 af/year/unit	14 AFY	50.00%	0.069	1.93	35%	65%	0.0445	0.0308	0.0754	2.11	14.00	11.89
~5 Bed, 4.5 Bath	29 units	0.14 ac	0.5 af/year/unit	14.5 AFY	50.00%	0.069	2.00	35%	65%	0.0445	0.0308	0.0754	2.19	14.50	12.31
TOTAL	1050 units			277.75 AFY		0.60	51.35						52.62	277.75	225.13

COMMON AREA

Use	Area (acres)	Demand Factors (Marina Heights WSA)		Projected Demand
Parks	5.85 acres	2.5	AFY	14.625
TOTAL	5.85 acres			14.625

CONSTRUCTION PHASING

Year	Units	% of Total	Parks (acres)	Annual Demand	Interior Demand	Exterior Demand
2006	172	16%		45.50	36.88	8.62
2007	215	20%	5.85	71.50	46.10	25.40
2008	241	23%		63.75	51.67	12.08
2009	244	23%		64.54	52.32	12.23
2010	178	17%		47.09	38.16	8.92
2011	0	0%		0.00	0.00	0.00
Build-Out	1050	100%		292.38	225.13	67.25

Demand Summary

Total Residential Demand	277.75
Total Residential + Parks Demand	292.38
Total Interior	225.13
Total Residential Exterior	52.62
Total Parks	14.63

UNIVERSITY VILLAGES

Total Project Demands 593 AFY

Interior	Exterior
460	133

RESIDENTIAL

Product Type	Approximate Acreage	Number of Lots (Units)	Per Acre Density	Lot Size		Lot Size	People /unit	Interior Demand Factor (AWWARF)	Interior Demand	% Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Exterior Unit Demand	Total Unit Demand	Total Projected Demand (AFY)	Projected Exterior Demand (AFY)	Projected Interior Demand (AFY)
SINGLE FAMILY HIGH DENSITY																			
Live/Work Town home	5.6	139	25	1740	SF	0.04 ac	1.5	0.116	16.11	30%	0%	100%	0.000	0.010	0.010	0.126	17.5	1.4	16.1
Duet	18.2	352	19	2250	SF	0.05 ac	1.5	0.116	40.80	40%	40%	60%	0.014	0.010	0.024	0.140	49.4	8.6	40.8
Small Lot Alley	17.2	242	14	3086	SF	0.07 ac	2.0	0.155	37.40	40%	30%	70%	0.014	0.017	0.031	0.186	44.9	7.5	37.4
Small Lot Standard	11.4	131	12	3800	SF	0.09 ac	3.0	0.232	30.37	40%	50%	50%	0.029	0.015	0.044	0.276	36.1	5.8	30.4
Carriage	13.7	126	9	4750	SF	0.11 ac	3.0	0.232	29.21	40%	60%	40%	0.044	0.015	0.059	0.290	36.6	7.4	29.2
	15.2																		
Standard Lot		115	8	5750	SF	0.13 ac	3.0	0.232	26.66	50%	60%	40%	0.067	0.022	0.089	0.321	36.9	10.2	26.7
Sub-Total	81.2	1105						SF	180.56						0.257	1.339	221.4	40.8	180.6
																			221.4
MULT-FAMILY																			
Mixed-Use Town home	11.0	24	2.2	11.0	AC	0.458 ac	1.5	0.116	2.78	10%	25%	75%	0.019	0.029	0.048	0.164	3.9	1.2	2.8
Apartments	3.0	108	36.0	3.0	AC	0.028 ac	2.0	0.155	16.69	10%	25%	75%	0.001	0.002	0.003	0.157	17.0	0.3	16.7
Sub-Total	14.0	132						MF	19.47								20.9	1.5	19.5
TOTAL	95.2	1237							200.03								242.30	42.3	200.0

COMMON AREAS

	Area (acres)	CIMIS Values	% Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand
Park	27.3	2.1	80%	50%	50%	18.3	7.5 AFY	25.9 AFY
COMMON AREA TOTAL	27.3							25.9 AFY

COMMERCIAL

Planning Area	Location	Land Use / FAR*	Parcel Size (acres)	Building Size	Area	Seats	Percentage of Irrigable Area	Water Demand Factors (MCWD)		Total Demand	Irrigable Area (acres)	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Exterior Demand	Interior Demand	Projected Demand
		0.32	30.6	421,500	sq.ft.					34.1	15.3			5.1	10.3	15.4	18.7	34.1
		Retail	27.95	385,000	sq.ft.		50%	General Retail	0.00005 AFY/Sq.Ft.	19.3	14.0	20%	80%	4.70	9.39	14.09	5.16	19.3
A	Retail / Services	Restaurant (free standing)	1.45	20,000	sq.ft.		50%	Restaurant	0.00052 AFY/Sq.Ft.	10.4	0.7	20%	80%	0.24	0.49	0.73	9.67	10.4
		Fast Food Restaurant	1.20	16,500	sq.ft.	1155	50%	Deli	0.00027 AFY/Sq.Ft.	4.5	0.599	20%	80%	0.20	0.40	0.60	3.85	4.5
		0.19	9.60	81,000	sq.ft.					24.7	4.8			4.0	2.0	6.05	18.61	24.7
		Gas Station Store	0.36	3,000	sq.ft.		50%	Grocery / Markets	0.00039 AFY/Sq.Ft.	1.2	0.2	50%	50%	0.15	0.07	0.22	0.95	1.2
J	Retail / Services	Grocery Store	6.52	55,000	sq.ft.		50%	Grocery / Markets	0.00039 AFY/Sq.Ft.	21.5	3.3	50%	50%	2.74	1.37	4.11	17.34	21.5
		Service	0.71	6,000	sq.ft.		50%	Office/R&D	0.00034 AFY/Sq.Ft.	2.0	0.4	50%	50%	0.30	0.15	0.45	1.59	2.0
		Retail Shops	2.01	17,000	sq.ft.		50%	General Retail	0.00005 AFY/Sq.Ft.	0.9	1.0	50%	50%	0.85	0.42	1.27	(0.42)	0.9
		0.21	22.7	209,000	sq.ft.					68.2	11.7			3.5	7.0	10.5	58.9	69.4
		Retail	13.51	114,000	sq.ft.		50%	General Retail	0.00005 AFY/Sq.Ft.	5.7	6.8	20%	80%	2.27	4.54	6.81	(1.11)	5.7
		Restaurant (free standing)	1.78	15,000	sq.ft.	875	50%	Restaurant	0.00052 AFY/Sq.Ft.	7.8	0.9	20%	80%	0.30	0.60	0.90	6.90	7.8
B1	Multiple Use	Fast Food Restaurant	1.19	10,000	sq.ft.	700	50%	Deli	0.00027 AFY/Sq.Ft.	2.7	0.593	20%	80%	0.20	0.40	0.60	2.10	2.7
		Cinema	4.15	35,000	sq.ft.	1750	50%	Theater	0.00140 AFY/Sq.Ft.	49.0	2.074	20%	80%	0.70	1.39	2.09	46.91	49.0
		Service	2.72	25,000	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	3.0	1.4	50%	50%	0.06	0.03	0.09	2.91	3.0
		Office (above retail)	-	10,000	sq.ft.			Office / R&D	0.00012 AFY/Sq.Ft.	1.2	-			-	-	-	1.20	1.2
		0.16	3.6	24,500	sq.ft.						1.8			0.6	1.2	1.8	2.6	4.4
		Retail	1.76	12,000	sq.ft.		50%	General Retail	0.00005 AFY/Sq.Ft.	0.6	0.9	20%	80%	0.30	0.59	0.89	(0.29)	0.6
V	Retail / Services	Restaurant (free standing)	0.73	5,000	sq.ft.	292	50%	Restaurant	0.00052 AFY/Sq.Ft.	2.6	0.4	20%	80%	0.12	0.25	0.37	2.23	2.6
		Fast Food Restaurant	0.29	2,000	sq.ft.	140	50%	Deli	0.00027 AFY/Sq.Ft.	0.5	0.147	20%	80%	0.05	0.10	0.15	0.39	0.5
		Service	0.81	5,500	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	0.7	0.404	20%	80%	0.14	0.27	0.41	0.25	0.7
			11	13,725	sq.ft.		50%			66.6	5.5	50%	50%	4.62	2.31	6.93	66.17	73.1
OP1	"multiple use"	Hotel Rooms		350	Rooms	350		Hotel/Motel (rooms)	0.17000 AFY/Room	59.5	-	50%	50%	-	-	-	59.50	59.5
		Retail		1,000	sq.ft.			General Retail	0.00005 AFY/Sq.Ft.	0.1	-	20%	80%	-	-	-	0.05	0.1
		Restaurant		12,725	sq.ft.	743		Restaurant	0.00052 AFY/Sq.Ft.	6.6	-	20%	80%	-	-	-	6.62	6.6
			4.9															
T	"multiple use"	Hotel Rooms		150	Rooms	150		Hotel/Motel (rooms)	0.17000 AFY/Room	25.5	-			-	-	-	25.50	25.5
OP2	"Office/research"	Office/Research & development/Light Industrial	15.7	253,000	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	30.4	7.9	20%	80%	2.64	5.28	7.91	22.45	30.4
OP3	"multiple use"	Cultural/Office	5.2	82,000	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	9.8	2.6	20%	80%	0.87	1.75	2.62	7.22	9.8
OP4	"business park"	Office/Research & development/Light Industrial	10.5	170,000	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	20.4	5.3	20%	80%	1.76	3.53	5.29	15.11	20.4
OP5	"business park"	Office/Research & development/Light Industrial	15.3	245,000	sq.ft.		50%	Office / R&D	0.00012 AFY/Sq.Ft.	29.4	7.7	20%	80%	2.57	5.14	7.71	21.69	29.4
		0.22	2.1	20,000	sq.ft.					4.0	0.8			0.3	0.5	0.8	3.2	4.0
		Retail	0.89	8,500	sq.ft.		50%	General Retail	0.00005 AFY/Sq.Ft.	0.4	0.4	20%	80%	0.15	0.30	0.45	(0.02)	0.4
Z	Retail / Services	Service	0.05	5,000	sq.ft.		50%	Office/R&D	0.00012 AFY/Sq.Ft.	0.6	0.027	20%	80%	0.00	0.00	0.00	0.60	0.6
		Restaurant (free standing)	0.53	5,000	sq.ft.	292	50%	Restaurant	0.00052 AFY/Sq.Ft.	2.6	0.3	20%	80%	0.09	0.18	0.28	2.34	2.6
		Fast Food Restaurant	0.16	1,500	sq.ft.	105	50%	Deli	0.00027 AFY/Sq.Ft.	0.4	0.079	20%	80%	0.03	0.05	0.08	0.33	0.4
			131.20	1,519,725											289	63.2		

* FAR for PLANNING AREA CALCULATED BASED ON INTERIOR SQUARE-FOOT & AREA ACREAGES: SUB PARCEL ACREAGES CALCULATED BASED ON PLANNING AREA FAR

TOTAL 325

CONSTRUCTION PHASING

Factor Based

Year	% of Residential Total	Units	Residential Demand Interior	Residential Demand Exterior	Total	Parks (acres)	Park Demand (exterior)	% of Commercial Total	Commercial Demand Interior	Commercial Demand Exterior	Commercial Total	Annual Demand	Interior Demand	Exterior Demand
2007	29%	359	58	12	70	8.00	8	48%	125	31	156	234	183	51
2008	31%	388	63	13	76	9.00	8	12%	31	8	38	122	93	29
2009	31%	384	62	13	75	8:00	8	11%	28	7	35	118	90	28
2010	9%	106	17	4	21	2.00	2	0%	0	0	0	23	17	6
2011	0%	0	0	0	0	0.00	0	12%	31	8	39	39	31	8
2012	0%	0	0	0	0	0.00	0	0%	0	0	0	0	0	0
2013	0%	0	0	0	0	0.00	0	18%	46	11	57	57	46	11
Build-Out	100%	1237	200	42	242	27.00	26	100%	260	65	325	593	460	133

2009
2011
2013

Other University Villages Specific Plan Demands

Total Project Demands: 108 AFY

	Interior	Exterior
	89	20

Development Name	Acres	Interior	Exterior	Projected Demands (per University Villages WSA, January 13, 2004)	Construction Phasing
Monterey-Salinas Transit	4.3	2.81	1.61	4.42	2010
Transportation Agecy of Mo.Co.	13.2	8.62	4.95	13.57	2010
USACOE	Estimates not given in WSA - Included in Existing Ord Community Worksheet				
MCWD Site	11.3	36.92	10.51	47.43	2009
City of Marina PBC Parcel (8th St.)*	17.4	15.16	0	15.16	2007
City of Marina PBC Parcel (3rd St)*	3	9.15	0	9.15	2012
Goodwill Industries	Estimates not given in WSA - Included in Existing Ord Community Worksheet				
Young Nak Church	1.5	0.88	1.31	2.19	2005
Co. of Monterey	Estimates not given in WSA - Included in Existing Ord Community Worksheet				
City of Marina Fire Station	3.3	15.09	1.34	16.43	2008
TOTAL	54	88.63	19.72	108.35	

*University Villages WSA includes an allottment for exterior use on the City PBC parcels. Totals in this budget have been revised to reflect the use of artificial turf and assumes no exterior irrigation.

Construction Phasing

	Interior	Exterior	
2005	0.88	1.31	
2006			
2007	15.16	0	
2008	15.09	1.34	
2009	36.92	10.51	
2010	11.43	6.56	
2011			
2012	9.15	0	
2013			
2014			
2015			
2016			
	88.63	19.72	108.35

CYPRESS KNOLLS

Total Project Demands: 148 AFY

Interior	Exterior
121	27

RESIDENTIAL

Product Type	Approximate Acreage	Number of Lots		Per Acre Density	Lot Size		Lot Size	person/unit	Interior Demand Factor (AWWARF)	Interior Demand (AFY)	% Irrigable Area	Irrigable Area Per Lot (acres)	Total Irrigable Area (Acres)	% Turf	% Ornamental	Turf Demand Factor	Ornamental Demand Factor	Total Exterior Unit Demand	Water Demand Factor	Total Projected Demand (AFY)	Total Exterior Demand (AFY)	Total Interior Demand (AFY)
SINGLE-FAMILY																						
Single-Family Residential(60x100)	8.68	63	units	7.3	6,000	SF	0.14 ac	1.8	0.139	8.76	30%	0.04	2.60	30%	70%	0.023	0.020	0.043	0.182	11.46	2.70	8.76
Single-Family Residential(55x100)	39.77	315	units	7.9	5,500	SF	0.13 ac	1.8	0.139	43.82	30%	0.04	11.93	30%	70%	0.021	0.018	0.039	0.178	56.18	12.37	43.82
Single-Family Residential(50x100)	19.28	168	units	8.7	5,000	SF	0.11 ac	1.8	0.139	23.37	30%	0.03	5.79	30%	70%	0.019	0.017	0.036	0.175	29.37	6.00	23.37
MULTI-FAMILY																						
Apartments	4.28	116	units	27.1		SF	0.08 ac	2.4	0.185	21.51	30%	0.02	2.78	15%	85%	0.007	0.014	0.021	0.206	23.92	2.40	21.51
Townhomes	5.80	50	units	8.6	4500	SF	0.10 ac	1.8	0.139	6.96	30%	0.03	1.55	15%	85%	0.009	0.000	0.009	0.148	7.38	0.43	6.96
TOTAL	77.81	712								104.42										128.31	23.89	104.42

COMMERCIAL

Land Use		Parcel Size (acres)	Building Size	Area	Demand Factors		Total Demand	FAR	Unbuilt Area	Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirment	Total Demand	Total Exterior Demand (AFY)	Total Interior Demand AFY	Total Demand
Community Center		2.3	27,175	sq.ft.				0.58	1.0	0.4	50%	50%	1.08	0.20	3.26	1.27	1.99	3.26
	Support Services		6,300	sq.ft.	0.00012	AFY/Sq.Ft.	0.76								*0.76*		*0.46*	
	Recreation Center		20,875	sq.ft.	0.00012	AFY/Sq.Ft.	2.51								*2.51*		*1.53*	
Assisted Living (60 beds)		4.8	60	rooms/beds	0.28200	AFY/Room	16.92	0.58	2.0	0.8	50%	50%	1.88	0.34	16.92	2.22	14.70	16.92
TOTAL		118.5	54,410				20.18								20.18	3.49	16.69	20.18

CONSTRUCTION PHASING

Factor Based

Year	Units	Single-Family Residential(a)	Single-Family Residential(b)	Single-Family Residential(c)	Townhomes	Apts	Units	Residential Interior Demand	Residential Exterior Demand	Residential Total Demand	Commercial Building Size	Commercial Interior Demand	Commercial Exterior Demand	Total Commercial Demand	Interior Demand	Exterior Demand	Total Demand
2006	196	10	49	26	30	81	196	31	5	36					31.02	5.22	36.23
2007	115	10	59	26	20	-		16	4	20	6,300	0.46	1.27	2	16.46	5.12	21.57
2008	115	13	66	36	-	-	115	16	4	20	20,875	1.53		2	17.53	4.43	21.96
2009	114	13	66	35	-	-	114	16	4	20					15.86	4.40	20.26
2010	172	17	75	45	-	35	172	26	6	32					25.55	6.00	31.55
2011	0	-	-		-	-	-	-	-	-	60	14.70	2.22	17	14.70	2.22	16.92
2012	0	-	-		-	-	-	-		-					-	-	-
2013	0	0	0		0	0									-	-	-
2014	0	0	0		0	0									-	-	-
2015	0	0	0		0	0									-	-	-
2016	0	0	0		0	0									-	-	-
Build-Out	712	63	315	168	50	116	712	104	24	128		16.69	3.49	20.18	121.11	27.4	148.49

GOLF COURSE

Total Demands: 420 AFY

Interior	Exterior
56	364

OTHER

Product Type	CIMIS Factor		Acreage	% Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand
Golf Course	2.5	afy	180	100%	100%	0%	360.0	0.0	360.0
TOTAL									360.0

COMMERCIAL

Land Use	Parcel Size (acres)	Building Size		Rooms	Demand Factor (MCWD)		Total Projected Demand	FAR	Unbuilt Area	Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornimental Requirement	Total Exterior Demand	Total Interior
Hotel	10.0	327,250	sq.ft.	350	0.17000	AFY/Room	59.5	0.28	7.3	2.9	50%	50%	2.68	1.22	3.90	55.60
TOTAL							59.5								3.90	55.60

CONSTRUCTION PHASING

Year	Hotel	Golf Course	Annual Demand	Interior Demand	Exterior Demand
2010		180 acres	360.00	0.00	360.00
2011	350 Rooms		59.50	55.60	3.90
			419.50		

AIRPORT BUSINESS PARK

Total Demands 155 AFY

Exterior	Interior
6	148

COMMERCIAL

Land Use	Parcel Size (acres)	Building Size		Demand Factors (MCWD)		Total Projected Demand	FAR	Unbuilt Area (acres)	Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornimental Requirement	Total Exterior Demand	Total Interior Demand	Total Projected Demand
Office, and Retail Commercial	20.0	1,290,100	sq.ft.	0.00005	AFY/sq.f	64.51	0.425	11.5	4.6	10%	90%	0.85	3.48	4.33	60.18	64.51
Industrial/Institutional	20.0	750,000	sq.ft.	0.00012	AFY/sq.f	90.00	0.425	11.5	2.3	0%	100%	-	1.93	1.93	88.07	90.00
TOTAL	**40.0**					**154.51**						0.85	5.41	**6.26**	**148.25**	**154.51**

CONSTRUCTION PHASING

Year		%	Annual Demand	Interior Demand	Exterior Demand
	2010	20%	30.90	29.65	1.25
	2011	20%	30.90	29.65	1.25
	2012	20%	30.90	29.65	1.25
	2013	20%	30.90	29.65	1.25
	2014	20%	30.90	29.65	1.25
	2015				
Build-Out			154.51	148.25	6.26

OTHER DEVELOPMENTS

TOTALS			
Combined Demands	230	AFY	
	Interior	Exterior	
	123	108	

Parks

Total Demands	Total Projected Demand	
	50 AFY	
	Interior	Exterior
	0	50

K-8 School

Demands	Total Projected Demand	
	28 AFY	
	Interior	Exterior
	19	7

Equistrian Center

Total Demands	Total Projected Demand	
	27	AFY
	Interior	Exterior
	0	27

Monterey Peninsula College

Total Demands	Total Projected Demand	
	33	AFY
	Interior	Exterior
	26	7

High School

Total Demands	Total Projected Demand	
	49	AFY
	Interior	Exterior
	31	17

Lumberman's

Demands	Total Projected Demand	
	1	AFY
	Interior	Exterior
	1	0

Public Senior Center

Total Demands	Total Projected Demand	
	43	AFY
	Interior	Exterior
	43	0

Imjin Partners

Total Demands	Total Projected Demand	
	2	AFY
	Interior	Exterior
	1.59	0.21

PARKS

Park	Area (acres)	Demand Factor	% Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand	
Abrams Community Park	27	2	100%	100%	0%	49.9	0.0	49.9	AFY
								49.9	

CONSTRUCTION

Year	Annual Factor Based Demand	Interior Demand	Exterior Demand
2010 Abrams Park	49.90	-	49.90
	49.90		49.90

Potential High

Potential High School Demand Projections Based on Development of a High School of a similar size and capacity as Seaside High School with

Area (acres)	Number of Students	% Irrigable Area	Irrigated Landscape	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand	Total Exterior Demand	Total Interior Demand
25	1500	40%	10	90%	10%	16.63	0.84	48.91	17.47	31.44

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand
	2010	48.91	31.44	17.47
Build-Out		48.91	31.44	17.47

Potential K-8

* Potential K-8 School based development of a school of similar size and capacities as Marina Del Mar Elementary School and Los Arboles Middle School. Metered water demands provided by MCWD for the two representative schools

Area (acres)	Number of Students	% Irrigable Area	Irrigated Landscape	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand	Total Exterior Demand	Total Interior Demand
10	1000	40%	4	90%	10%	6.65	0.336	26.28	6.99	19.29

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand
	2009	13.14	9.65	3.49
	2011	13.14	9.65	3.49

Equistrian Center

Land Use	Area		Water Use Rate		%Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand
Equistrian Center	28	acres	2.1	afy per acre	75%	50%	50%	19.4	7.2	26.6

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand
	2015	26.64	-	26.64
Build-Out		26.64	0.00	26.64

Monterey Peninsula

Land Use	Area (acres)	Number of Students	Water Use Rate		Estimated Interior Demand		% Irrigable Area	Irrigated Landscape (acres)	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Exterior Demand	Total Projected Demand
MPC Satellite Campus	10	2,000	0.0003	AFY	26	AFY	40%	4	80%	20%	5.91	0.67	6.59	32.59

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand
	2010	32.59	26.00	6.59
Build-Out		32.59	26.00	6.59

New Public Senior Center

Land Use	Area (acres)	Building Size (s.f.)	Water Use Rate		Estimated Interior Demand		Estimated Exterior Demand	Total Projected Demand
Senior Center	Unk.	6,000	0.0072	AFY	43.2	AFY	UNK.	43.20

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand	TOTAL
	2010	43.20	43.20	UNK	43.20
Build-Out		43.20	43.20	0.00	43.20

Lumberman's

Land Use	Area (acres)	Building Size (s.f.)	Water Use Rate		Estimated Interior Demand		Estimated Exterior Demand	Total Projected Demand
Lumberman's*	Unk.	20,000	0.00005	AFY	1	AFY	UNK.	1.00

CONSTRUCTION

Year		Annual Demand	Interior Demand	Exterior Demand	TOTAL
	2007	1.00	1.00	UNK	1.00
Build-Out		1.00	1.00	0.00	1.00

*No exterior lot area given for

Total Construction Phasing	Interior	Exterior
2007	1	
2008		
2009	9.65	3.49
2010	100.64	73.95
2011	9.65	3.49
2012		
2013		
2014		
2015	0.00	26.64
	121	108

IMJIN PARTNERS

Land Use	Parcel Size (acres)	Building Size		Demand Factors (MCWD)		Total Projected Demand	FAR	Unbuilt Area (acres)	Irrigable Area	% Turf	% Ornamental	Turf Requirement	Ornimental Requirement	Total Exterior Demand	Total Interior Demand	Total Projected Demand
Office	1.0	15,000	sq.ft.	0.00012	AFY/sq.ft.	1.80	0.425	0.58	0.23	10%	90%	0.04	0.17	0.21	1.59	1.80
TOTAL	1.0					1.80						0.04	0.17	0.21	1.59	1.80

Total Construction Phasing	Interior	Exterior	Total
2007			
2008	1.59	0.21	1.80
2009			
2010			

Preston Park

Existing Demand

Total Demands	153 AFY	
	Interior	Exterior
	126	27

Total Demands

Existing Demand

253 AFY

Interior	Exterior
194	59

Abrams "B"

Existing Demand

Total Demands	74	AFY
	Interior	Exterior
	59	15

Note: Existing demands have been calculated utilizing MCWD demand methodology - Metered Record used where provided*.

Median Strip Irrigation

Existing Demand

Total Demands	10	AFY
	Interior	Exterior
	0	10

Central Coast High School

Existing Demand

Total Demands	11	AFY
	Interior	Exterior
	5	7

Other Existing Demands

Existing Demand

Total Demands	5	AFY
	Interior	Exterior
	5	0

EXISTING ORD COMMUNITY DEVELOPMENTS

Preston Park

Land Use	Number of Lots	Lot Size	Demand Factors (MCWD)	person/unit	Total Project Demand	% Irrigable Area	Irrigable Area Per Lot (acres)	Total Irrigable Area (Acres)	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Exterior Unit Demand	Total Exterior Demand	Total Interior Demand	MCWD Metered Records
Residential	354	0.14 ac	0.5 AFY	3.5	177	40%	0.056	19.82	60%	40%	0.06	0.02	0.08	27.44	125.56	153

Abrams "B"

Land Use	Number of Lots	Lot Size	Demand Factors (MCWD)	person/unit	Total Project Demand	% Irrigable Area	Irrigable Area Per Lot (acres)	Total Irrigable Area (Acres)	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Exterior Unit Demand	Total Exterior Demand	Total Interior Demand	MCWD Metered Records*
Residential	192	0.14 ac	0.5 AFY	3.5	96	40%	0.056	10.75	60%	40%	0.06	0.02	0.08	14.88	59.12	74

Median Strip Irrigation

Land Use	Area	Total Irrigable Area (Acres)	Total Demand (est)
Median Strips*	UNK.	UNK	10

No value given for median strip area, landscape mix, etc. Allocation of 10 AFY given for purposes of estimation.

*MCWD Metered Records for Abrams and Preston Park provided by D. Yount, 04/20/05. Average of years 2002, 2003, and 2004 taken. No breakdown was provided for exterior v. interior use. Interior/Exterior demands derived using the factor based methodology. Total = MCWD Metered Records Interior = MCWD Metered Records - Total Exterior Demand Exterior = Factor Based Methodology (Estimated Irrigable Area * (Turf Req. + Ornamental Req.))

Central Coast High School*

*Central Coast High School Demands derived through use of Seaside High School past demand records provided by MCWD. Seaside High School has approximately 1500 students with a total demand of 48.91 AFY. Central Coast High School has 350 students. 350/1500 = 23%

48.91x 0.23 = 11.25 AFY

Exterior demand is estimated for purposes of disaggregation of Interior v. exterior estimated demands.

Area (acres)	Number of Students	% Irrigable Area	Irrigated Landscape	% Turf	% Ornamental	Turf Requirement	Ornamental Requirement	Total Projected Demand	Total Exterior Demand	Total Interior Demand
19	350	40%	5	50%	50%	4.62	2.1	11.25	6.72	4.53

Other Existing Use Estimates*:

	Demand	
USACOE	1	AFY
Goodwill	1	AFY
FORA	1	AFY
US Media	1	AFY
County	1	AFY
TOTAL	5	AFY

No information known on these existing uses, amount of interior v. exterior, etc. Assumptions made for estimation purposes. All demand is assumed to be interior.

Appendix C
Hydrology
Engineering Development Associates
FEMA Letter of Map Revision

SUPPLEMENTAL REPORT

RETENTION BASIN ANALYSIS

FOR

CYPRESS KNOLL

MARINA, CALIFORNIA

DATE: JUNE 9, 2005

PREPARED BY:

ENGINEERING DEVELOPMENT ASSOCIATES
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EDA Job Number: 3-2277.000

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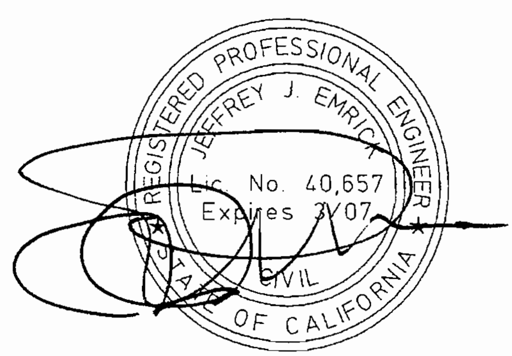


CYPRESS KNOLL
MARINA, CALIFORNIA

TABLE OF CONTENTS

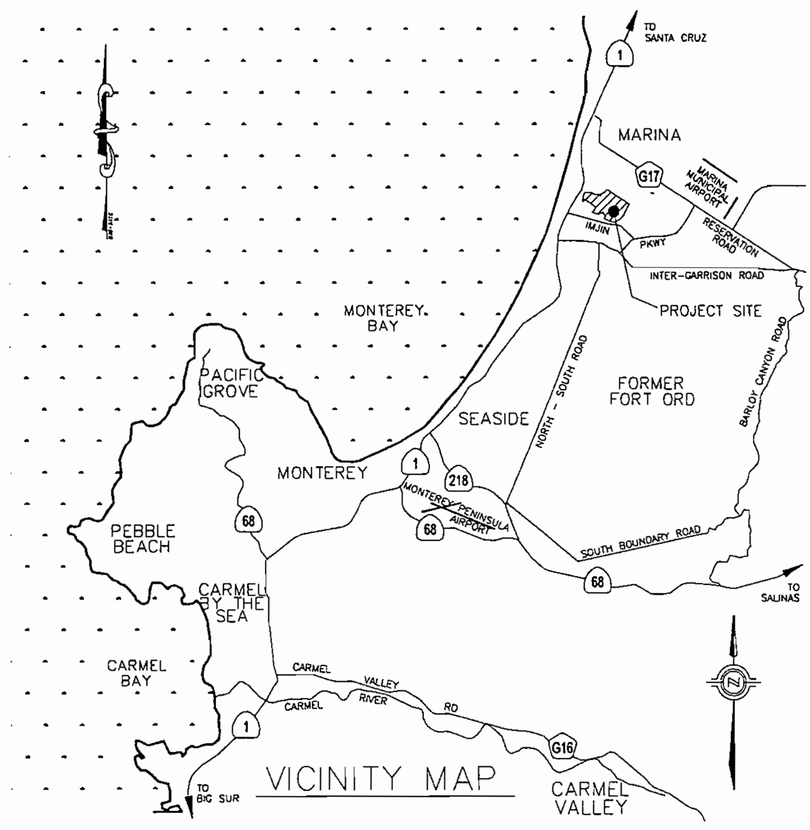
INTRODUCTION:

The proposed residential project, Cypress Knoll, is located on the east side of State Highway 1 within the corporate limits of the City of Marina in the northwest corner of the former Fort Ord Military Reservation (see Figure 1).

The site is approximately 190.59 acres in size and currently has single-family residential base housing. The project plans to remove existing facilities and replace it with 772 residential units on 158.3 acres and non-residential facilities on 32.29 acres. An existing retention basin is located near the northwest corner of the site. The existing site's predominate surface flow direction is to the northwest towards that basin.

Cypress Knoll will also include the construction of roadway with curb, gutter & sidewalk, utilities, and storm drainage improvements. This drainage report is intended to address the estimated storm flow volumes generated from the proposed development of Cypress Knoll for retention basin sizing. All relevant calculations and assumptions are presented in the Appendices of this report.

FIGURE 1: VICINITY MAP



REFERENCES:

Analysis assumptions, estimations and design procedures were based on following assumptions and references:

1. The 100-year flood surface elevation was taken from the National Flood Insurance Program, FIRM Flood Insurance Rate Map for the City of Marina, Monterey County, California Community-Panel Number 0607270005C, February 3, 1993.

2. Design constraints were referenced from the City of Marina Engineering Design Standards. The required storage volume of the retention basin was determined for the required 10-year design storm as well as the 25-, 50-, and 100-year storms. The Soil Conservation Services' Unit Hydrograph Method was used to develop runoff volumes generated in the tributary watersheds. A weighted curve number, CN, was developed based on the type of development tributary to the retention basin. All relevant information and calculations are presented in the Appendix to this report.

3. The computer program, "Hydraflow Hydrographs 2004©," by Intelisolve was used to determine the volume of runoff generated on the project site for the 100-, 50-, 25-, and 10-year design storms using the SCS Unit Hydrograph. Then the SCS Unit Hydrograph was used to basin route the flow into the existing retention basin in order to calculate the required basin size.

METHOD OF ANALYSIS:

Existing Retention Basin Volume:

The existing retention basin is located just north of the western portion of the project site and west of the George S. Patton Elementary School. It is approximately 35 feet in depth and has a total storage volume of about 11,200,000 cubic feet (257 acre-feet). The total existing volume was calculated by adding the volumes of the basin between each contour as determined by the using conic method:

$$V = d\left(\frac{A_1+(A_1A_2)^{1/2}+A_2}{3}\right)$$

Where:

V = Storage (cu. ft.)
d = Change in elevation between points 1 and 2
A_1 = Surface area at elevation 1 (sq. ft.)
A_2 = Surface area at elevation 2 (sq. ft.)

Required Retention Basin Volume:

The volume of storm water generated by the three tributary watersheds was determined by the use of the SCS Unit Hydrograph Method. Intelisolve's Hydraflow Hydrographs™ computer program was used to model the hydrographs. Hydraflow computes SCS Method runoff hydrographs by convoluting a rainfall hyetograph through a unit hydrograph. This method is also used in SCS TR-20.

The curve number, CN, for a watershed is estimated as a function of land use, soil type, and antecedent watershed moisture. The existing and proposed CN's used in this analysis were developed by SCS and published in Technical Report 55(commonly referred to as TR-55). The existing CN, as stated in EDA's original hydrological study of this site, is equal to 72. The CN remains unchanged with the development of the project site as per the tentative map.

This retention basin (or terminal sump) by definition has no outlet except for water lost via infiltration. An infiltration rate of 12 inches per hour was used as per the City of Marina's "Design of Storm Water Drainage Facilities" specifications. The maximum storage requirements were determined for the basin during a 10-, 25-, 50-, and 100-year design storms taking into consideration the outflow due to infiltration. The following table indicates the resulting storage volumes and outflows for each design storm:

TABLE: RETENTION BASIN CAPACITIES AND OUTFLOWS AT VARIOUS DESIGN STORMS

Design Storm	Required Volume (cubic feet)	Peak Outflow due to Infiltration (cfs)
10-Year	115,860	15.4
25-Year	161,320	18.8
50-Year	263,650	26.4
100-Year	334,330	31.6
Actual Max Basin Volume =	11,200,000	

These results indicate that the existing retention basin has adequate volume to accept any surface flows that it may receive from the three tributary watershed areas; however, the FIRM indicates that *Zone A* covers large areas of the site during a 100-year design storm. *Zone A* is a designation for areas with no base flood elevations that have been determined. The original hydrological study that was preformed by EDA in 1999 used the SCS TR-20 Method. This study indicated that peak surface runoff during a 100-year storm will cause flooding near the intersection of Booker Street and Hayes Circle. This study however does not take into consideration the possible results of the movement of groundwater through the beach sands that covers this area. The flood area shown on the FIRM therefore may be the result of the movement of groundwater in addition to the surface runoff. Because the movement of groundwater as well as perched water tables could be a significant factor affecting the flooding of the project site, further geotechnical studies may be necessary. Copies of the referenced FIRM map are provided in Appendix III of this report

SUMMARY:

The existing retention basin has adequate storage capacity for surface runoff generated in the tributary watershed that includes the proposed Cypress Knoll project site. The FIRM however indicates that flooding will occur over a large portion of the site. Further geotechnical studies may be necessary to determine if groundwater movements or perched water tables could be a significant factor affecting the flooding of the project site.

APPENDICES

SUPPLEMENTAL REPORT, RETENTION BASIN ANALYSIS AND REFERENCE SHEETS
CYPRESS KNOLL
MARINA, MONTEREY COUNTY, CALIFORNIA

APPENDIX I

ORIGINAL HYDROLOGY AND HYDRAULIC REPORT (1999) WITH WATERSHED MAP
ORIGINAL TR-20 ANALYSIS

Hydrology

The site is located in the rolling dune-like topography of the former Fort Ord. A map of the tributary areas is shown below. There are a total of 495 acres tributary to the point of concentration at the western apogee of Hayes. Of the 495 acres, about 85 acres is in the previous city limit of the City of Marina. According to the city, the 85 acres is hydraulically isolated from the remaining watershed and is therefore excluded from the area. Therefore, the total area tributary to the point of concentration is 410 acres. The soil is very sandy and in good hydrologic condition. CN's are determined using soil in good hydrologic condition and assuming 20% impervious area in the residential neighborhood and 40% impervious area in the other area. A summary of the watershed parameters is contained in the following table.

	Catchment		
	1	2	3
Area ac	229	158	23
Area sqmi	0.36	0.25	0.04
Low Elev	60	115	100
High Elev	150	198	180
DH	90	83	80
Length ft	5652	3340	1610
Length mi	1.07	0.63	0.30
Lca ft	2776	1255	425
Lca mi	0.53	0.24	0.08
Lag hr	0.42	0.23	0.10
Tc hr	0.69	0.39	0.17
CN	72	72	75

The rainfall total for the 100-year, 24-hour storm is taken from Precipitation-Frequency Atlas of the Western United States, published by NOAA, and is 3.5 inches.

The TR-20 computer program is used to determine the flow rate resulting from a 100-year storm. Because travel time is negligible in the watershed the hydrographs from all the areas are added directly.

The 100-year flow rate determined by the TR-20 method and using the variables described above is 109 cubic-feet-per-second (cfs). The TR-20 output is contained in the appendix to this report.

Hydraulics

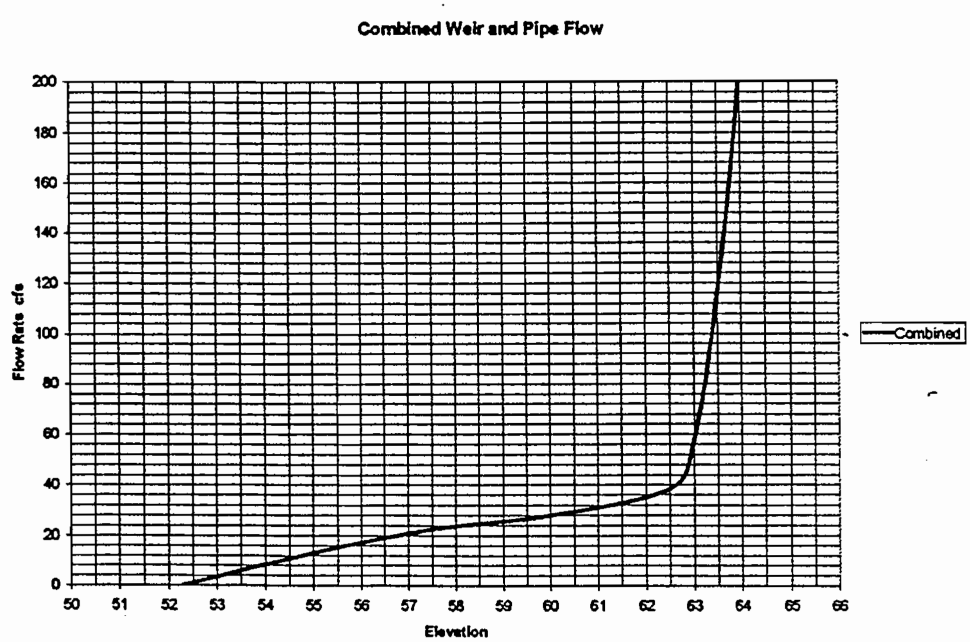
Runoff from the three tributary areas is concentrated at the western apogee of Hayes Circle. Water arrives at the point of concentration on the ground surface and via an underground storm drain system. Water is carried away from the point by the continuing storm drain pipe and, if necessary, overland to the east and north toward the existing natural sump area.

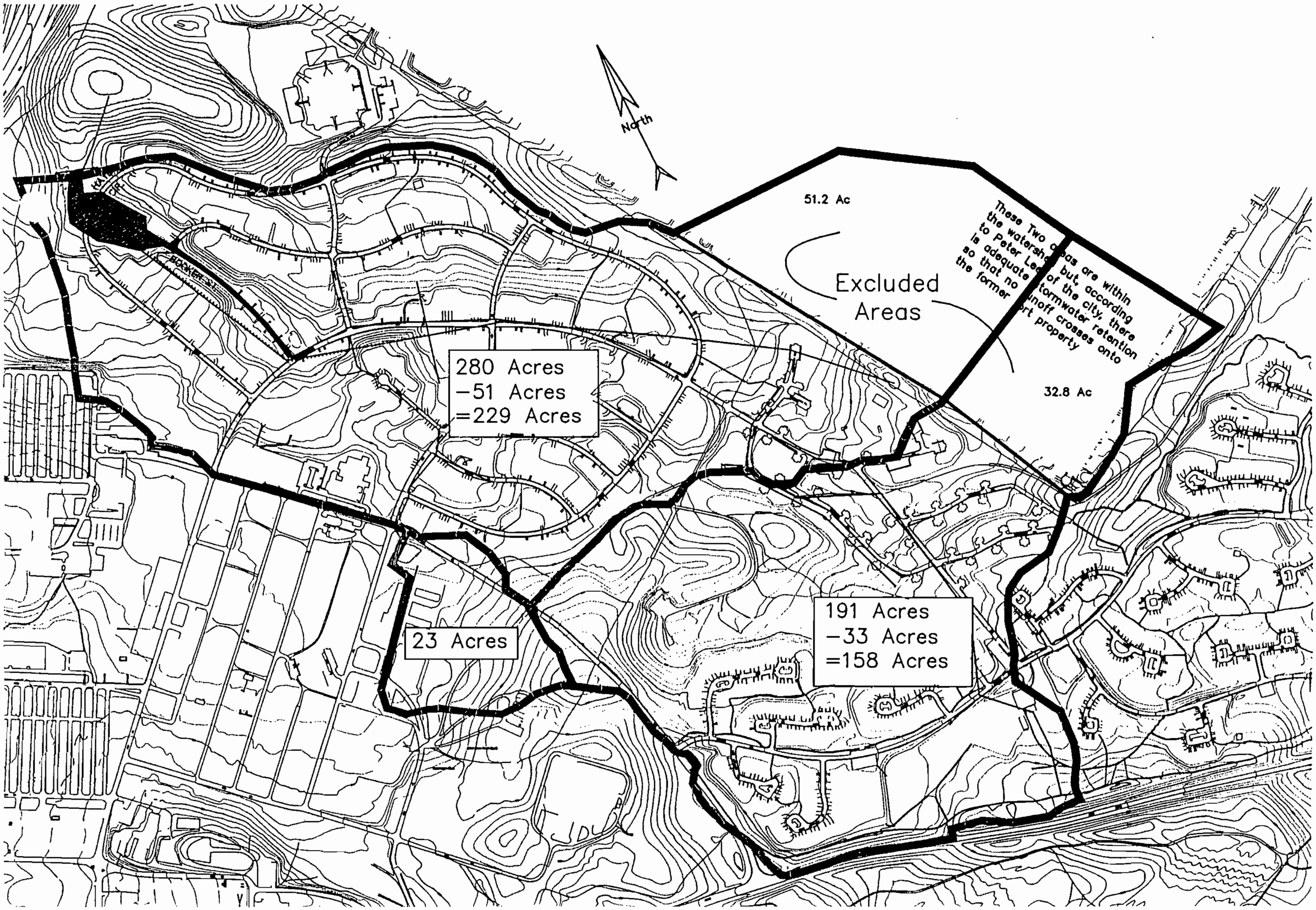
Calculations indicate that the storm drain system does not have enough capacity to carry the flood resulting from the design 100-year storm. Therefore, two modes of flow are modeled and combined into a single "rating curve" at the point of discharge.

The storm drain system is modeled using the computer program Storm Cadd. A chart showing the water surface elevation for various flow rates is constructed using the results of the model. It should be noted that the plans indicate the last reach of storm drain pipe is 30 inch diameter but up stream pipes are 48" diameter. There was no access to the end of the pipe for a direct measurement but the pipe was visible. It does look like the outlet is a 30" diameter pipe.

Overland flow is modeled as a weir. The shape of the weir is taken from field measurements. A weir coefficient of 2.6 is used. A chart shows the water surface elevation and weir flow rate is constructed using the results of the model.

To determine the combined flow a chart is developed showing the combined flow of the pipe and weir at various water surface elevations. The water surface elevation required passing the 109cfs is then defined as the level of the 100-year flood. The 100-year flood level is at elevation 63.4'. The chart is presented below.




North
51.2 Ac
32.8 Ac
These Two a as are within the watersh but, according to Peter Le of the city, there is adequate tormwater retention so that no unoff crosses onto the former rt property
Excluded Areas
280 Acres
−51 Acres
=229 Acres
191 Acres
−33 Acres
=158 Acres
23 Acres
BOOKER ST

```
********************************************************************************
*                                      * TR 20 S/N    :                        *
*                                      * HMVersion    :  3.40                  *
*            TR 20                     * Date         :  8/06/99               *
*                                      * Time         : 15:02:10               *
*    Project Formulation Hydrology     * Input file   : d5.t20                 *
*                                      * Output file  : d5.out                 *
*                                      *                                       *
*                                      *                                       *
********************************************************************************
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xxxxxxx  xxxxxx    xxxxx    xxxxx
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   x     x     x       x   x   x x
   x     xxxxxx      x     x  x  x
   x     x   x     x       x x   x
   x     x    x   x        xx    x
   x     x     x  xxxxxxx   xxxxx
```

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:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
:::                                     :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::         Haestad Methods, Inc.       :::
:::                                     :::
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

```
*****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****************

JOB TR-20
TITLE     Cypress Knolls
TITLE     Existing Conditions
 3 STRUCT       1
 9 ENDTBL
 3 STRUCT       2
 9 ENDTBL
 3 STRUCT       3
 9 ENDTBL
 6 RUNOFF 1     1     1          0.36        72.0        0.691          1
 6 RUNOFF 1     2     2          0.25        72.0        0.391          1
 6 RUNOFF 1     3     3          0.04        75.0        0.171          1
 6 ADDHYD 4     3 1 2 4                                      1          1
 6 ADDHYD 4     3 4 3 5                                      1          1
   ENDATA
 7 INCREM 6                       0.1
 7 COMPUT 7     1     3          0.00        3.25           11 2   1    1
   ENDCMP 1
 7 INCREM 6                       0.1
 7 COMPUT 7     1     3          0.00        3.00           11 2   1    2
   ENDCMP 1
 7 INCREM 6                       0.1
 7 COMPUT 7     1     3          0.00        2.60           11 2   1    3
   ENDCMP 1
 7 INCREM 6                       0.1
 7 COMPUT 7     1     3          0.00        2.40           11 2   1    4
   ENDCMP 1
   ENDJOB 2

*******************************END OF 80-80 LIST********************************
```

COMPUTER PROGRAM FOR PROJECT FORMULATION - HYDROLOGY USER NOTES

THE USERS MANUAL FOR THIS PROGRAM IS THE MAY 1982 DRAFT OF TR-20. CHANGES FROM THE 2/14/74 VERSION INCLUDE:

REACH ROUTING - THE MODIFIED ATT-KIN ROUTING PROCEDURE REPLACES THE CONVEX METHOD. INPUT DATA PREPARED FOR PREVIOUS PROGRAM VERSIONS USING CONVEX ROUTING COEFFICIENTS WILL NOT RUN ON THIS VERSION.

THE PREFERRED TYPE OF DATA ENTRY IS CROSS SECTION DATA REPRESENTATIVE OF A REACH. IT IS RECOMMENDED THAT THE OPTIONAL CROSS SECTION DISCHARGE-AREA PLOTS BE OBTAINED WHENEVER NEW CROSS SECTION DATA IS ENTERED. THE PLOTS SHOULD BE CHECKED FOR REASONABLENESS AND ADEQUACY OF INPUT DATA FOR THE COMPUTATION OF "M" VALUES USED IN THE ROUTING PROCEDURE.

GUIDELINES FOR DETERMINING OR ANALYZING REACH LENGTHS AND COEFFICIENTS (X,M) ARE AVAILABLE IN THE USERS MANUAL. SUMMARY TABLE 2 DISPLAYS REACH ROUTING RESULTS AND ROUTING PARAMETERS FOR COMPARISON AND CHECKING.

HYDROGRAPH GENERATION - THE PROCEDURE TO CALCULATE THE INTERNAL TIME INCREMENT AND PEAK TIME OF THE UNIT HYDROGRAPH HAVE BEEN IMPROVED. PEAK DISCHARGES AND TIMES MAY DIFFER FROM THE PREVIOUS VERSION. OUTPUT HYDROGRAPHS ARE STILL INTERPOLATED, PRINTED, AND ROUTED AT THE USER SELECTED MAIN TIME INCREMENT.

INTERMEDIATE PEAKS - METHOD ADDED TO PROVIDE DISCHARGES AT INTERMEDIATE POINTS WITHIN REACHES WITHOUT ROUTING.

OTHER - THIS VERSION CONTAINS SOME ADDITIONS TO THE INPUT AND NUMEROUS MODIFICATIONS TO THE OUTPUT. USER OPTIONS HAVE BEEN MODIFIED AND AUGMENTED ON THE JOB RECORD, RAINTABLES ADDED, ERROR AND WARNING MESSAGES EXPANDED, AND THE SUMMARY TABLES COMPLETELY REVISED. THE HOLDOUT OPTION IS NOT OPERATIONAL AT THIS TIME.

PROGRAM QUESTIONS OR PROBLEMS SHOULD BE DIRECTED TO HYDRAULIC ENGINEERS AT THE SCS NATIONAL TECHNICAL CENTERS:

CHESTER, PA (NORTHEAST) -- 215-499-3933, FORT WORTH, TX (SOUTH) -- 334-5242 (FTS)
LINCOLN, NB (MIDWEST) -- 541-5318 (FTS), PORTLAND, OR (WEST) -- 423-4099 (FTS)
OR HYDROLOGY UNIT, ENGINEERING DIVISION, LANHAM, MD -- 436-7383 (FTS).

PROGRAM CHANGES SINCE MAY 1982:

12/17/82 - CORRECT PEAK RATE FACTOR FOR USER ENTERED DIMHYD
CORRECT REACH ROUTING PEAK TRAVEL TIME PRINTED WITH FULLPRINT OPTION
5/02/83 - CORRECT COMPUTATIONS FOR ---

1. DIVISION OF BASEFLOW IN DIVERT OPERATION
2. HYDROGRAPH VOLUME SPLIT BETWEEN BASEFLOW AND ABOVE BASEFLOW
3. CROSS SECTION DATA PLOTTING POSITION
4. INTERMEDIATE PEAK WHEN "FROM" AREA IS LARGER THAN "THRU" AREA
5. STORAGE ROUTED REACH TRAVEL TIME FOR MULTIPEAK HYDROGRAPH
6. ORDERING "FLOW-FREQ" FILE FROM SUMMARY TABLE #3 DATA
7. BASEFLOW ENTERED WITH READHYD
8. LOW FLOW SPLIT DURING DIVERT PROCEDURE #2 WHEN SECTION RATINGS START AT DIFFERENT ELEVATIONS

ENHANCEMENTS ---

1. REPLACE USER MANUAL ERROR CODES (PAGE 4-9 TO 4-11) WITH MESSAGES
2. LABEL OUTPUT HYDROGRAPH FILES WITH CROSS SECTION/STRUCTURE, ALTERNATE AND STORM NO'S

09/01/83 - CORRECT INPUT AND OUTPUT ERRORS FOR INTERMEDIATE PEAKS
CORRECT COMBINATION OF RATING TABLES FOR DIVERT
CHECK REACH ROUTING PARAMETERS FOR ACCEPTABLE LIMITS
ELIMINATE MINIMUM REACH TRAVEL TIME WHEN ATT-KIN COEFFICIENT EQUALS ONE

EXECUTIVE CONTROL OPERATION INCREM RECORD ID
MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID
FROM STRUCTURE 1
TO STRUCTURE 3
STARTING TIME = .00 RAIN DEPTH = 3.25 RAIN DURATION= 1.00 RAIN TABLE NO.= 1 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.33	57.78	(RUNOFF)
15.52	12.99	(RUNOFF)
19.21	10.31	(RUNOFF)
23.48	8.41	(RUNOFF)

OPERATION RUNOFF STRUCTURE 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.13	51.40	(RUNOFF)
15.53	9.04	(RUNOFF)
19.06	7.28	(RUNOFF)
23.47	5.86	(RUNOFF)

OPERATION RUNOFF STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
9.99	12.60	(RUNOFF)
10.46	5.22	(RUNOFF)
23.45	1.03	(RUNOFF)

OPERATION ADDHYD   STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.21	102.69	(NULL)
15.53	22.03	(NULL)
19.11	17.55	(NULL)
21.48	15.47	(NULL)
23.47	14.27	(NULL)

OPERATION ADDHYD   STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.18	109.02	(NULL)
15.49	23.65	(NULL)
17.45	20.26	(NULL)
19.09	18.81	(NULL)
21.47	16.59	(NULL)
23.46	15.29	(NULL)

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM RECORD ID
MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID
FROM STRUCTURE 1
TO STRUCTURE 3
STARTING TIME = .00 RAIN DEPTH = 3.00 RAIN DURATION= 1.00 RAIN TABLE NO.= 1 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.34	45.66	(RUNOFF)
15.56	11.22	(RUNOFF)
19.21	8.99	(RUNOFF)
23.49	7.37	(RUNOFF)

OPERATION RUNOFF STRUCTURE 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.13	40.83	(RUNOFF)
15.54	7.82	(RUNOFF)
23.47	5.13	(RUNOFF)

OPERATION RUNOFF STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.00	10.42	(RUNOFF)
10.46	4.43	(RUNOFF)

OPERATION ADDHYD STRUCTURE 3

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.21	102.69	(NULL)
15.53	22.03	(NULL)
19.11	17.55	(NULL)
21.48	15.47	(NULL)
23.47	14.27	(NULL)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.22	81.05	(NULL)
15.55	19.04	(NULL)
17.46	16.40	(NULL)
19.12	15.29	(NULL)
21.48	13.52	(NULL)
23.47	12.50	(NULL)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.20	86.09	(NULL)
15.50	20.45	(NULL)
17.46	17.61	(NULL)
19.09	16.40	(NULL)
21.47	14.51	(NULL)
23.46	13.41	(NULL)

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL OPERATION INCREM RECORD ID
MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID
FROM STRUCTURE 1
TO STRUCTURE 3
STARTING TIME = .00 RAIN DEPTH = 2.60 RAIN DURATION= 1.00 RAIN TABLE NO.= 1 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.40	28.15	(RUNOFF)
15.59	8.50	(RUNOFF)
23.50	5.74	(RUNOFF)

OPERATION RUNOFF STRUCTURE 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.15	25.24	(RUNOFF)
23.47	4.00	(RUNOFF)

OPERATION RUNOFF STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.00	7.15	(RUNOFF)
10.46	3.22	(RUNOFF)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.25	49.80	(NULL)
15.56	14.43	(NULL)
17.48	12.55	(NULL)
19.12	11.78	(NULL)
23.48	9.74	(NULL)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.23	53.09	(NULL)
15.52	15.52	(NULL)
17.47	13.50	(NULL)
19.09	12.65	(NULL)
23.47	10.47	(NULL)

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL OPERATION INCREM RECORD ID
MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT   RECORD ID

FROM STRUCTURE 1
TO STRUCTURE 3

STARTING TIME = .00   RAIN DEPTH = 2.40   RAIN DURATION= 1.00   RAIN TABLE NO.= 1   ANT. MOIST. COND= 2
ALTERNATE NO.= 1   STORM NO.= 4   MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF   STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.43	20.72	(RUNOFF)
15.61	7.20	(RUNOFF)
23.50	4.95	(RUNOFF)

OPERATION RUNOFF STRUCTURE 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.18	18.53	(RUNOFF)
23.47	3.46	(RUNOFF)

OPERATION RUNOFF STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.01	5.65	(RUNOFF)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.29	35.96	(NULL)
15.57	12.23	(NULL)
17.49	10.71	(NULL)
19.12	10.09	(NULL)
23.48	8.41	(NULL)

OPERATION ADDHYD STRUCTURE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
10.27	38.61	(NULL)
15.54	13.16	(NULL)
17.47	11.52	(NULL)
19.10	10.84	(NULL)
23.47	9.04	(NULL)

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
COMPUTATIONS COMPLETED FOR PASS 4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1	STORM 1												
STRUCTURE 1	RUNOFF	.36	1	2	.10	.0	3.25	24.00	.96	---	10.33	57.78	160.5
STRUCTURE 2	RUNOFF	.25	1	2	.10	.0	3.25	24.00	.96	---	10.13	51.40	205.6
STRUCTURE 3	RUNOFF	.04	1	2	.10	.0	3.25	24.00	1.13	---	9.99	12.60	315.1
STRUCTURE 3	ADDHYD	.61	1	2	.10	.0	3.25	24.00	.96	---	10.21	102.69	168.4
STRUCTURE 3	ADDHYD	.65	1	2	.10	.0	3.25	24.00	.97	---	10.18	109.02	167.7
ALTERNATE 1	STORM 2												
STRUCTURE 1	RUNOFF	.36	1	2	.10	.0	3.00	24.00	.81	---	10.34	45.66	126.8
STRUCTURE 2	RUNOFF	.25	1	2	.10	.0	3.00	24.00	.81	---	10.13	40.83	163.3
STRUCTURE 3	RUNOFF	.04	1	2	.10	.0	3.00	24.00	.96	---	10.00	10.42	260.4
STRUCTURE 3	ADDHYD	.61	1	2	.10	.0	3.00	24.00	.81	---	10.22	81.05	132.9
STRUCTURE 3	ADDHYD	.65	1	2	.10	.0	3.00	24.00	.82	---	10.20	86.09	132.4
ALTERNATE 1	STORM 3												
STRUCTURE 1	RUNOFF	.36	1	2	.10	.0	2.60	24.00	.58	---	10.40	28.15	78.2
STRUCTURE 2	RUNOFF	.25	1	2	.10	.0	2.60	24.00	.58	---	10.15	25.24	101.0
STRUCTURE 3	RUNOFF	.04	1	2	.10	.0	2.60	24.00	.71	---	10.00	7.15	178.8
STRUCTURE 3	ADDHYD	.61	1	2	.10	.0	2.60	24.00	.58	---	10.25	49.80	81.6
STRUCTURE 3	ADDHYD	.65	1	2	.10	.0	2.60	24.00	.59	---	10.23	53.09	81.7
ALTERNATE 1	STORM 4												
STRUCTURE 1	RUNOFF	.36	1	2	.10	.0	2.40	24.00	.48	---	10.43	20.72	57.6

STRUCTURE	2	RUNOFF	.25	1	2	.10	.0	2.40	24.00	.48	---	10.18	18.53	74.1
STRUCTURE	3	RUNOFF	.04	1	2	.10	.0	2.40	24.00	.59	---	10.01	5.65	141.2
STRUCTURE	3	ADDHYD	.61	1	2	.10	.0	2.40	24.00	.48	---	10.29	35.96	59.0
STRUCTURE	3	ADDHYD	.65	1	2	.10	.0	2.40	24.00	.48	---	10.27	38.61	59.4

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS.......... 1	2	3	4
STRUCTURE	3	.65				
ALTERNATE	1		109.02	86.09	53.09	38.61
STRUCTURE	2	.25				
ALTERNATE	1		51.40	40.83	25.24	18.53
STRUCTURE	1	.36				
ALTERNATE	1		57.78	45.66	28.15	20.72

END OF 1 JOBS IN THIS RUN
Stop - Program terminated.

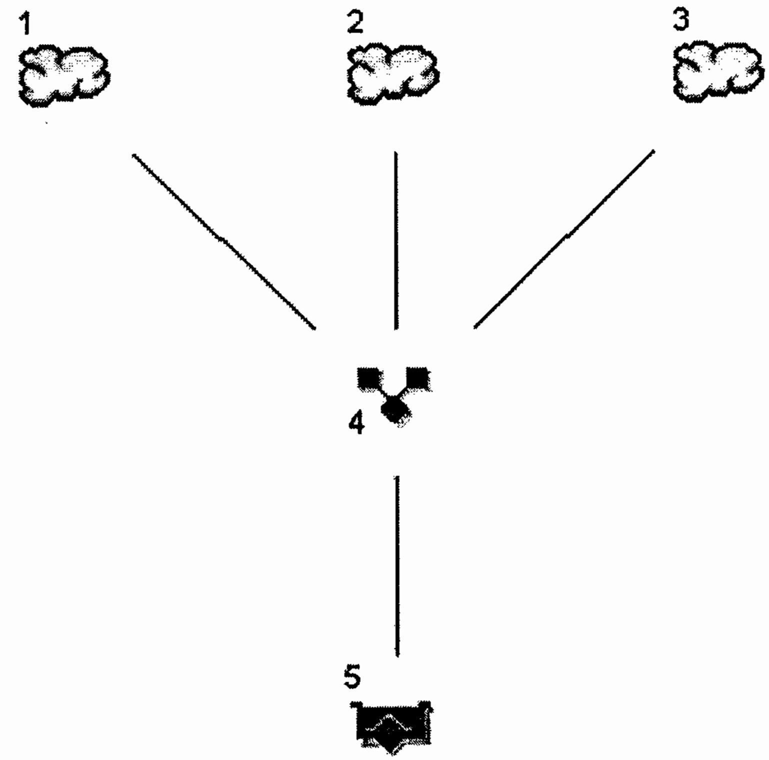
SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS.......... 1	2	3	4
STRUCTURE	3	.65				
ALTERNATE	1		109.02	86.09	53.09	38.61
STRUCTURE	2	.25				
ALTERNATE	1		51.40	40.83	25.24	18.53
STRUCTURE	1	.36				
ALTERNATE	1		57.78	45.66	28.15	20.72

END OF 1 JOBS IN THIS RUN
Stop - Program terminated.

APPENDIX II

SCS HYDROGRAPHS MODEL
SCS HYDROGRAPH RETURN PERIOD RECAP
SCS HYDROGRAPH SUMMARY REPORTS AND PLOTS FOR 10-, 25-, 50-, AND 100-YEAR STORMS
EXISTING RETENTION BASIN EXHIBIT
POND REPORTS WITH STAGE/STORAGE TABLE & GRAPH, STAGE/STORAGE/DISCHARGE TABLE, AND STAGE/DISCHARGE GRAPH



Legend

Hyd.	Origin	Description
1	SCS Runoff	Area 1
2	SCS Runoff	Area 2
3	SCS Runoff	Area 3
4	Combine	Confluence
5	Reservoir	Retention Basin

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	------	------	------	------	------	13.62	17.76	27.44	34.30	Area 1
2	SCS Runoff	------	------	------	------	------	12.82	17.24	27.61	34.92	Area 2
3	SCS Runoff	------	------	------	------	------	4.96	6.39	9.51	11.62	Area 3
4	Combine	1, 2, 3	------	------	------	------	25.10	33.16	51.63	64.50	Confluence
5	Reservoir	4	------	------	------	------	15.42	18.78	26.35	31.57	Retention Basin

Proj. file: 32277000Hyd.gpw	Wednesday, Jun 8 2005, 3:32 PM

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	13.62	1	719	397,591	—	—	—	Area 1
2	SCS Runoff	12.82	1	653	274,726	—	—	—	Area 2
3	SCS Runoff	4.96	1	610	49,508	—	—	—	Area 3
4	Combine	25.10	1	673	721,824	1, 2, 3	—	—	Confluence
5	Reservoir	15.42	1	852	721,823	4	26.62	115,861	Retention Basin

32277000Hyd.gpw	Return Period: 10 Year	Wednesday, Jun 8 2005, 3:32 PM

Hydrograph Plot

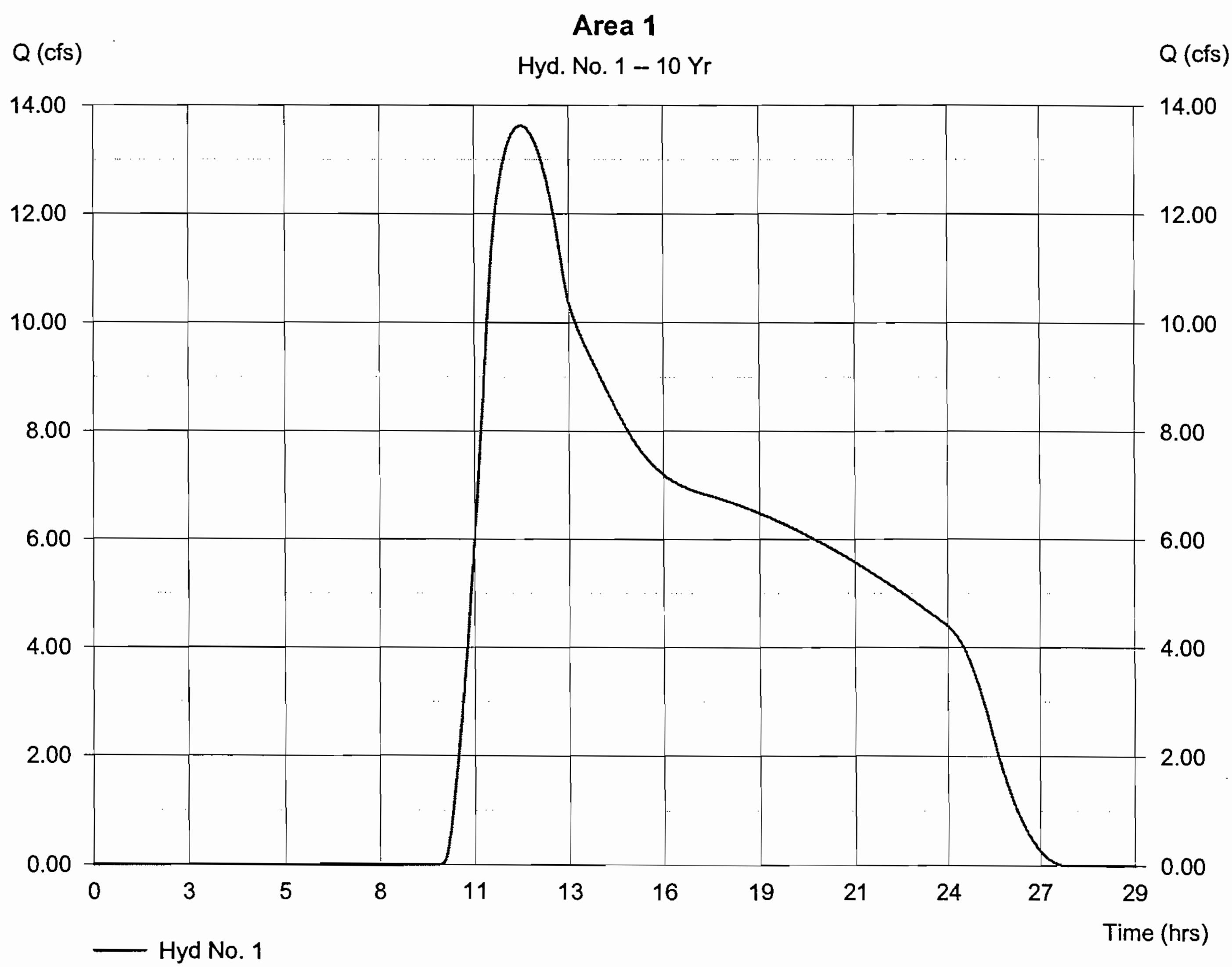
Hydraflow Hydrographs by Intelisolve | Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 1

Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 13.62 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 229.000 ac	Curve number	= 72
Basin Slope	= 1.6 %	Hydraulic length	= 5652 ft
Tc method	= LAG	Time of conc. (Tc)	= 127.45 min
Total precip.	= 2.40 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 397,591 cuft



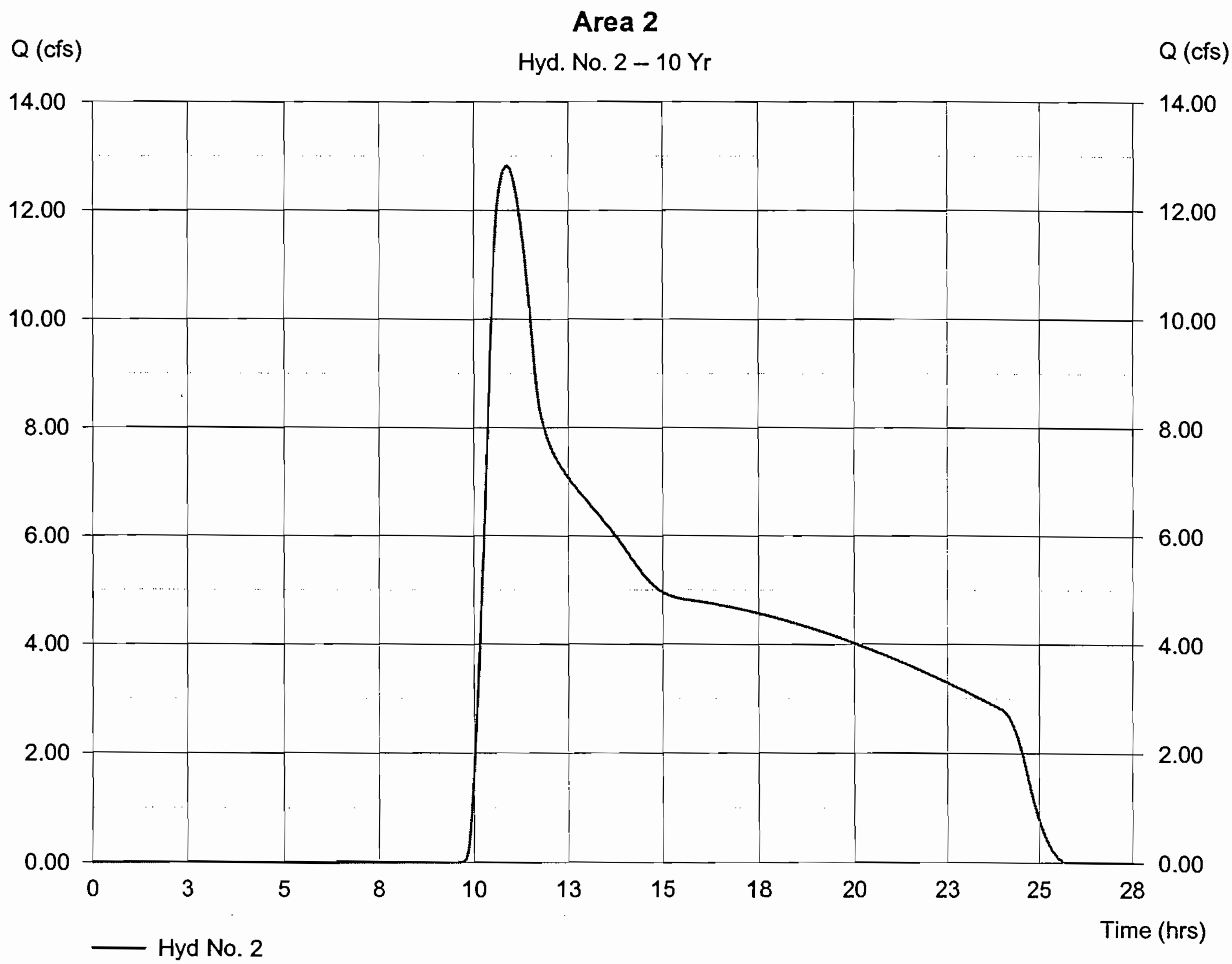
Hydrograph Plot

Hyd. No. 2

Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 12.82 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 158.000 ac	Curve number	= 72
Basin Slope	= 2.5 %	Hydraulic length	= 3340 ft
Tc method	= LAG	Time of conc. (Tc)	= 66.97 min
Total precip.	= 2.40 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 274,726 cuft



Hydrograph Plot

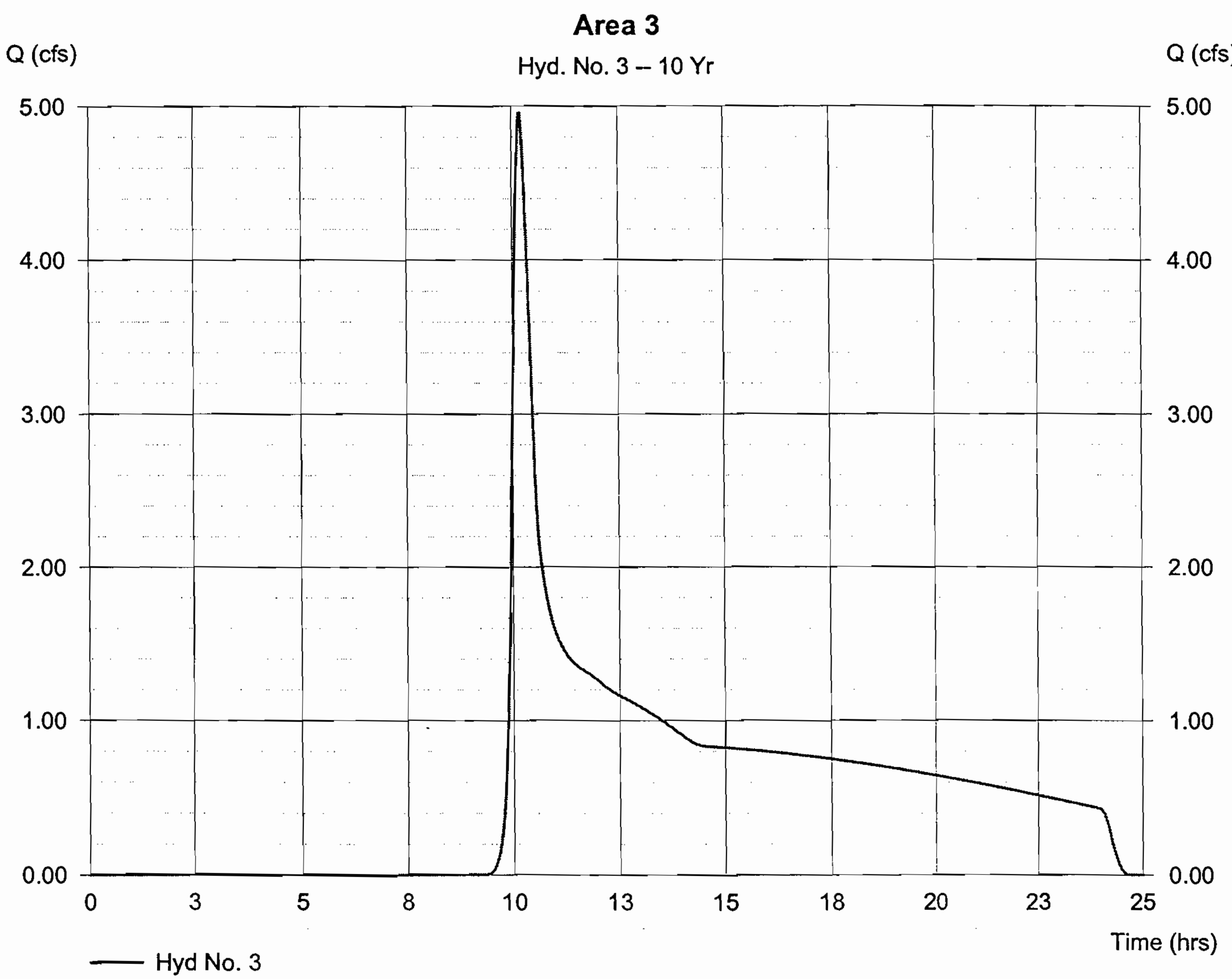
Hydraflow Hydrographs by Intelisolve | Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 3

Area 3

Hydrograph type	= SCS Runoff	Peak discharge	= 4.96 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 23.000 ac	Curve number	= 75
Basin Slope	= 5.0 %	Hydraulic length	= 1610 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.28 min
Total precip.	= 2.40 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 49,508 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Wednesday, Jun 8 2005, 3:35 PM

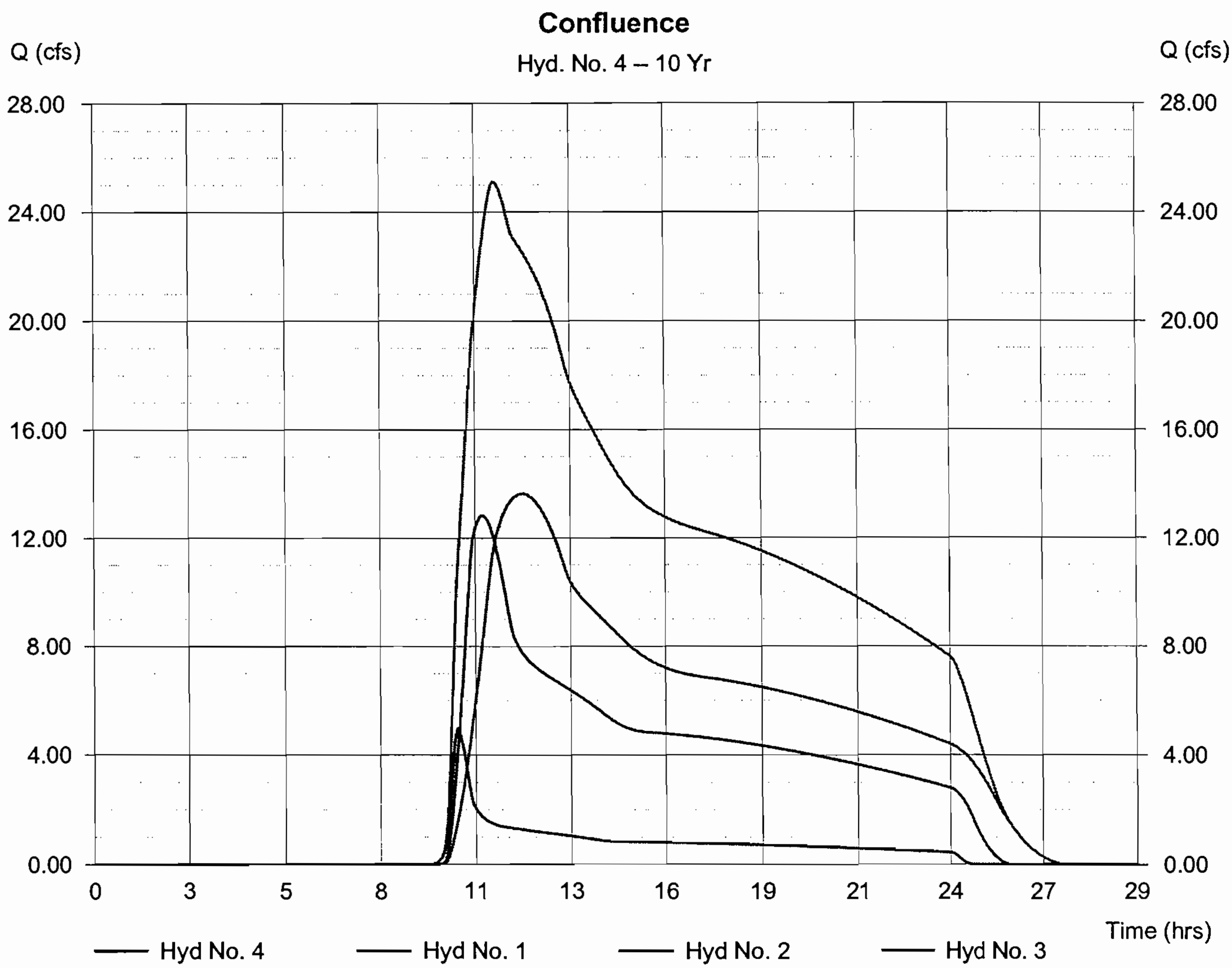
Hyd. No. 4

Confluence

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 25.10 cfs
Time interval = 1 min

Hydrograph Volume = 721,824 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Wednesday, Jun 8 2005, 3:35 PM

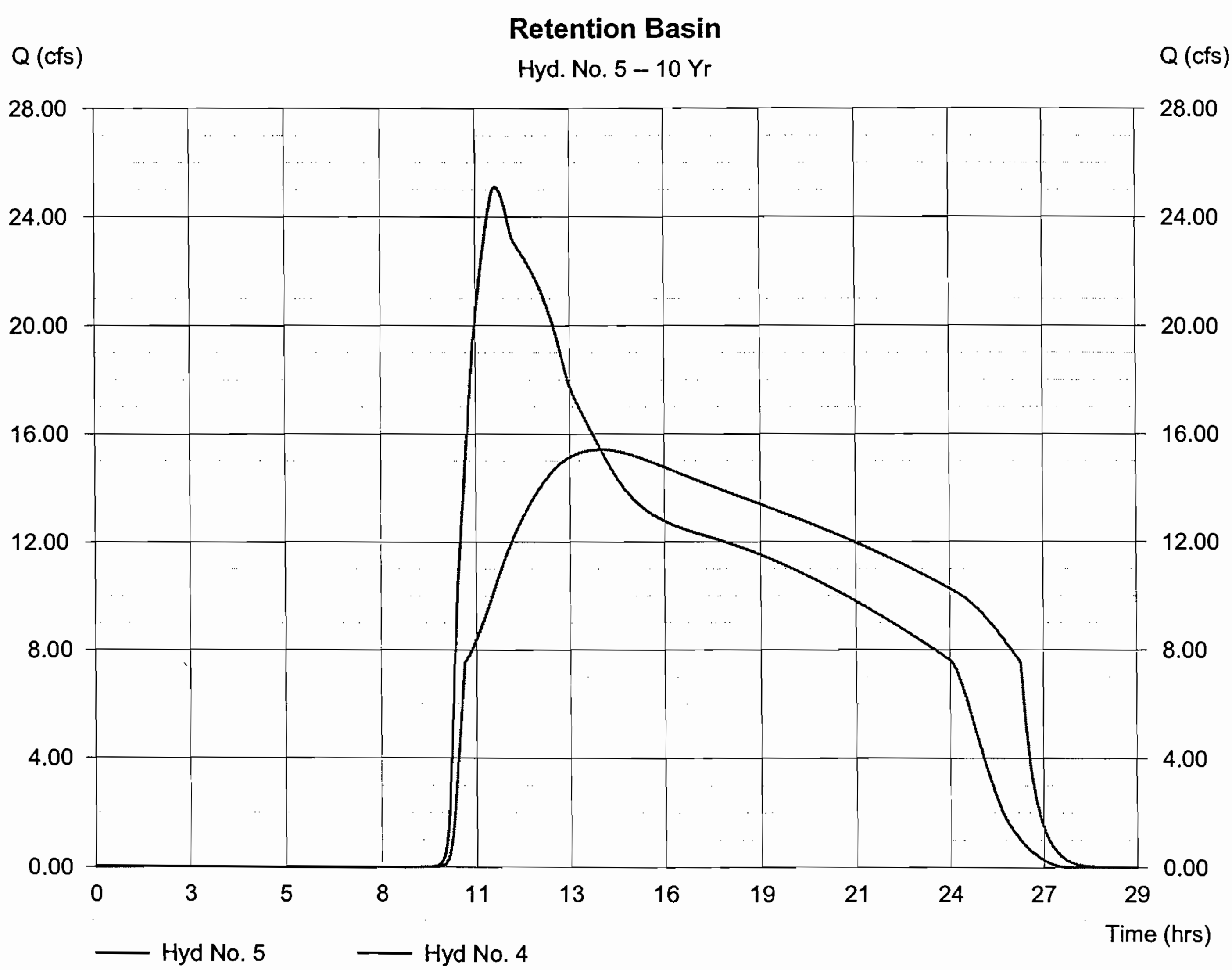
Hyd. No. 5

Retention Basin

Hydrograph type	= Reservoir	Peak discharge	= 15.42 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 26.62 ft
Reservoir name	= Existing Basin	Max. Storage	= 115,861 cuft

Storage Indication method used.

Hydrograph Volume = 721,823 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	17.76	1	710	484,102	----	------	------	Area 1
2	SCS Runoff	17.24	1	648	334,504	----	------	------	Area 2
3	SCS Runoff	6.39	1	610	59,253	----	------	------	Area 3
4	Combine	33.16	1	671	877,860	1, 2, 3	------	------	Confluence
5	Reservoir	18.78	1	845	877,858	4	27.31	161,319	Retention Basin

32277000Hyd.gpw	Return Period: 25 Year	Wednesday, Jun 8 2005, 3:32 PM

Hydrograph Plot

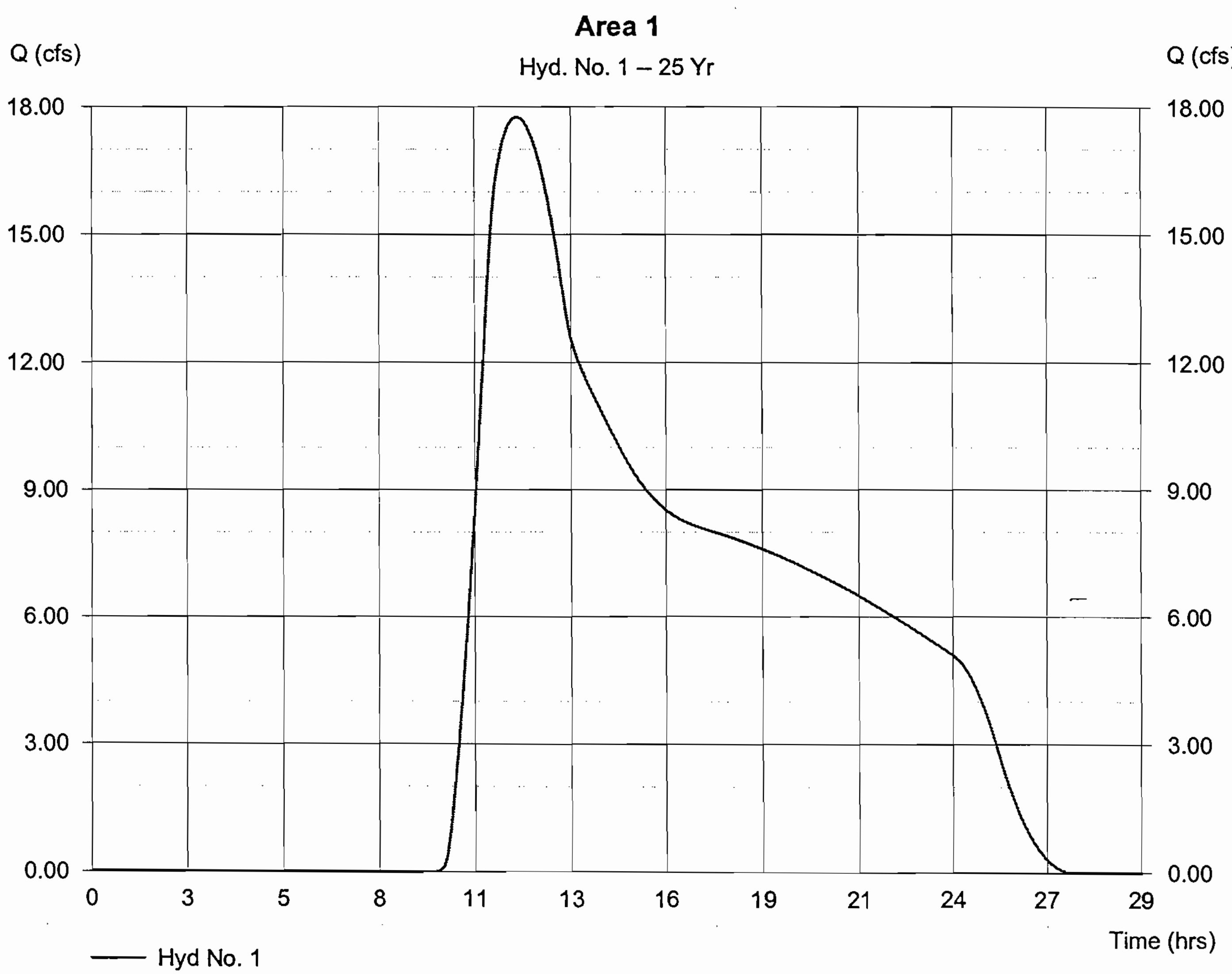
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 1

Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 17.76 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 229.000 ac	Curve number	= 72
Basin Slope	= 1.6 %	Hydraulic length	= 5652 ft
Tc method	= LAG	Time of conc. (Tc)	= 127.45 min
Total precip.	= 2.60 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 484,102 cuft



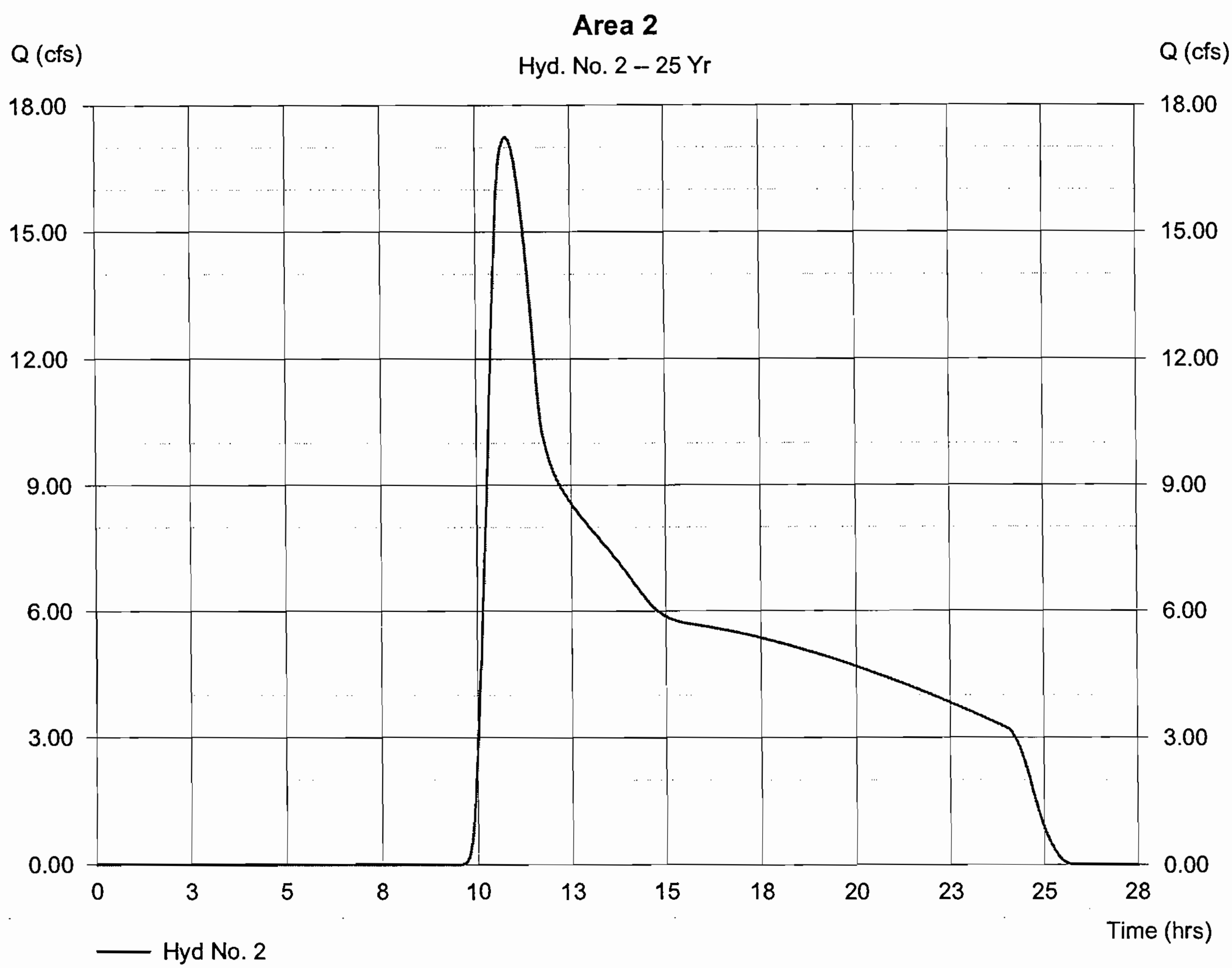
Hydrograph Plot

Hyd. No. 2

Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 17.24 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 158.000 ac	Curve number	= 72
Basin Slope	= 2.5 %	Hydraulic length	= 3340 ft
Tc method	= LAG	Time of conc. (Tc)	= 66.97 min
Total precip.	= 2.60 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 334,504 cuft



Hydrograph Plot

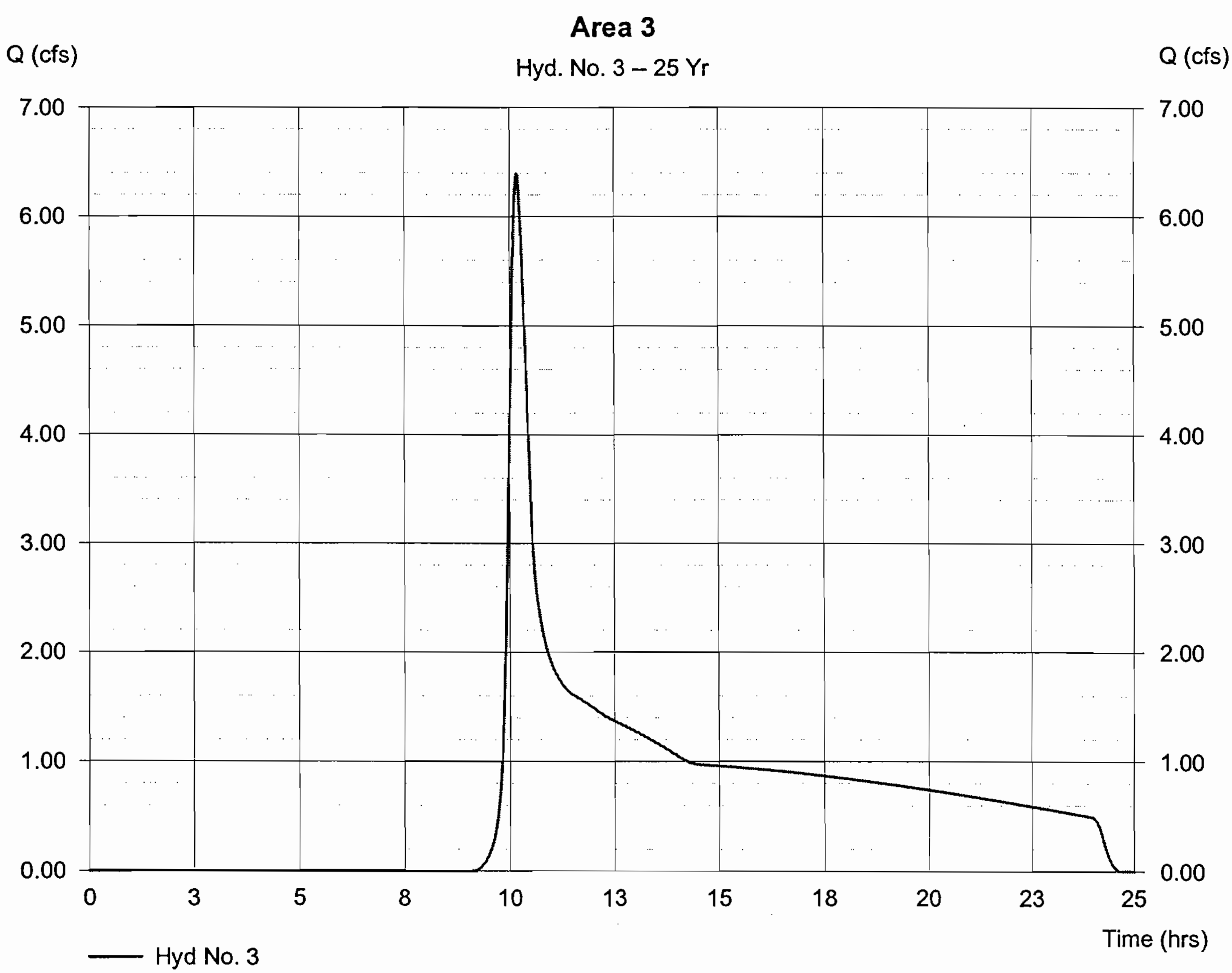
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 3

Area 3

Hydrograph type	= SCS Runoff	Peak discharge	= 6.39 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 23.000 ac	Curve number	= 75
Basin Slope	= 5.0 %	Hydraulic length	= 1610 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.28 min
Total precip.	= 2.60 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 59,253 cuft



Hydrograph Plot

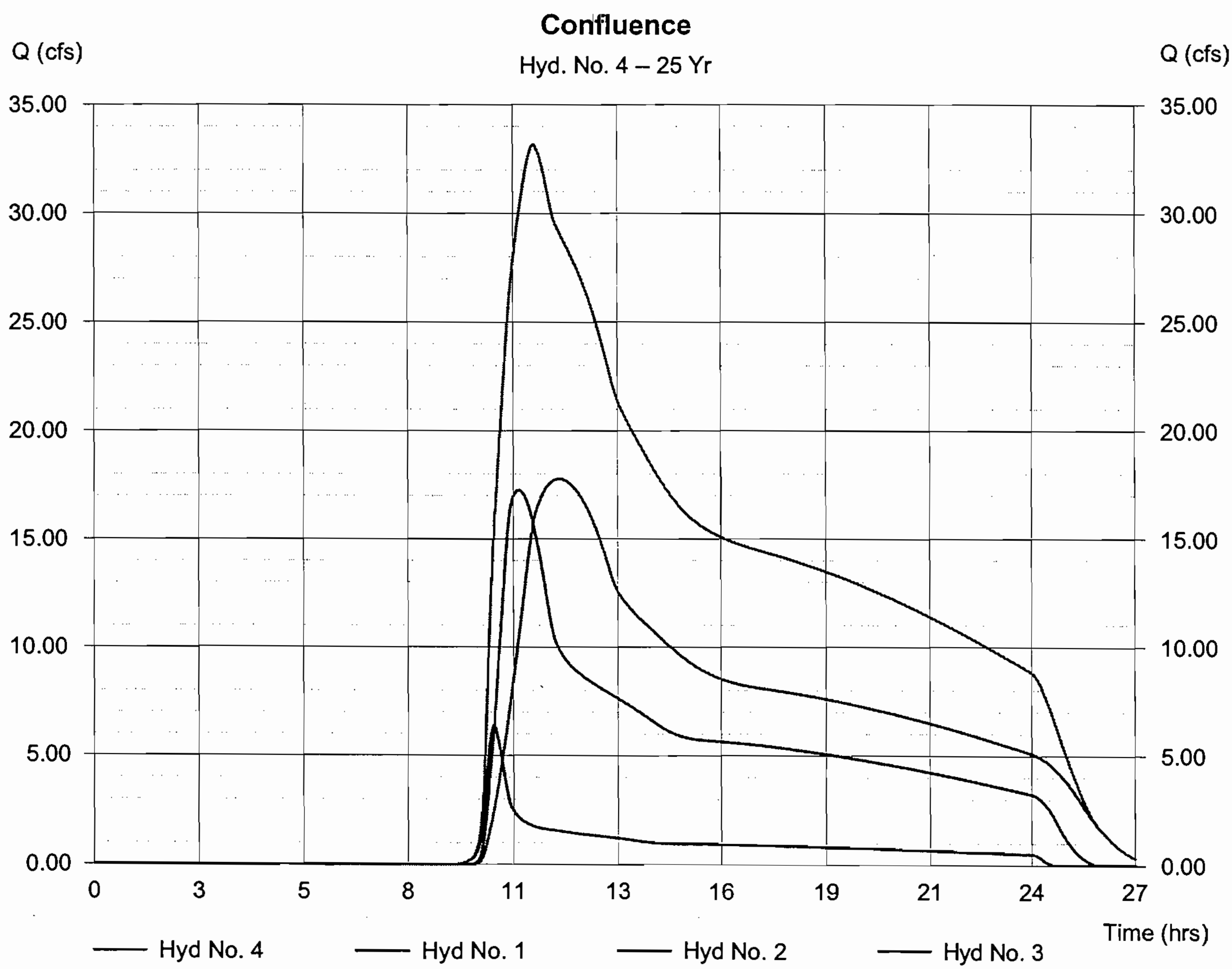
Hydraflow Hydrographs by Intelisolve Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 4

Confluence

Hydrograph type	= Combine	Peak discharge	= 33.16 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Inflow hyds.	= 1, 2, 3		

Hydrograph Volume = 877,860 cuft



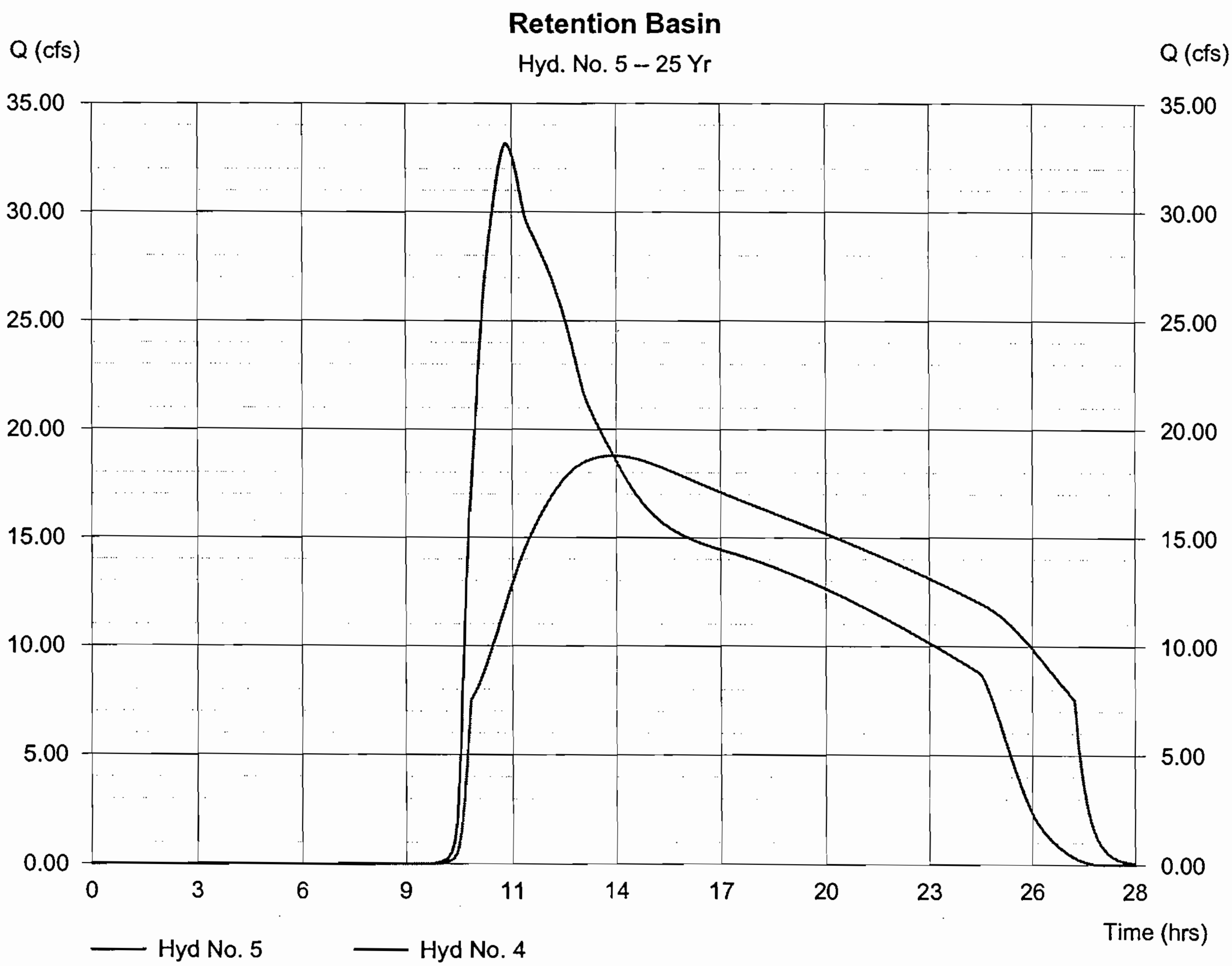
Hydrograph Plot

Hyd. No. 5

Retention Basin

Hydrograph type	= Reservoir	Peak discharge	= 18.78 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 27.31 ft
Reservoir name	= Existing Basin	Max. Storage	= 161,319 cuft

Storage Indication method used. Hydrograph Volume = 877,858 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	27.44	1	698	672,837	—	—	—	Area 1
2	SCS Runoff	27.61	1	642	464,915	—	—	—	Area 2
3	SCS Runoff	9.51	1	609	80,216	—	—	—	Area 3
4	Combine	51.63	1	668	1,217,968	1, 2, 3	—	—	Confluence
5	Reservoir	26.35	1	831	1,217,968	4	28.87	263,651	Retention Basin

32277000Hyd.gpw	Return Period: 50 Year	Wednesday, Jun 8 2005, 3:32 PM

Hydrograph Plot

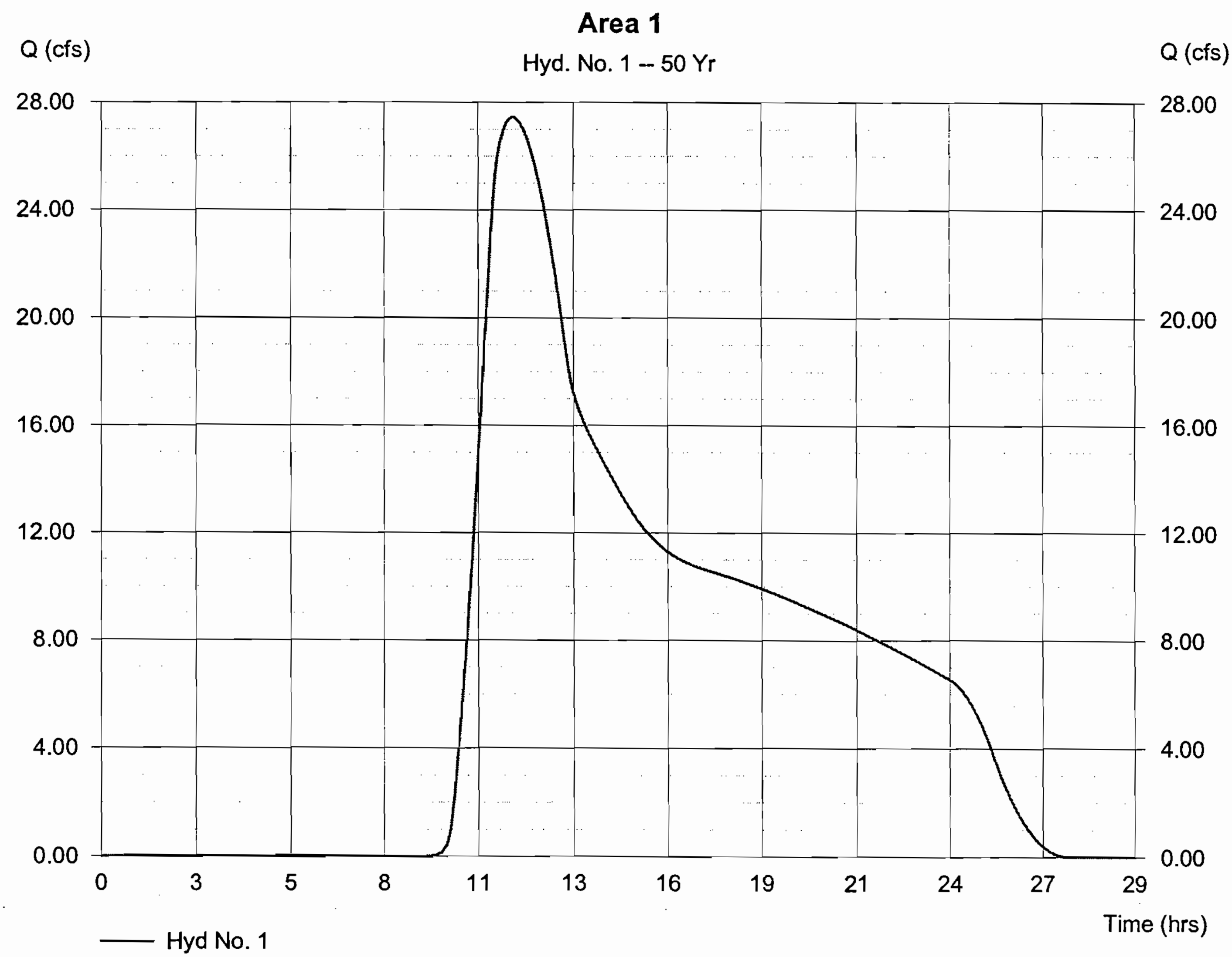
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 1

Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 27.44 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 229.000 ac	Curve number	= 72
Basin Slope	= 1.6 %	Hydraulic length	= 5652 ft
Tc method	= LAG	Time of conc. (Tc)	= 127.45 min
Total precip.	= 3.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 672,837 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

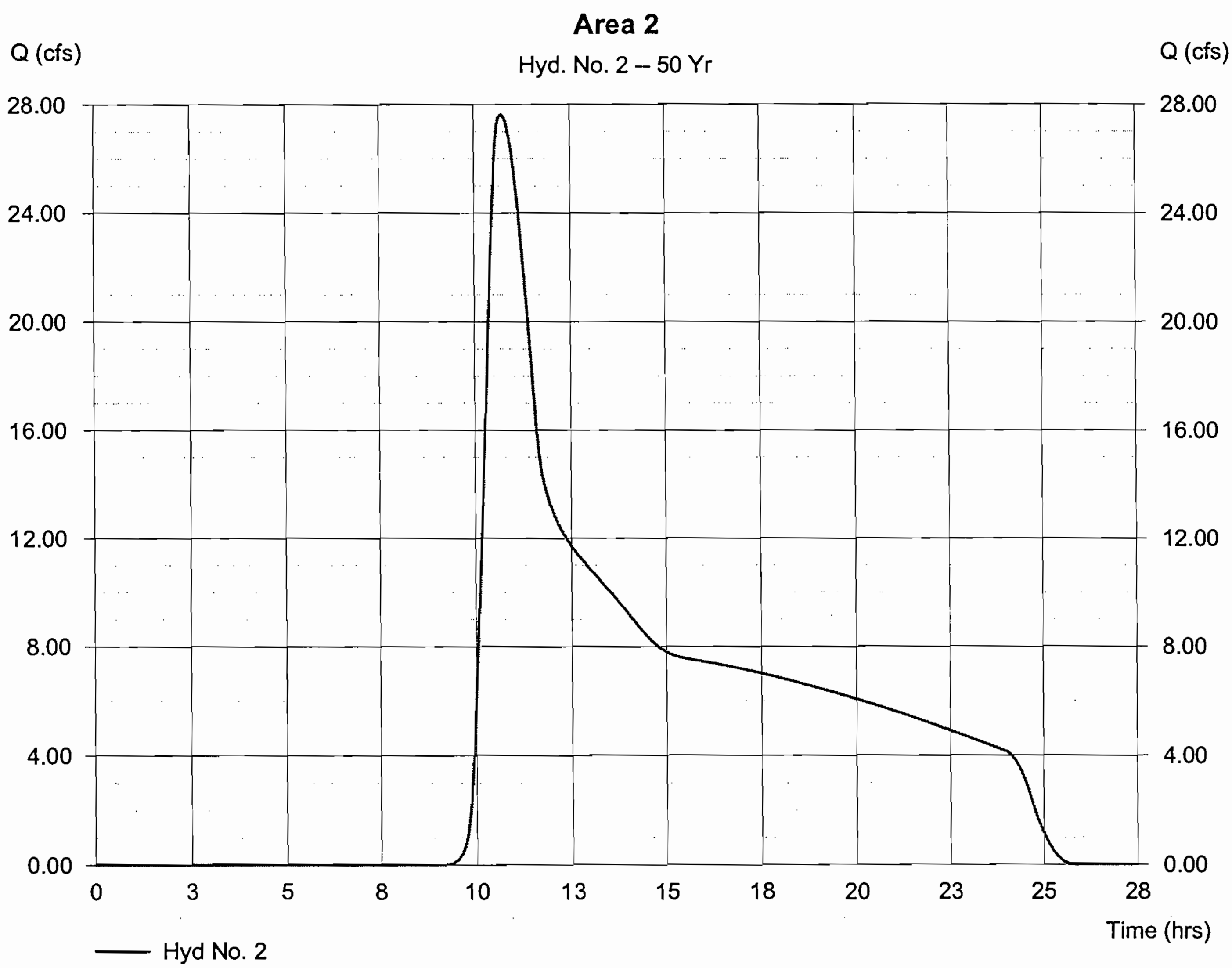
Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 2

Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 27.61 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 158.000 ac	Curve number	= 72
Basin Slope	= 2.5 %	Hydraulic length	= 3340 ft
Tc method	= LAG	Time of conc. (Tc)	= 66.97 min
Total precip.	= 3.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 464,915 cuft



Hydrograph Plot

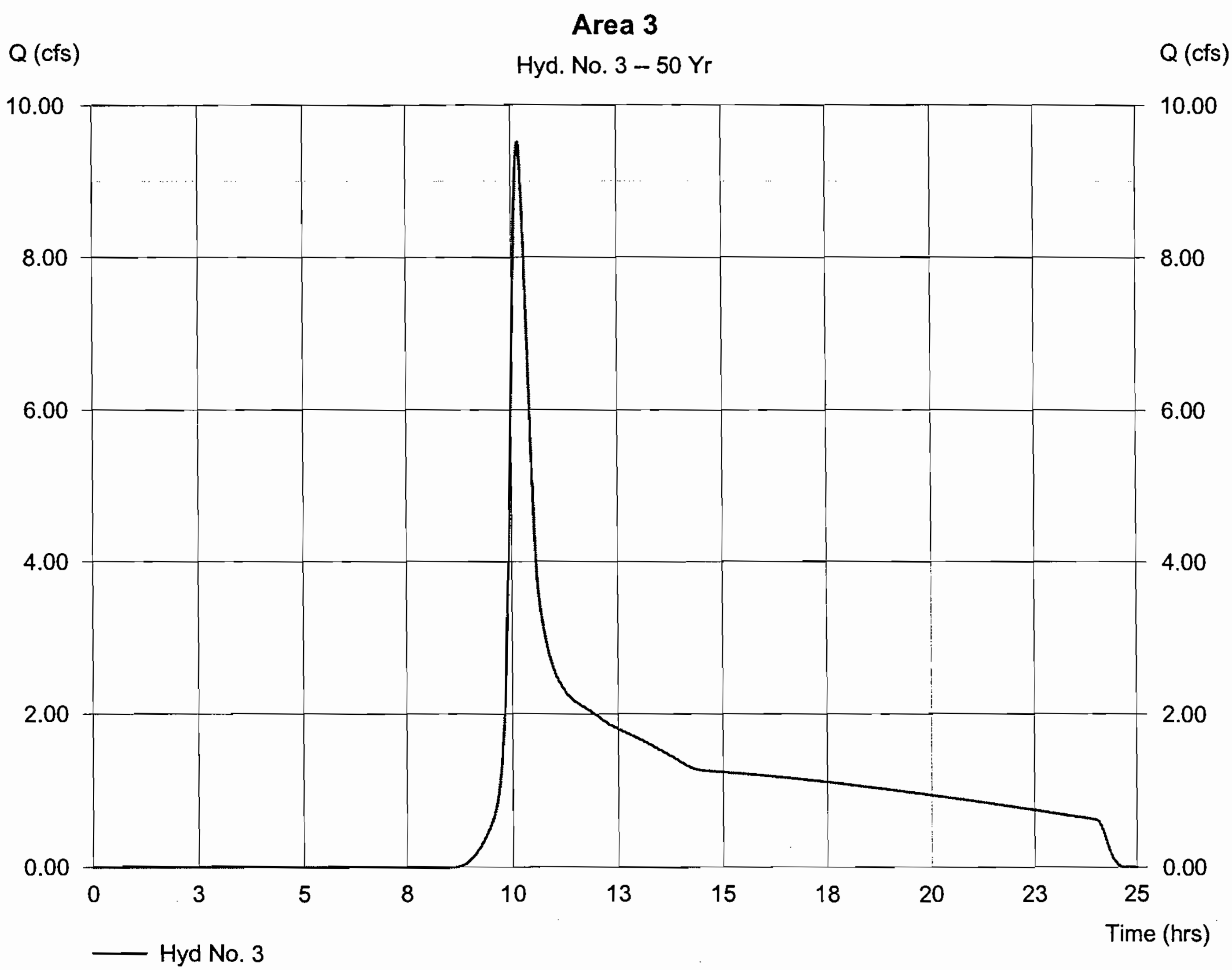
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 3

Area 3

Hydrograph type	= SCS Runoff	Peak discharge	= 9.51 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 23.000 ac	Curve number	= 75
Basin Slope	= 5.0 %	Hydraulic length	= 1610 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.28 min
Total precip.	= 3.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 80,216 cuft



Hydrograph Plot

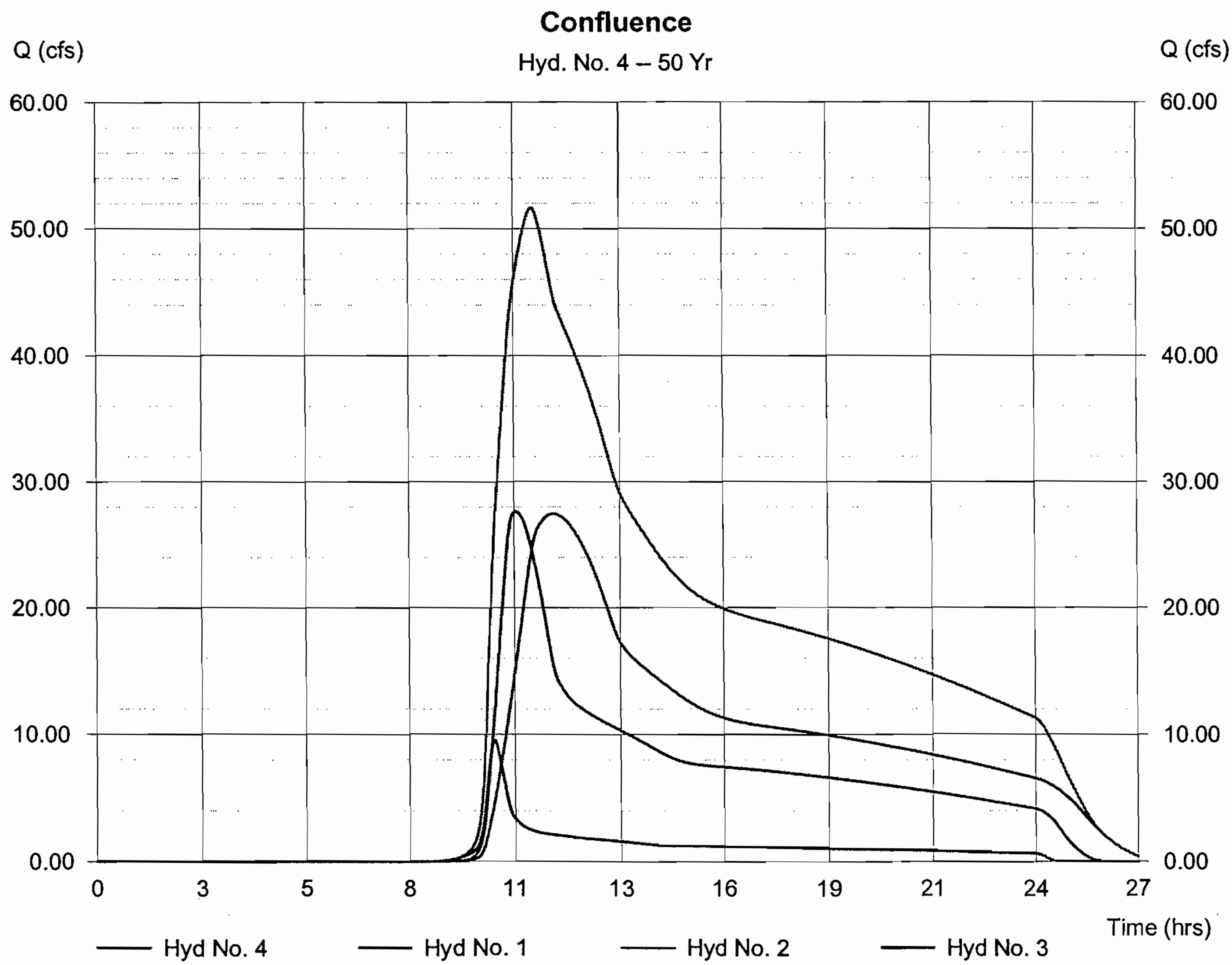
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 4

Confluence

Hydrograph type	= Combine	Peak discharge	= 51.63 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Inflow hyds.	= 1, 2, 3		

Hydrograph Volume = 1,217,968 cuft



Hydrograph Plot

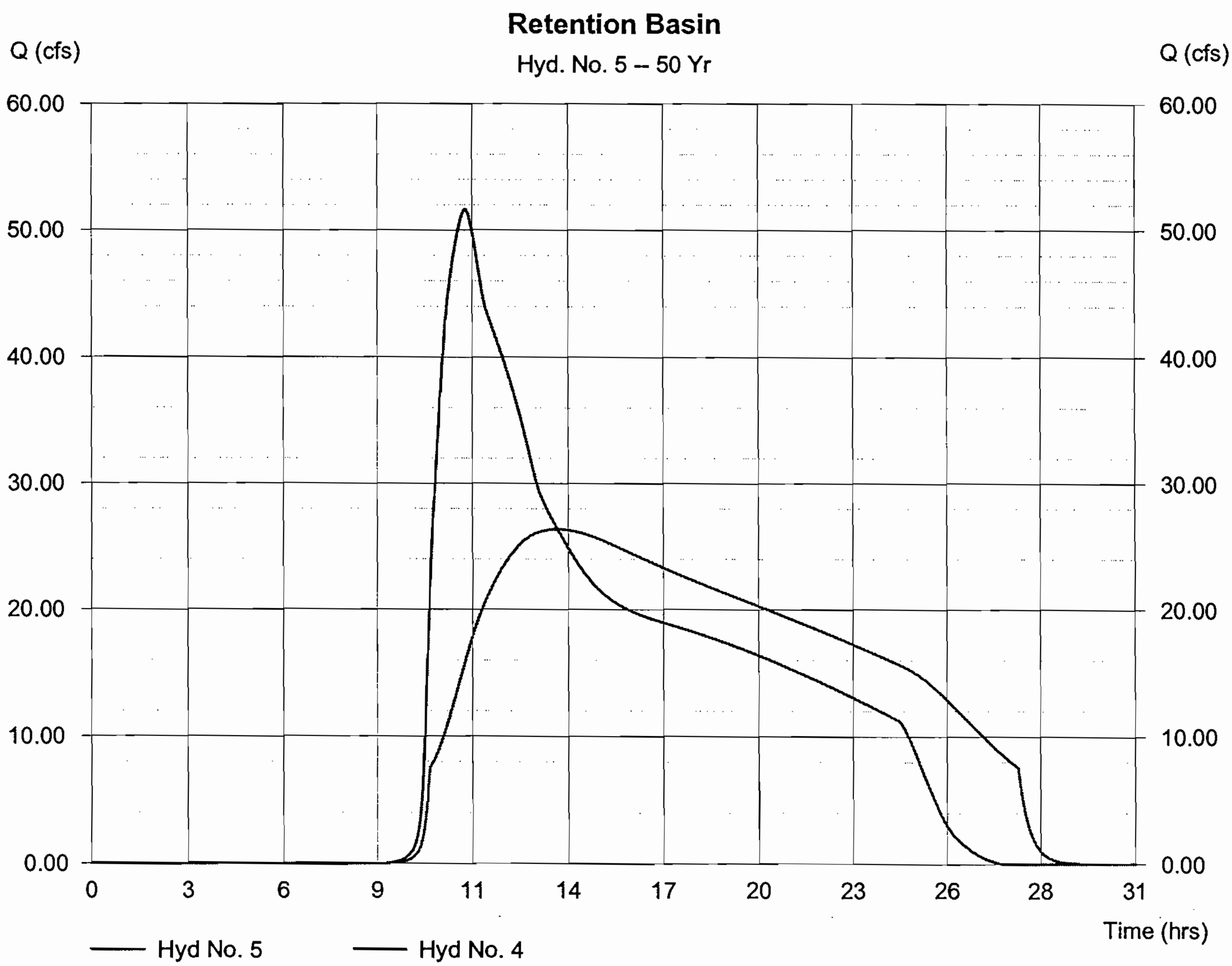
Hydraflow Hydrographs by Intelisolve | Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 5

Retention Basin

Hydrograph type	= Reservoir	Peak discharge	= 26.35 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 28.87 ft
Reservoir name	= Existing Basin	Max. Storage	= 263,651 cuft

Storage Indication method used. | Hydrograph Volume = 1,217,968 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	34.30	1	694	800,014	----	------	------	Area 1
2	SCS Runoff	34.92	1	639	552,791	----	------	------	Area 2
3	SCS Runoff	11.62	1	609	94,171	----	------	------	Area 3
4	Combine	64.50	1	666	1,446,975	1, 2, 3	------	------	Confluence
5	Reservoir	31.57	1	823	1,446,974	4	29.94	334,332	Retention Basin

32277000Hyd.gpw	Return Period: 100 Year	Wednesday, Jun 8 2005, 3:32 PM

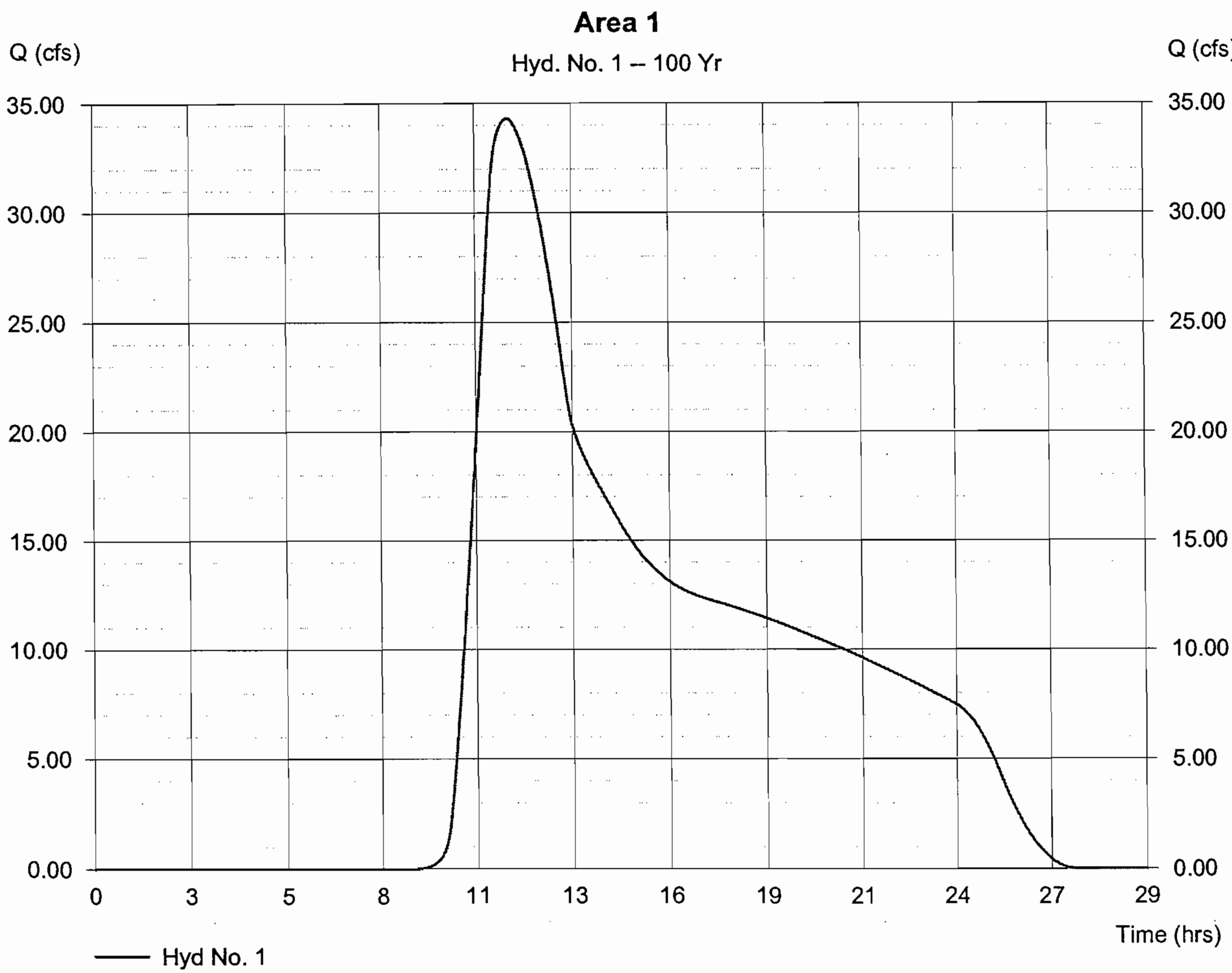
Hydrograph Plot

Hyd. No. 1

Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 34.30 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 229.000 ac	Curve number	= 72
Basin Slope	= 1.6 %	Hydraulic length	= 5652 ft
Tc method	= LAG	Time of conc. (Tc)	= 127.45 min
Total precip.	= 3.25 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 800,014 cuft



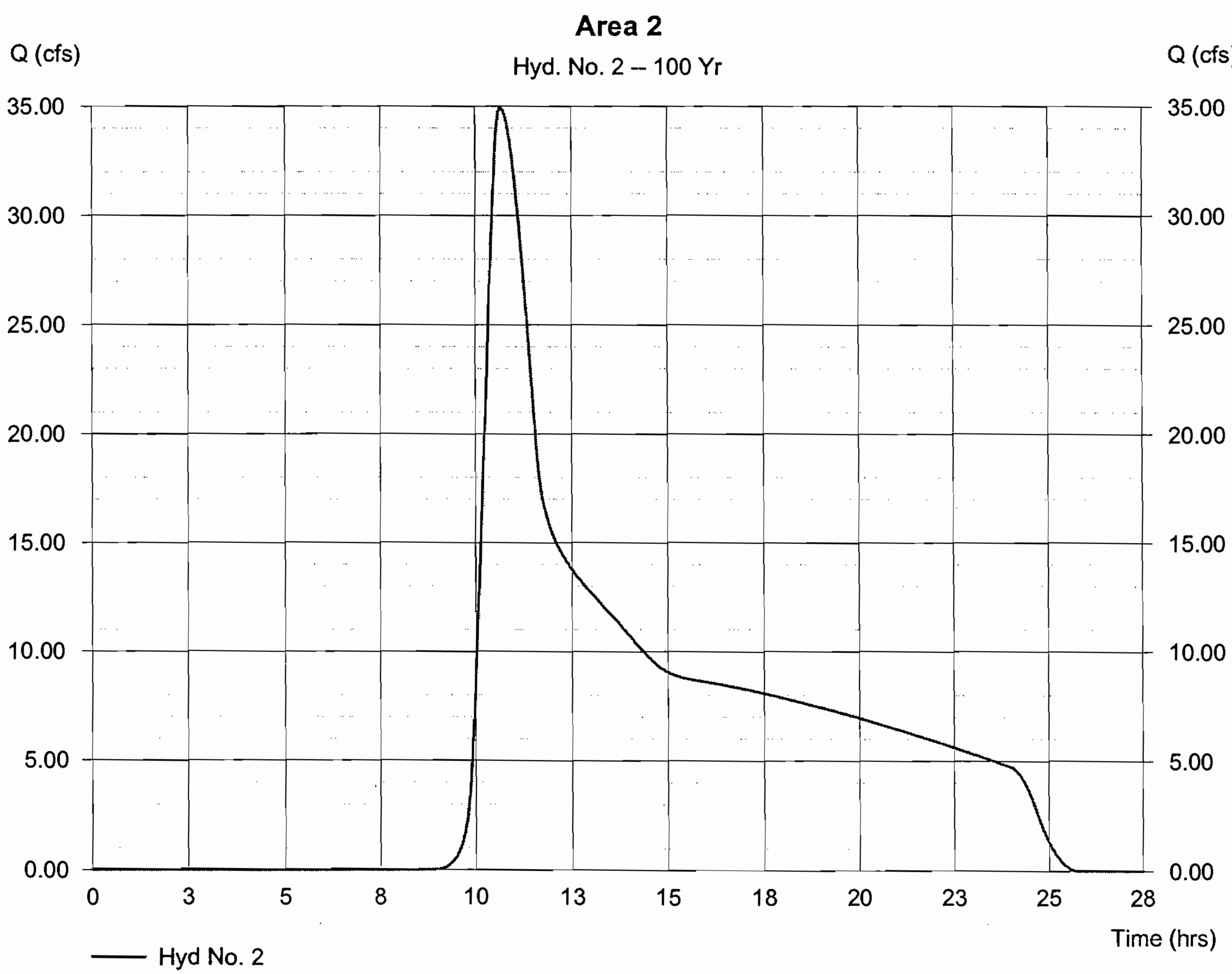
Hydrograph Plot

Hyd. No. 2

Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 34.92 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 158.000 ac	Curve number	= 72
Basin Slope	= 2.5 %	Hydraulic length	= 3340 ft
Tc method	= LAG	Time of conc. (Tc)	= 66.97 min
Total precip.	= 3.25 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 552,791 cuft



Hydrograph Plot

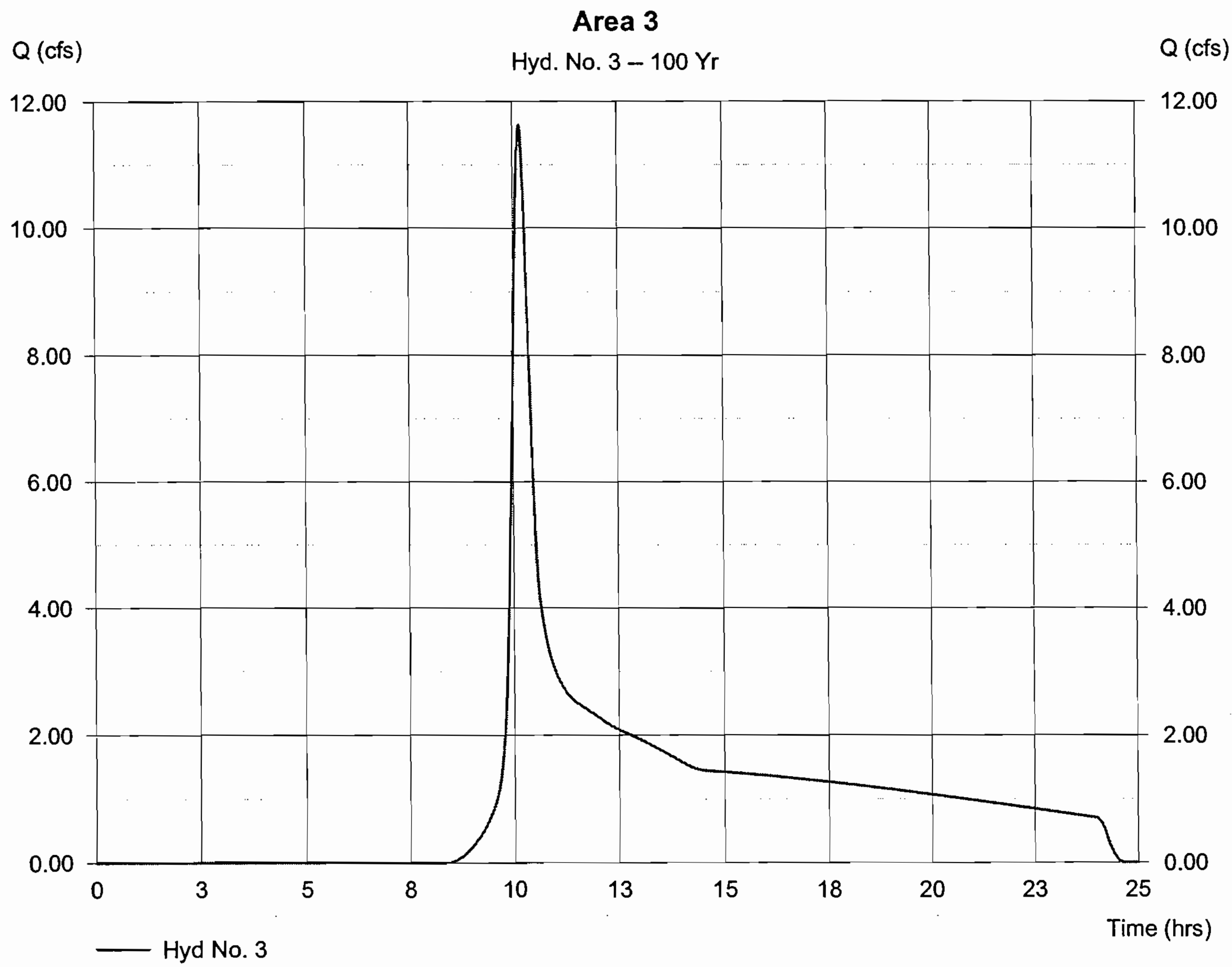
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 3

Area 3

Hydrograph type	= SCS Runoff	Peak discharge	= 11.62 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 23.000 ac	Curve number	= 75
Basin Slope	= 5.0 %	Hydraulic length	= 1610 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.28 min
Total precip.	= 3.25 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 94,171 cuft



Hydrograph Plot

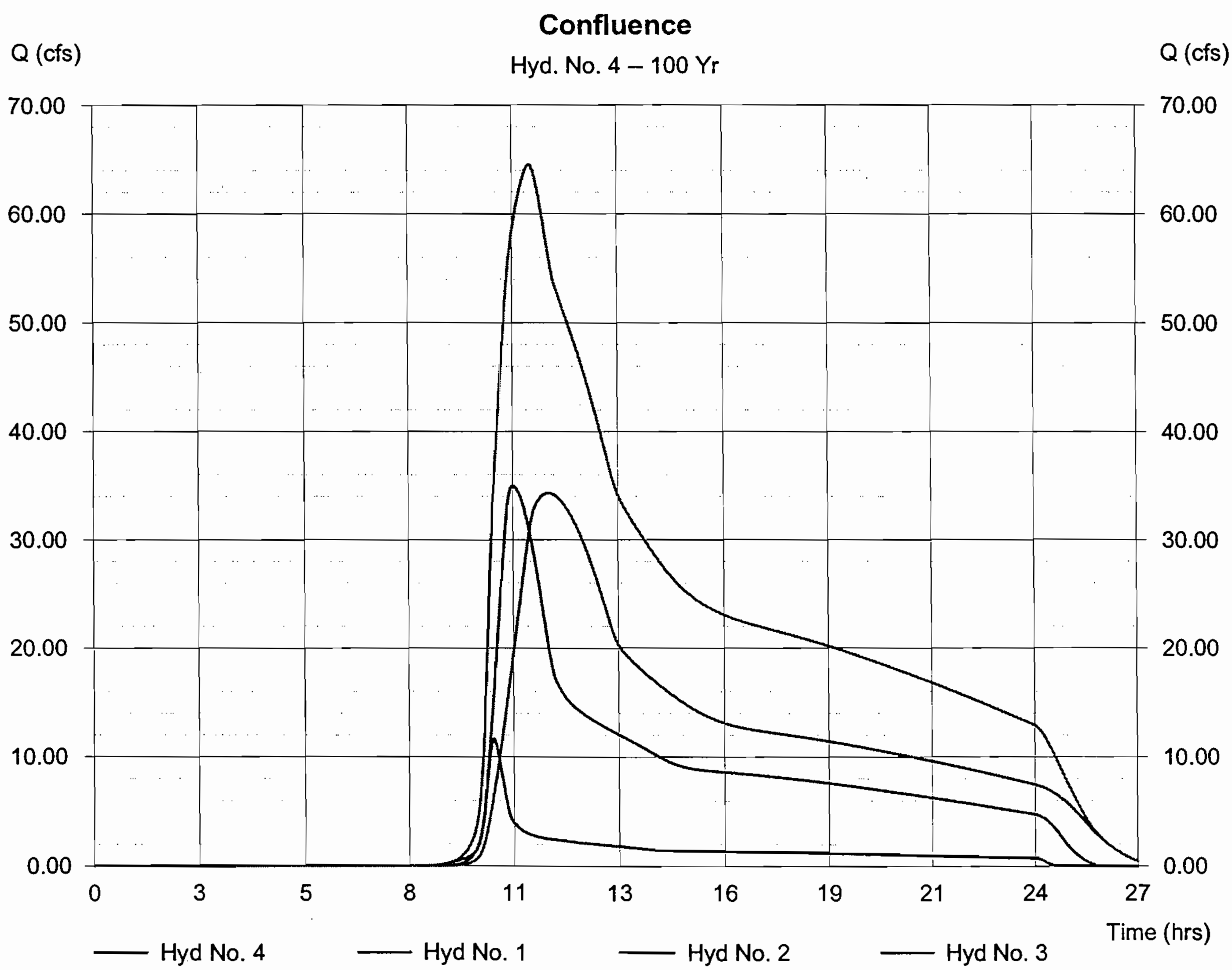
Hydraflow Hydrographs by Intelisolve — Wednesday, Jun 8 2005, 3:35 PM

Hyd. No. 4

Confluence

Hydrograph type	= Combine	Peak discharge	= 64.50 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyds.	= 1, 2, 3		

Hydrograph Volume = 1,446,975 cuft



Hydrograph Plot

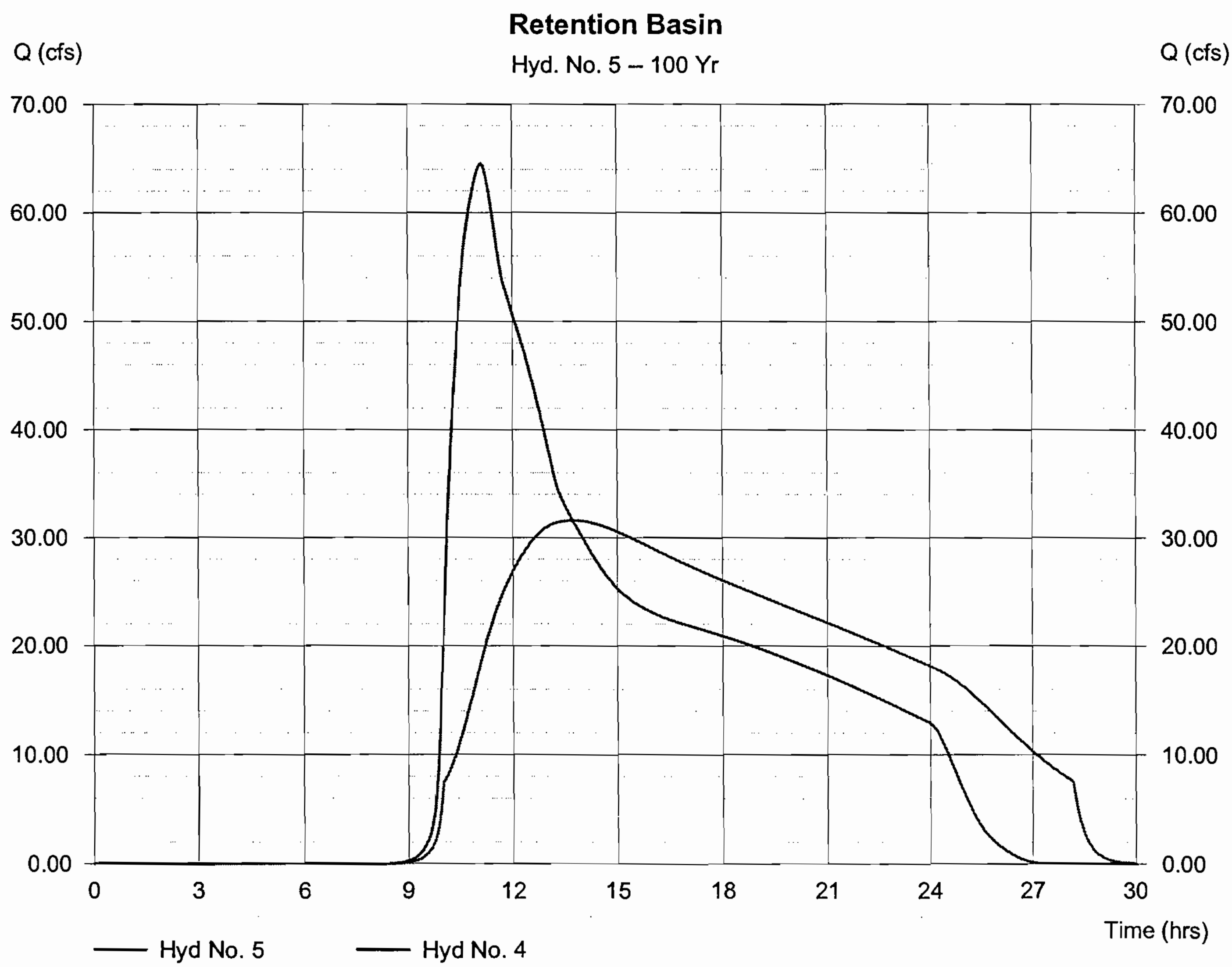
Hydraflow Hydrographs by Intelisolve | Wednesday, Jun 8 2005, 3:35 PM

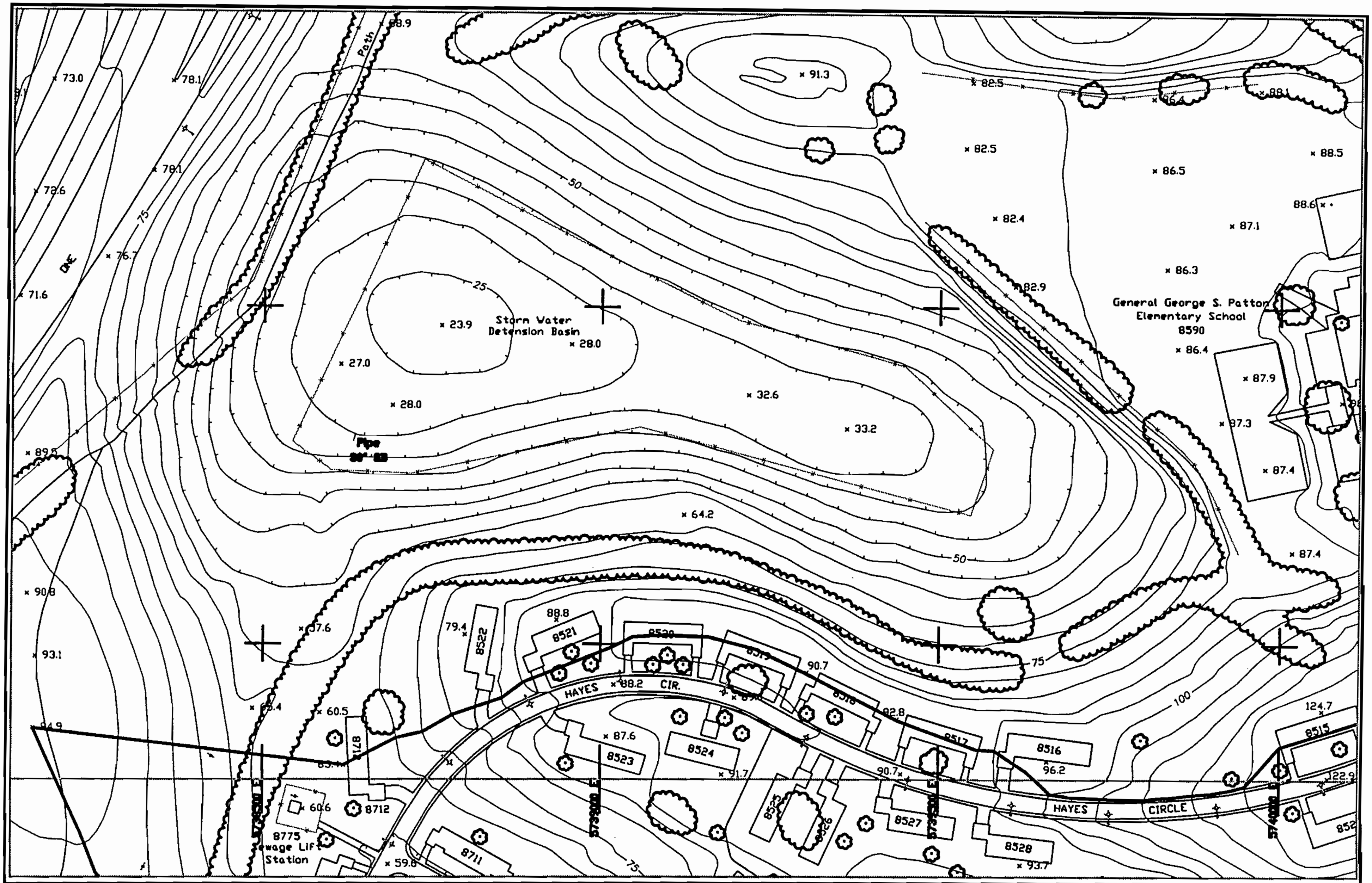
Hyd. No. 5

Retention Basin

Hydrograph type	= Reservoir	Peak discharge	= 31.57 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 29.94 ft
Reservoir name	= Existing Basin	Max. Storage	= 334,332 cuft

Storage Indication method used. | Hydrograph Volume = 1,446,974 cuft





EXISTING RETENTION BASIN

CYPRESS KNOLL
MARINA, CALIFORNIA
JUNE 9, 2005

eda design professionals
civil engineers • land surveyors • land planners
1320 santa barbara st • san luis obispo, ca 93401
ph: 805/549-8658 • email: eda@edainc.com

SCALE: 1"=200'

K:\32277000\H & H\Watershed.dwg 6-09-05 10:47:00 AM mattr

Pond Report

Hydraflow Hydrographs by Intelisolve | Wednesday, May 25 2005, 2:42 PM

Pond No. 1 - Existing Basin

Pond Data

Pond storage is based on known contour areas. Conic method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	24.00	00	0	0
1.00	25.00	27,063	9,020	9,020
6.00	30.00	114,640	328,972	337,992
11.00	35.00	234,070	854,115	1,192,107
16.00	40.00	336,111	1,417,640	2,609,747
21.00	45.00	438,709	1,931,171	4,540,918
26.00	50.00	543,479	2,450,555	6,991,473
31.00	55.00	653,851	2,988,778	9,980,251
36.00	60.00	780,987	3,582,034	13,562,290

Culvert / Orifice Structures

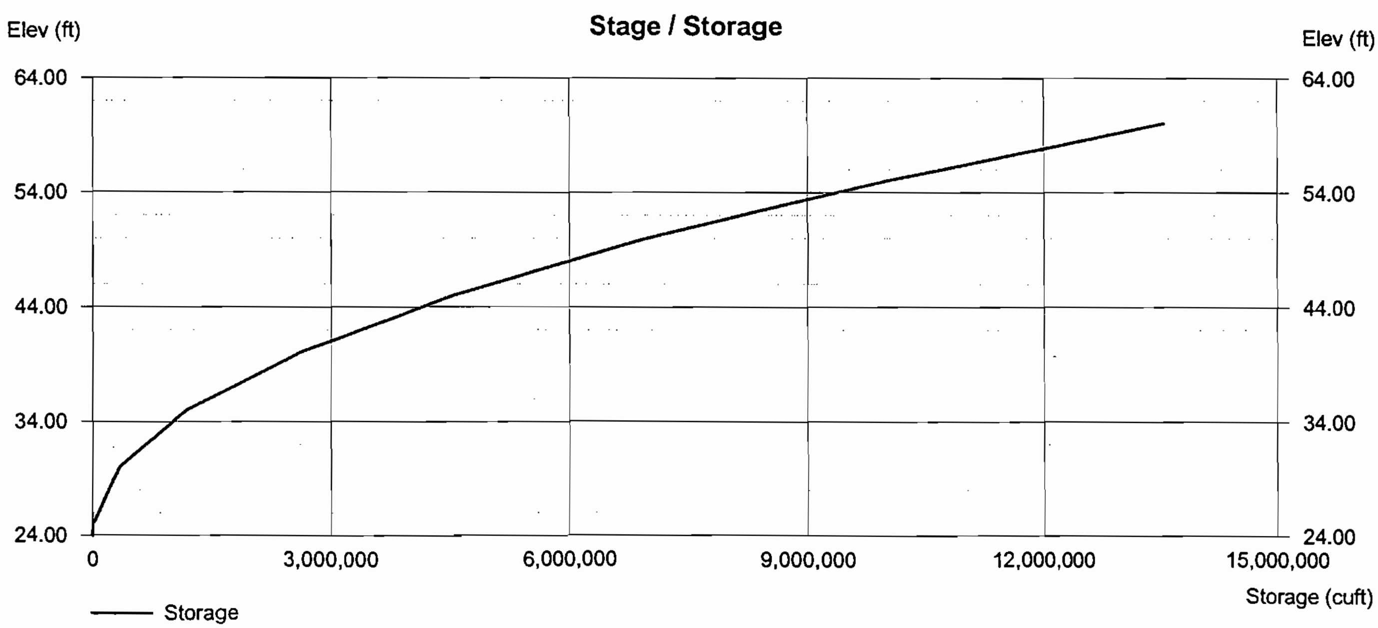
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0.00	0.00	0.00	0.00
Weir Type	= —	—	—	—
Multi-Stage	= No	No	No	No

Exfiltration = 12.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelisolve — Wednesday, May 25 2005, 2:40 PM

Pond No. 1 - Existing Basin

Pond Data

Pond storage is based on known contour areas. Conic method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	24.00	00	0	0
1.00	25.00	27,063	9,020	9,020
6.00	30.00	114,640	328,972	337,992
11.00	35.00	234,070	854,115	1,192,107
16.00	40.00	336,111	1,417,640	2,609,747
21.00	45.00	438,709	1,931,171	4,540,918
26.00	50.00	543,479	2,450,555	6,991,473
31.00	55.00	653,851	2,988,778	9,980,251
36.00	60.00	780,987	3,582,034	13,562,290

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0.00	0.00	0.00	0.00
Weir Type	= —	—	—	—
Multi-Stage	= No	No	No	No

Exfiltration = 12.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	24.00	—	—	—	—	—	—	—	—	0.000	0.00
1.00	9,020	25.00	—	—	—	—	—	—	—	—	7.517	7.52
6.00	337,992	30.00	—	—	—	—	—	—	—	—	31.844	31.84
11.00	1,192,107	35.00	—	—	—	—	—	—	—	—	65.019	65.02
16.00	2,609,747	40.00	—	—	—	—	—	—	—	—	93.364	93.36
21.00	4,540,918	45.00	—	—	—	—	—	—	—	—	121.863	121.86
26.00	6,991,473	50.00	—	—	—	—	—	—	—	—	150.965	150.97
31.00	9,980,251	55.00	—	—	—	—	—	—	—	—	181.624	181.62
36.00	13,562,290	60.00	—	—	—	—	—	—	—	—	216.939	216.94

Pond Report

Hydraflow Hydrographs by Intelisolve — Wednesday, May 25 2005, 2:42 PM

Pond No. 1 - Existing Basin

Pond Data

Pond storage is based on known contour areas. Conic method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	24.00	00	0	0
1.00	25.00	27,063	9,020	9,020
6.00	30.00	114,640	328,972	337,992
11.00	35.00	234,070	854,115	1,192,107
16.00	40.00	336,111	1,417,640	2,609,747
21.00	45.00	438,709	1,931,171	4,540,918
26.00	50.00	543,479	2,450,555	6,991,473
31.00	55.00	653,851	2,988,778	9,980,251
36.00	60.00	780,987	3,582,034	13,562,290

Culvert / Orifice Structures

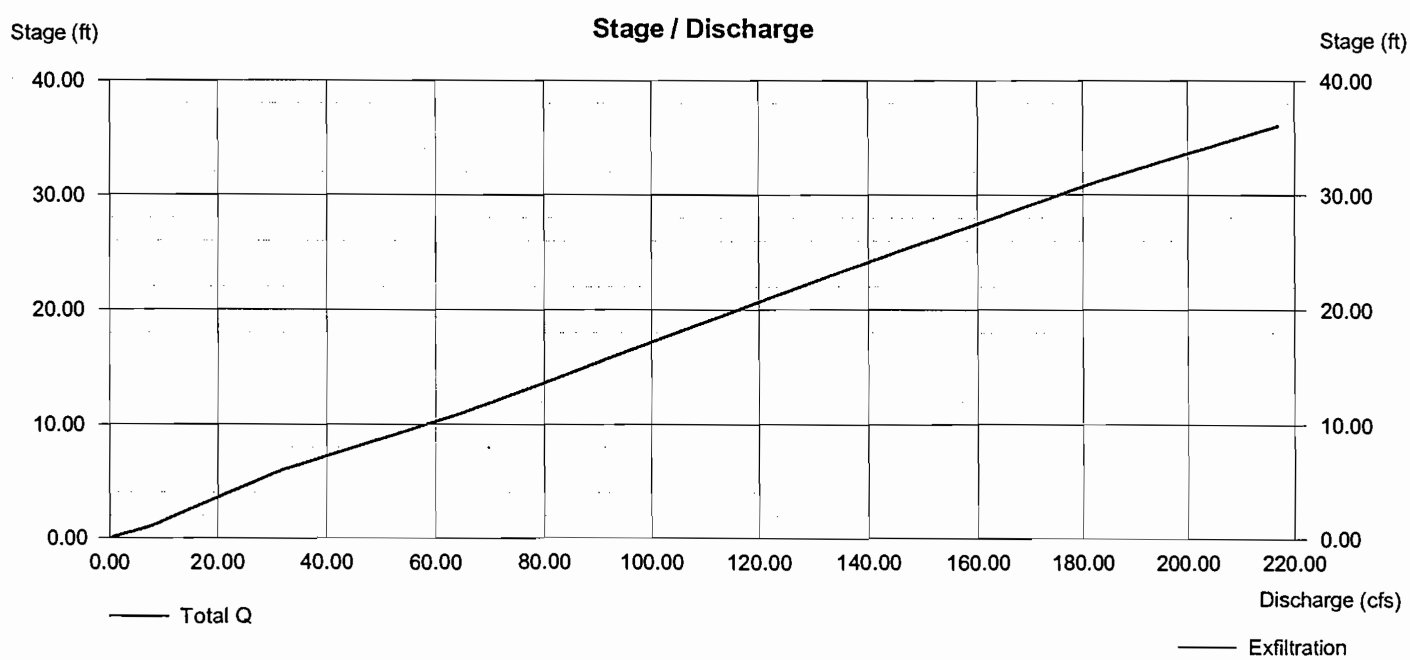
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 12.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Federal Emergency Management Agency
Washington, D.C. 20472

APR 21 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Ila Mettee-McCutchon
Mayor, City of Marina
211 Hillcrest Avenue
Marina, CA 93933

IN REPLY REFER TO:

Case No.:	05-09-A506P
(Formerly Case No.:	05-09-2100506P)
Community Name:	City of Marina, CA
Community No.:	060727
Effective Date of This Revision:	AUG 17 2006

Dear Mayor Mettee-McCutchon:

The Flood Insurance Rate Map for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community. Please note that the case number referenced above was changed to accommodate our digital processing.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Oakland, California, at (510) 627-7175, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Michael B. Godesky, CFM, Project Engineer
Engineering Management Section
Mitigation Division

For: William R. Blanton Jr., CFM, Acting Chief
Engineering Management Section
Mitigation Division

List of Enclosures:

- Letter of Map Revision Determination Document
- Annotated Flood Insurance Rate Map

cc: Mr. James Cullen
Acting City Engineer
City of Marina

Mr. Edward D. Ballman, P.E.
Balance Hydrologics, Inc.

 | Issue Date: APR 21 2006 | Effective Date: AUG 17 2006 | Case No.: 05-09-A506P | LOMR-APP

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	**City of Marina** **Monterey County** **California** **COMMUNITY NO.: 060727**	**DETENTION BASIN**	**HYDROLOGIC ANALYSIS** **NEW TOPOGRAPHIC DATA**
IDENTIFIER	Cypress Knolls	**APPROXIMATE LATITUDE & LONGITUDE: 36.700, -121.800** **SOURCE: USGS QUADRANGLE DATUM: NAD 83**	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 060727 0005 B DATE: February 3, 1993	NO REVISION TO THE FLOOD INSURANCE STUDY REPORT

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Local Flooding – unnamed detention basin adjacent to California Highway 1 and just south of the Del Monte Boulevard exit

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Local Flooding	Zone A	Zone AE	NONE	YES
	No BFEs*	BFEs	YES	NONE

* Revision will establish a Base Flood Elevation (BFE) for the detention basin.

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Engineering Management Section
Mitigation Division

106979 10.3.1.05092100506 102IAC

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Sally M. Ziolkowski
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

Although the revised area is shown on the effective FIRM as within the limits of the Fort Ord Military Reservation, this base was decommissioned in 1994, and the revised area now is located within the corporate limits of the City of Marina.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Engineering Management Section
Mitigation Division

106979 10.3.1.05092100506 102IAC

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
Local Flooding	Unnamed detention basin adjacent to California Highway 1, just south of Del Monte Boulevard exit	None	32	0005 B

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER: *Name:* *The Californian*
Dates: 05/11/2006 05/18/2006

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Engineering Management Section
Mitigation Division

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE CITY OF MARINA, MONTEREY COUNTY, CALIFORNIA UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On February 3, 1993, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the City of Marina, Monterey County, California, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Division has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified Base Flood Elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

Hydrologic and hydraulic analyses were performed to incorporate updated topographic information and have resulted in a decrease in SFHA width and establishment of a BFE for an unnamed detention basin located adjacent to California Highway 1 and just south of the Del Monte Boulevard exit. The aforementioned detention basin contains the base flood. The table below indicates the existing and modified BFEs for the detention basin.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Unnamed detention basin adjacent to California Highway 1, just south of Del Monte Boulevard exit	None	32

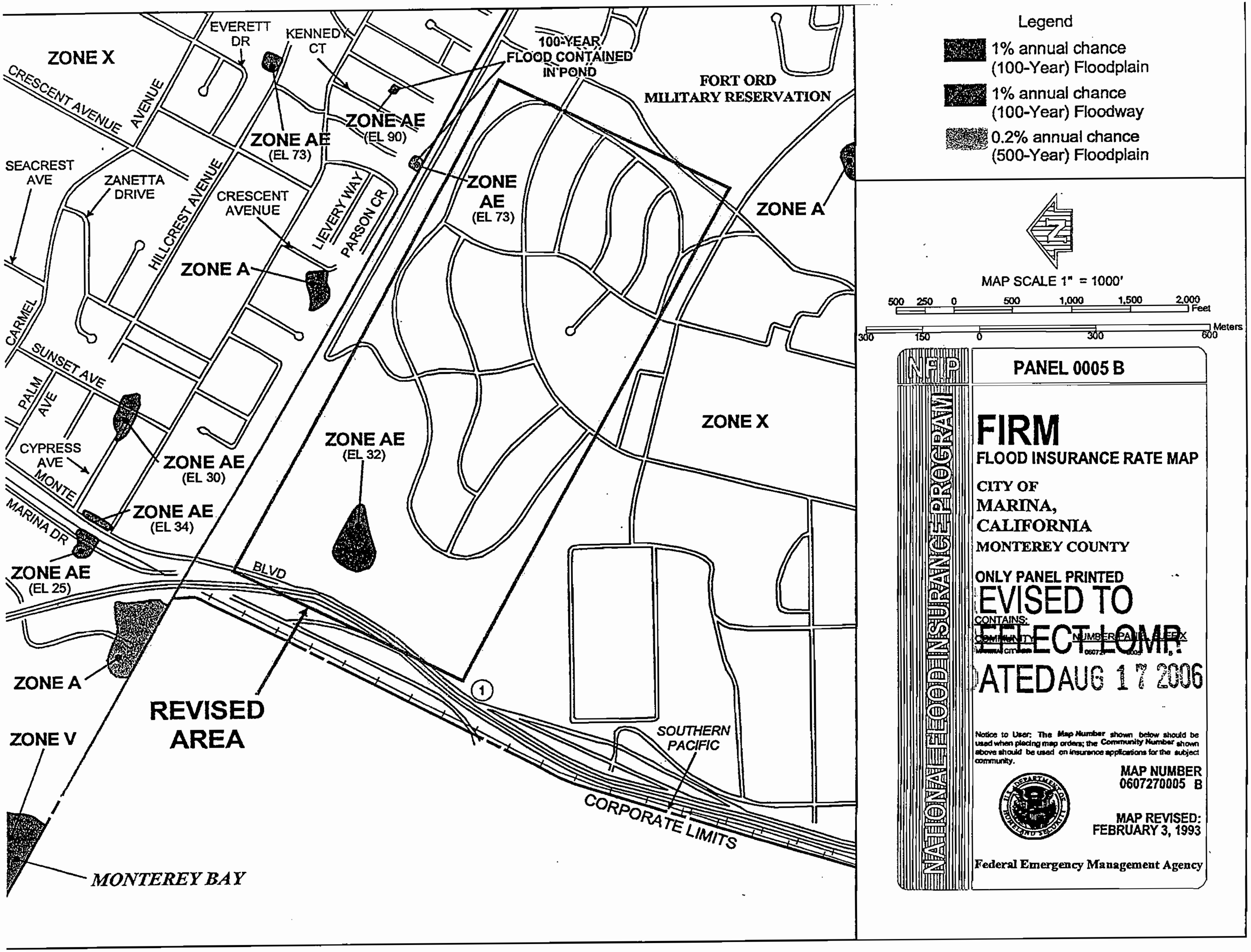
*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Division reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Ila Mettee-McCutchon
Mayor, City of Marina
211 Hillcrest Avenue
Marina, CA 93933



ZONE X
CRESCENT AVENUE
AVENUE
EVERETT DR
KENNEDY CT
100-YEAR FLOOD CONTAINED IN POND
FORT ORD MILITARY RESERVATION
ZONE AE (EL 73)
ZONE AE (EL 90)
SEACREST AVE
ZANETTA DRIVE
HILLCREST AVENUE
CRESCENT AVENUE
LIEVERY WAY
PARSON CR
ZONE AE (EL 73)
ZONE A
ZONE A
CARMEL
SUNSET AVE
PALM AVE
CYPRESS AVE
MONTE
ZONE AE (EL 30)
ZONE AE (EL 32)
ZONE X
ZONE AE (EL 34)
MARINA DR
ZONE AE (EL 25)
BLVD
ZONE A
REVISED AREA
1
ZONE V
SOUTHERN PACIFIC
CORPORATE LIMITS
MONTEREY BAY
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
N
MAP SCALE 1" = 1000'
500 250 0 500 1,000 1,500 2,000 Feet
300 150 0 300 600 Meters
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 0005 B
FIRM
FLOOD INSURANCE RATE MAP
CITY OF MARINA, CALIFORNIA
MONTEREY COUNTY
ONLY PANEL PRINTED
REVISED TO REFLECT LOMR DATED AUG 17 2006
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.
MAP NUMBER 0607270005 B
MAP REVISED: FEBRUARY 3, 1993
Federal Emergency Management Agency

Balance
Hydrologics, Inc.

841 Folger Avenue • Berkeley, CA 94710-2800
(510) 704-1000 • *(fax) 704-1001* • email: office@balancehydro.com

January 24, 2006

FEMA Map Coordination Contractor
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304-6425

RE: Additional Information Requested for Case Number 05-09-2100506P
Unnamed Infiltration Basin at Cypress Knolls, City of Marina, California

Dear Madam or Sir:

This letter and accompanying supplemental documentation have been prepared to address the additional information needs identified in your letter of October 27, 2005. We appreciate your prompt review of our original submittal dated August 16, 2005 and have endeavored to provide you with the information needed to continue with the detailed review of our request for a LOMR.

This letter is intended to clarify what is included in the enclosed supplemental materials. Each item is explained referencing the number in your letter.

1. *Maintenance and Operation Plan.* The review requests that an officially adopted maintenance and operation plan for the infiltration basin be provided. Appendix A includes a copy of this document provided by the City of Marina Public Works Department, the agency responsible for the implementation of the plan.

2. *City Corporate Limits.* The review requests that a map of the City of Marina be provided to illustrate the updated corporate limits. The currently effective FIRM panel is ambiguous in that it shows the infiltration basin to be within the Fort Ord Military Reservation, but does not clearly indicate that this area is also within the City of Marina. FEMA's Q3 data, however, accurately depicts the current corporate limits of the City of Marina, which shows the proposed map revision to be well within the city boundary. The corporate limits taken from the Q3 data has been displayed on the attached Figure 1.

Closing

We appreciate your ongoing efforts to review the additional materials included herein for compliance with the requirements of the National Flood Insurance Program.

Do not hesitate to contact Balance Hydrologics with any questions related to the LOMR application, the supporting documentation or the modeling work performed.

Thank you again for your prompt attention to this request.

BALANCE HYDROLOGICS, INC.

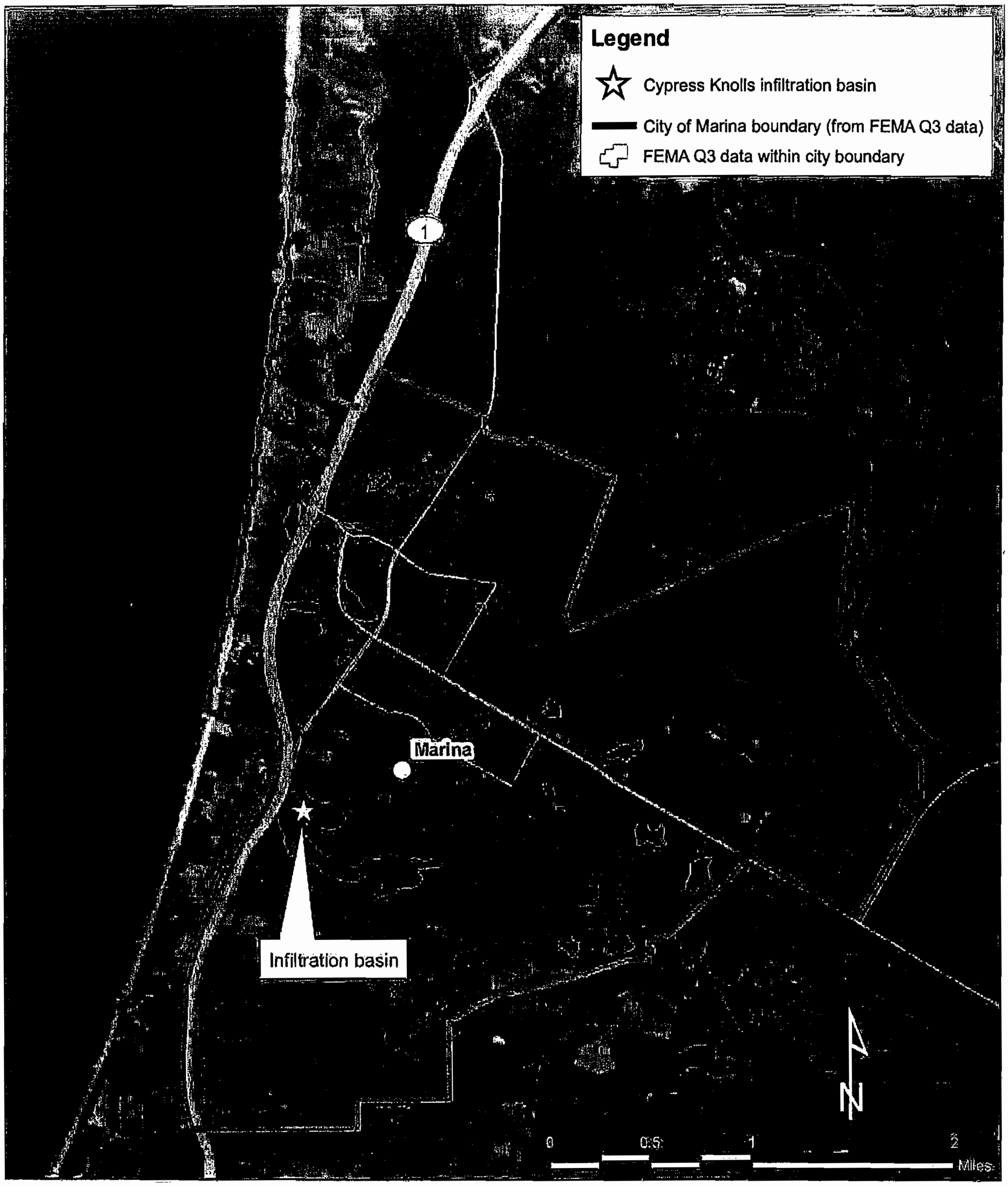
Sincerely,

Edward D. Ballman, P.E.
Civil Engineer / Hydrologist

Eric Riedner
Engineer / Hydrologist

cc: Elizabeth Caraker, City of Marina
Ray Parks, Ray Parks and Associates

Attachments: Appendix A
Figure 1



Balance

Figure 1. City of Marina boundary map developed from FEMA Q3 data Montery County, California

Q3 Flood Data, Monterey, California, 1996.

corr.

Balance Hydrologics, Inc.

841 Folger Avenue • Berkeley, CA 94710 • 510-704-1000 • 510-704-1001 fax • office@balancehydro.com

Transmittal Form

To: FEMA Map Coordination Contractor
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304-6425

From: Edward D. Ballman, P.E. / jrb
Eric Riedner

Date:	January 24, 2006
Project Number:	203092

We are sending the following: ☒ Attached ☐ Under Separate Cover

Document Title(s): ***Additional Information Requested for Case Number 05-09-2100506P, Unnamed Infiltration Basin at Cypress Knolls, City of Marina, California***

Remarks:

US Postal Service

☐ First Class
☐ Priority
☐ Express

☒ Overnight Express (Fedex, UPS, Other)

☐ Overnight Service (Transbox, Other)

☐ Courier

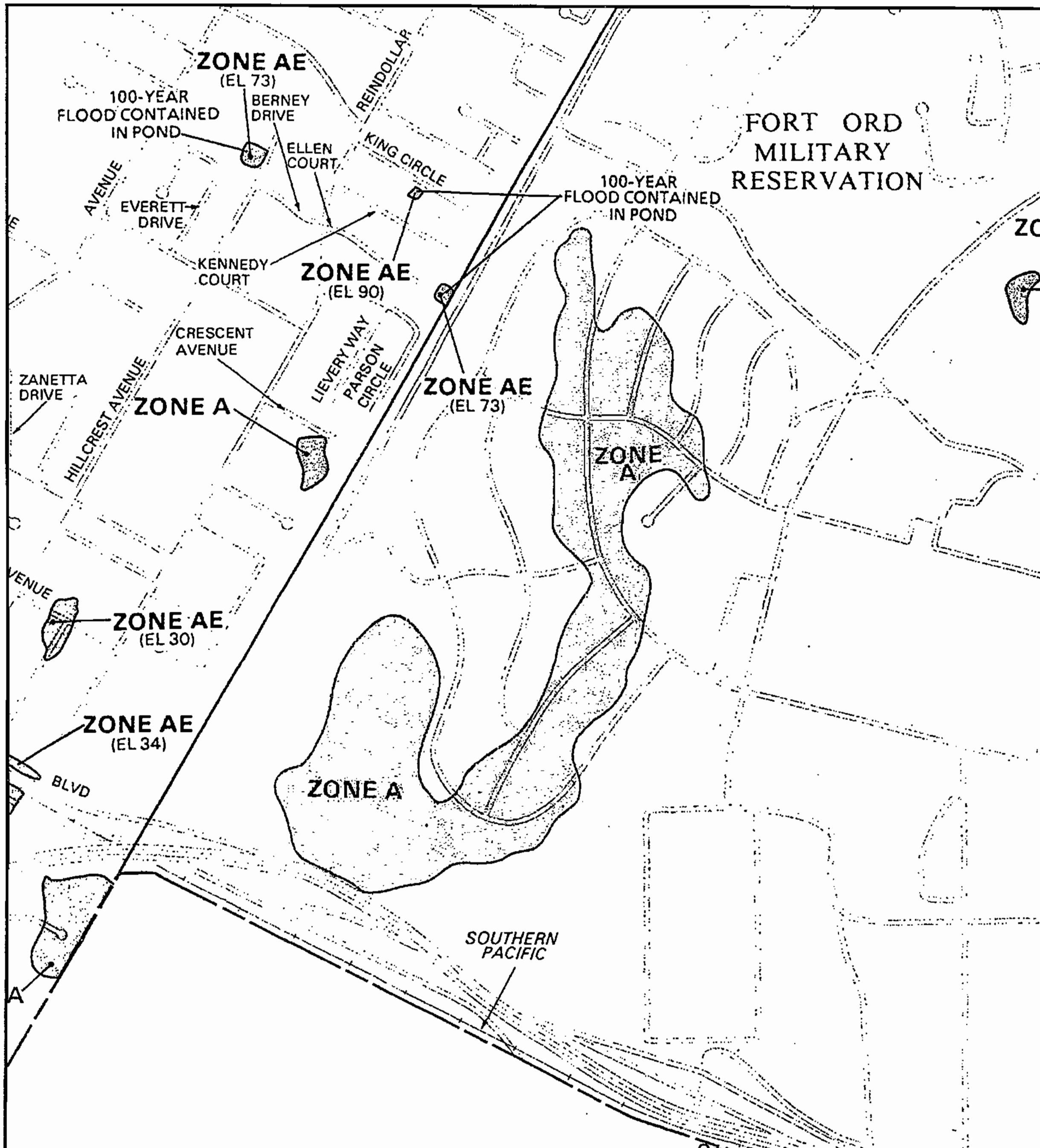
Transmitted:
☐ As Requested
☐ For Approval
☐ For Your Use
☐ For Review and Comment

Remarks:

Special Service Requested:

☐ Saturday Delivery ☐ Insured ☐ Return Receipt Requested

If any of the above are not included, please call (510) 704-1000



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
MARINA,
CALIFORNIA
MONTEREY COUNTY

ONLY PANEL PRINTED

EFFECTIVE

COMMUNITY-PANEL NUMBER
060727 0005 B

MAP REVISED:
FEBRUARY 3, 1993

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

City of Marina

211 HILLCREST AVENUE
MARINA, CA 93933

DEPARTMENT OF PUBLIC WORKS

FAX (831) 384-0425

FACSIMILE COVER SHEET

DATE OF TRANSMITTAL: 12/9/05

TO FAX NUMBER: (510) 704-1001

ATTENTION: ERIC RIEDNER

FROM: JOHN L. ILASIN, PROJECT ENGINEER

NUMBER OF PAGES (INCLUDING COVER SHEET): 2

If you have not received all pages as listed above or if this has been sent to the incorrect fax number, please contact our office immediately at (831) 884-1212. THANK YOU.

MESSAGE: CITY OF MARINA PERCOLATION POND MAINTENANCE PROCEDURE.

Please confirm receipt of this transmission ____________

[X] Original will not follow
[ ] Original will follow by:

- [ ] Regular Mail
- [ ] Certified Mail
- [ ] Federal Express
- [ ] Hand Delivery
- [ ] Other

Copies of this transmittal were forwarded to:

1) ____________ 3) ____________

2) ____________ 4) ____________

CITY OF MARINA

Percolation Pond
Maintenance Procedure

BACKGROUND:

The City of Marina disposes much of the storm water runoff from its streets through percolation ponds. Each pond serves a relatively localized area and was constructed at the same time the streets, from which it receives runoff, were constructed. Typically, the ponds consist of a flat sandy bottom of a given area, a designed slope to a flat benched area, and are enclosed by a six foot high chain link fence. In many cases the benched area and top few feet of the slope are planted for weed and erosion control. The remainder of the slope and the flat bottom are free of vegetation and debris to promote infiltration of the collected runoff.

MAINTENANCE PROCEDURE:

Prior to the wet season for each year the following tasks must be accomplished.

1. Remove all vegetation from the unplanted slope and from the bottom of each percolation pond.

2. Scarify and remove the thin crust of silt and deposits from the bottom and sides of each pond as necessary.

3. Redress slopes as required.

4. Clean all catch basins and any grease/debris separators serving a pond.

The following tasks should be accomplished as needed.

1. Maintain weed and debris control in benched area and along street frontage of ponds.

2. Repair chain link fencing and slats.

EQUIPMENT:

The following equipment is generally used to accomplish the pond maintenance described above.

1. Bobcat - for scarifying and loading.
2. Various weed control equipment.
3. Trucks - hauling waste/debris.
4. Truck mounted vacuum for catch basin cleaning.
5. Pipe flushing equipment.

Appendix D
Finding of Suitability to Transfer
U.S. Dept. of the Army

FINDING OF SUITABILITY TO TRANSFER (FOST)
PATTON AND ABRAMS PARK DISPOSAL POLYGONS
FORMER FORT ORD, CALIFORNIA

On the basis of the Community Environmental Response Facilitation Act (CERFA) Report for Fort Ord, I have determined that the Patton and Abrams Park Disposal Polygons (the Property), at former Fort Ord, California, are suitable for transfer to the Fort Ord Reuse Authority (FORA) for housing and infrastructure. The property to be assigned and transferred includes 418 buildings and an aboveground water storage tank on approximately 412 acres (Polygon's E4.2, and E4.5 and portions of Polygons E4.1 and E4.3; Plates 1 and 2).

A determination of the environmental condition of the Property was made by the U.S. Department of the Army by conducting a review of existing environmental documents and completing associated visual site inspections (2/19/97; 8/29/97). The documents reviewed included the final Fort Ord CERFA Report (April 1994), U.S. EPA Region IX's concurrence to the CERFA Report (19 April 1994), various remedial investigation/feasibility studies documents, and remedial action reports and subsequent approval memoranda. The results of the document review indicate that the Property is environmentally suitable for transfer. The results are as follows:

- Four hundred and ten single and multi-family housing units (Tables 1 and 2) and six sewage lift stations (Buildings 4970, 6020, 6054, 6120, 6130, and 6225) are located on Polygons E4.1, E4.2, and E4.3 (Plates 1 and 2). A water treatment building (4975), water pump plant (4974) and an aboveground 1,000,000 gallon water storage tank (4976) are located on Polygon E4.5.

- Asbestos surveys have been completed for the 410 housing units and the water treatment building, water pump plant, and water storage tank on the Property as part of a facility-wide asbestos survey. Asbestos surveys were not completed for the six lift station buildings. These surveys show that all 410 housing units and the water treatment building, water pump plant, and water storage tank contain friable and/or nonfriable asbestos containing material (ACM). Two housing units (8416 and 8452) contain friable and nonfriable ACM (pipe fitting insulation and jacket in furnace and laundry room, respectively) rated 1 (immediate total removal recommended). Twenty-three housing units contain friable and nonfriable ACM (duct tape and sheet floor mastic) rated 2 (immediate repair, short-term removal recommended).

6074	6083	6090	8661
6075	6084	6091	8764
6076	6085	6092	
6077	6086	6093	
6080	6087	6126	
6081	6088	6127	
6082	6089	8629	

The remaining 378 housing units and the water treatment building, water pump plant, and water storage tank contain friable and/or nonfriable ACM in fair to good condition rated 9 to 13. The Army does not intend to remove the ACM in these buildings, but only discloses its existence and condition. Prior to occupancy recipient should remediate ACM rated 1 through 5. Any recommended inspection of ACM present in these buildings will be the responsibility of the recipient.

- The housing units within the Abrams Park Disposal Polygon were constructed between 1978 and 1982 and are not expected to contain lead-based paint (LBP). The housing units within the Patton Park Disposal Polygons were constructed between 1962 and 1969. The paint on the Patton Park housing units is in poor to excellent condition. No sampling for lead in soil has occurred on the Property. As agreed upon in an agency meeting on August 29, 1997, lead analytical results from soil samples collected adjacent to houses within the Stilwell Park, Marshall Park and Hayes Park housing areas will be used to represent lead concentrations in soil around the houses within the Patton Park housing area that were constructed of similar materials and during similar time periods. Average concentrations of lead detected in soil around the Stilwell Park, Marshall Park, and Hayes Park housing areas were 44, 33.8, and 23.5 mg/kg, respectively. The maximum background concentration for lead in soil at Fort Ord is 51.8 mg/kg (Harding Lawson Associates, *Draft Final Basewide Background Soil Investigation, Fort Ord, California [HLA 1993]*, dated March 15, 1993). The federal PRG for residential soil is 400 mg/kg. On the basis of these results, the BRAC Cleanup Team decided that, with regard to LBP in soil on the Property, no further action was necessary (August 29, 1997). Appropriate LBP notice is provided herein.

- No radon levels above 4 picocuries per liter (pCi/L) were detected on the Property during a 1990 survey.

- No radiological surveys have been conducted within the buildings because no radioactive materials were reportedly used or stored in the buildings.

- No polychlorinated biphenyl (PCB) transformers are on the Property, and no releases of PCB-contaminated dielectric fluids have been reported for the Property.

- Routine application of pesticides occurred around the residential areas on the former Fort Ord, based on available pesticide applications records which date from 1985 to the present. The records show the type of pesticide used, location and date of application, final application concentration and the name of the applicator. All pesticides were used in accordance with labeled instructions. The following is a list of pesticides applied in residential areas of Fort Ord during this time. These pesticides are still in use today and are considered safe for use in residential or outdoor areas.

    - Carbamates - methylcarbamates (Ficam, Baygon); carbaryl (Sevin); propoxur (Terminate)

    - Chloropyrifos (Dursban, Empire)

    - Combination Pesticides - Purge (diazinon, pyrethrin, piperonyl butoxide); ULD-100 and Drione (pyrethrin, piperonyl butoxide and petroleum distillate); Precore (methorprene and permethrin)

    - Diazinon

    - Herbicides: glyphosate (Round-up, Rodeo); 2-4D; Amitrole; sulfometuron methyl (Oust)

    - Propetamphos (Safrotin)

- Pyrethrum and synthetic Pyrethroids - pyrethrin; phenothrin; resmethrin; cypermethrin (Demon); cyfluthrin (Tempo)

- Rodenticides: chlorophacinone; strychnine; brodificoum; zinc phosphide

- Thurgicide (Dipel)

- Ordnance and explosives (OE) investigations, consisting of the Archive Search Report (ASR) and ASR Supplement No. 1 (December 1993 and November 1994, respectively), Site 39 Data Summary Work Plan (February 1994), OE contractor after-action reports (December 1994, November 1995), working maps, Fort Ord Training Facilities Map, and associated interviews from various ordnance-related community relations activities, show five potential OE locations (OE Site 1, OE Site 6, and the 75 mm Pack Howitzer Firing Area; and OE Sites 2 and 13A) adjacent to the Property (access to these areas will be prohibited). The OE site boundaries are based on the latest information (September 1997 map boundaries) provided by the OE removal contractor and the sources described above. Early preliminary surveys, including the ASR and ASR Supplement (which included interviews with former Fort Ord employees), resulted in identification of a number of potential OE sites. Some of the sites were identified by more than one source, resulting in multiple site boundaries for many of the OE sites. Subsequently, the Army conducted additional focused studies, including RI/FS studies associated with former OE use, an expanded ASR process and OE sampling, mapping, global positioning system (GPS) surveys, and OE removal actions which were performed as part of the Phase 1 and 2 Engineering Evaluation and Cost Analysis (EE/CA). These additional studies resulted in a refinement of the potential OE site boundaries. The current approximate extent of each OE site adjacent to the Property is shown on Plates 2 and 4. Additionally, three training areas (Mortar Squares) lie within or adjacent to the Property. In a letter to the California Environmental Protection Agency, Department of Toxic Substances Control, dated February 24, 1997, the Army stated that although the Mortar Squares were identified on training maps, through the archive search process the Mortar Squares were not identified as potential ordnance sites. However, since OE was used throughout the history of Fort Ord, the potential exists for OE to be present on the Property. This notice will be included in the deed.

- Six former underground storage tanks (USTs 4970.1, 6020.1, 6054.1, 6120.1, 6130.1 and 6225.1) associated with sewage lift stations and one (4974.1) associated with the water pump plant were located on the Property. The former USTs have been removed and the Monterey County Department of Health granted closure. USTs 4970.1, 4974.1, 6020.1, 6054.1, and 6120.1 were granted closure in a letter dated April 6, 1994; USTs 6130.1 and 6225.1 were granted closure in a letter dated December 13, 1995.

- Two of the six former underground storage tanks on the Property were replaced with aboveground storage tanks (ASTs). The ASTs contain diesel fuel (tanks 6130-B-1, and 6225) and are used to support generators at sewage lift stations.

- One solid waste management unit (FTO-002, OU2 Landfill) is immediately adjacent to a portion of Polygon E4.3 (Abrams Park). A remedial action (RA) for the OU2 landfill is underway. The RA included the excavation and relocation of landfill material buried on the northside of Imjin Road. This area has been completely excavated and clean-up goals have been met. Activities related to the landfill closure will not adversely affect this transfer.

- The final CERFA report identifies the Property as being within CERFA Parcel 202 and 128 and CERFA Disqualified Parcel 4. The State Department of Toxic Substances Control and U.S. EPA issued letters (April 18 and 19, 1994, respectively) of concurrence identifying CERFA Qualified Parcel 128 as an "uncontaminated" parcel. Parcel 4 was disqualified due to the location of the Property above the Fort Ord Landfill (OU 2) groundwater contamination plume. Remediation of the contaminated groundwater at OU 2 is underway. Twenty-seven groundwater monitoring, eight extraction, and six injection wells are located on the Property (Plates 3 and 4). Fourteen of the monitoring wells are located on the Patton Park Disposal Polygons and thirteen monitoring wells are located on Abrams Park Disposal Polygon E4.3. Trichloroethene (TCE) was detected at a maximum concentration of 50 micrograms per liter (March 1997) in groundwater beneath the Property. The eight extraction and six injection wells are located on the Abrams Park Disposal Polygon. The extraction and injection wells are part of the OU 2 groundwater pump-and-treat remediation system. The Army has received concurrence from the U.S. EPA (4 January 1996) that the pump-and-treat system for remediation of the OU 2 groundwater plume is in place and operating "properly and successfully." A table listing maximum VOC concentrations in the OU 2 plume is attached (Table 1). Additionally, inactive Fort Ord water supply well FO-24 is located on the Abrams Park Disposal Polygon. The Army reserves the right of access to all wells on the Property. Tampering with the wells will be prohibited.
- The Baseline Risk Assessment for OU 2 indicates that the groundwater does not pose a threat to occupants of the Property provided that groundwater from the contaminated aquifer is not used as a drinking water source. Well drilling and use of groundwater will be prohibited.

National Environmental Policy Act (NEPA) requirements for this transfer were satisfied by the analysis conducted in the Fort Ord Disposal and Reuse Environmental Impact Statement (EIS) dated June 1993, the June 1996 Supplemental Fort Ord Disposal and Reuse Environmental Impact Statement (SEIS), and associated Records of Decision (RODs).

Clean Air Act General Conformity Rule requirements for this transfer were satisfied by a Record of Non-Applicability based upon an exemption for property transfers where the proposed action is a transfer of ownership, interest and title in the land, facilities, and associated real and personal property.

On the basis of the above results and subsequent investigations, certain terms, conditions, reservations, restrictions, and notifications are required. Disclosure of conditions and use restrictions are described below and will be included in the deed.

NOTICE OF THE PRESENCE OF ASBESTOS AND COVENANT

1. The Grantee is hereby informed and does acknowledge that friable asbestos or asbestos-containing materials ("ACM") have been found on the Property, as described in the EBS and referenced asbestos surveys. The interior asbestos does not present a "release or threat of release into the environment" as defined by CERCLA.

2. Some buildings have been determined to contain friable and non-friable asbestos that may pose a threat to human health. Asbestos surveys were not completed for the six lift station buildings. Two housing units (8416 and 8452) contain friable and nonfriable ACM (pipe fitting insulation and jacket

in furnace and laundry room, respectively) rated 1 (immediate total removal recommended). Twenty-three housing units contain friable and nonfriable ACM (duct tape and sheet floor mastic) rated 2 (immediate repair, short-term removal recommended).

6074	6083	6090	8661
6075	6084	6091	8764
6076	6085	6092	
6077	6086	6093	
6080	6087	6126	
6081	6088	6127	
6082	6089	8629	

The remaining 378 housing units and the water treatment building, water pump plant, and water storage tank contain friable and/or nonfriable ACM in fair to good condition rated 9 to 13. Detailed information is contained in the EBS and referenced asbestos surveys.

3. The Grantor has agreed to convey said buildings and structures to the Grantee, prior to remediation of the asbestos hazards described above, in reliance upon the Grantee's express representation and promise that the Grantee will, prior to use or occupancy of said buildings, demolish said buildings or the portions thereof containing friable asbestos, disposing of ACM in accordance with applicable laws and regulations. With respect to the friable asbestos in said buildings and structures, the Grantee specifically agrees to undertake any and all abatement or remediation and agrees to be responsible for any future remediation of asbestos found to be necessary on the Property. . The Grantee acknowledges that the consideration for the conveyance of the Property was negotiated based upon the Grantee's agreement to the provisions contained in this Subsection. The Grantee covenants and agrees that its use and occupancy of the Property will be in compliance with all applicable laws relating to asbestos; and that the Grantor assumes no liability for any future remediation of asbestos or damages for personal injury, illness, disability, or death, to the Grantee, its successors or assigns, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with asbestos or ACM on the Property, whether the Grantee, its successors or assigns have properly warned or failed to properly warn the individual(s) injured.. The Grantee assumes no liability for damages for personal injury, illness, disability, death or property damage arising from (i) any exposure or failure to comply with any legal requirements applicable to asbestos on any portion of the Property arising prior to the Grantor's conveyance of such portion of the Property to the Grantee pursuant to this Deed, or (ii) any disposal, prior to the Grantor's conveyance of the Property of any asbestos or ACM. The Grantee acknowledges that the consideration for the conveyance of the Property was negotiated based upon the Grantee's agreement to the provisions contained in this Subsection.

4. Unprotected or unregulated exposures to asbestos in product manufacturing, shipyard, building construction workplaces have been associated with asbestos-related diseases. Both Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) regulate asbestos because of the potential hazards associated with exposure to airborne asbestos fibers. Both OSHA and EPA have determined that such exposure increases the risk of asbestos-related diseases, which include certain cancers and which can result in disability or death.

5. The Grantee acknowledges that it has inspected the property as to its asbestos content and condition and any hazardous or environmental conditions relating thereto prior to accepting the

responsibilities imposed upon the Grantee under this section. The failure of the Grantee to inspect, or to be fully informed as to the asbestos condition of all or any portion of the property offered, will not constitute grounds for any claim or demand against the United States, or any adjustment under this Deed or the MOA .

6. The Grantee further agrees to indemnify and hold harmless the Grantor, its officers, agents and employees, from and against all suits, claims, demands or actions, liabilities, judgments, costs and attorneys' fees arising out of, or in any manner predicated upon, exposure to asbestos on any portion of the Property after this conveyance of the Property to the Grantee or any future remediation or abatement of asbestos or the need therefor. The Grantee's obligation hereunder shall apply whenever the United States incurs costs or liabilities for actions giving rise to liability under this section.

NOTICE OF THE PRESENCE OF LEAD-BASED PAINT

A. The Grantee is hereby informed and does acknowledge that all buildings on the Property, which were constructed or rehabilitated prior to 1978, are presumed to contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Every purchaser of any interest in Residential Real Property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase. "Residential Real Property" means any housing constructed prior to 1978, except housing for the elderly (households reserved for and composed of one or more persons 62 years of age or more at the time of initial occupancy) or persons with disabilities (unless any child who is less than 6 years of age resides or is expected to reside in such housing) or any 0-bedroom dwelling.

B. Available information concerning known lead-based paint and/or lead-based paint hazards, the location of lead-based paint and/or lead-based paint hazards, and the condition of painted surfaces is contained in the U.S. Army Environmental Hygiene Agency report, *Industrial Hygiene Survey No. 55-71-R25A-94, Lead-Based Paint Inspection in Military Housing, Fort Ord, California, November 1, 1993 - March 11, 1994*, dated June 6, 1994, and the Environmental Baseline Survey dated April 1994, which have been provided to the Grantee. All purchasers must also receive the federally approved pamphlet on lead poisoning prevention. No sampling for lead in soil has occurred on the Property. Lead sampling on similar parcels with like type and age of structures has shown concentrations in soil below levels of concern for residential use. The maximum background concentration for lead in soil at Fort Ord is 51.8 mg/kg (*HLA, 1993*). The federal PRG for residential soil is 400 mg/kg. The Grantee hereby acknowledges receipt of the information described in this subparagraph.

C. The Grantee acknowledges that it has received the opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards prior to execution of this Transfer.

D. The Grantee covenants and agrees that it shall not permit the occupancy or use of any buildings or structures on the Property as Residential Real Property without complying with this section and all applicable federal, state, and local laws and regulations pertaining to lead-based paint and/or lead-based paint hazards. Prior to permitting the occupancy of the Property where its use subsequent to sale is intended for residential habitation, the Grantee specifically agrees to perform, at its sole expense, the Army's abatement requirements under Title X of the Housing and Community Development Act of 1992 (Residential Lead-Based Paint Hazard Reduction Act of 1992) (hereinafter Title X). The Grantee shall, after consideration of the guidelines and regulations established pursuant to Title X and after consultation with the appropriate state environmental agency: (1) inspect for the presence of lead-based paint and/or lead-based-paint hazards; (2) abate and eliminate lead-based paint hazards; and (3) comply with all applicable notice and disclosure requirements under Title X and applicable state law. In complying with these requirements, the Grantee covenants and agrees to be responsible for any abatement or remediation of lead-based paint or lead-based paint hazards on the Property found to be necessary as a result of the subsequent use of the property for residential purposes.

E. The Grantee further agrees to indemnify and hold harmless the Army, its officers, agents and employees, from and against all suits, claims, demands, or actions, liabilities, judgments, costs and attorney's fees arising out of, or in a manner predicated upon personal injury, death or property damage resulting from, related to, caused by or arising out of lead-based paint or lead-based paint hazards on the Property if used for residential purposes.

NOTICE OF THE PRESENCE OF CONTAMINATED GROUNDWATER

The groundwater beneath a portion of the property is contaminated with VOCs, primarily TCE. The maximum TCE concentration in the groundwater beneath the Property is 50 micrograms per liter. This notice is provided pursuant to CERCLA Section (§) 120(h)(1) and (3). A pump-and-treat groundwater remediation system is in place and shown to be operating effectively. Drilling of water wells and use or access to groundwater beneath the Property is prohibited, and will be recorded in the deed. The Grantee, its successors or assigns will never undertake nor allow any activity on or use of the Property that may adversely affect or detract from the restrictions contained herein. These restrictions bind and run with the land and are forever hereinafter enforceable.

Without the express written consent of the Grantor in each case first obtained, neither the Grantee, its successors or assigns, nor any other person or entity acting for or on behalf of the Grantee, its successors or assigns, shall interfere with any response action being taken on the Property by or on behalf of the grantor, or interrupt, relocate, or otherwise interfere with any remediation system now or in the future located on, over, through, or across any portion of the Property.

The deed will reserve a non-exclusive easement to allow continued access for the Army (or its designated contractor) and the regulatory agencies to permit necessary groundwater monitoring at wells located on the Property. Furthermore, the deed will prohibit all others from tampering with the groundwater monitoring wells.

NOTICE OF THE POTENTIAL FOR THE PRESENCE OF ORDNANCE AND EXPLOSIVES

Ordnance and explosives (OE) investigations indicate that OE is not likely on this Property. However, because this is a former military installation with a history of OE use there is a potential for OE to be present on the Property. In the event Grantee or its successors and assigns should discover any ordnance on the Property they shall not attempt to remove or destroy it, but shall immediately notify the local Police Department and the Directorate of Law Enforcement at the Presidio of

Table 1. Maximum Chemical Concentration by Aquifer Zone
OU 2 Groundwater Plume
Former Fort Ord, California

Aquifer Zone	Substance	Concentration (ug/L)
Upper Aquifer Zone	1,1,1-trichloroethane	18
	1,1-dichloroethene	33
	1,1-dichloroethene	14
	1,2-dichlorobenzene	16
	1,2-dichloroethane	3.7
	1,2-dichloroethene (total)	41
	1,2-dichloropropane	2.5
	1,4-dichlorobenzene	9
	bromodichloromethane	0.6
	chlorobenzene	2.8
	chloroform	3.7
	cis-1,2-dichloroethane	40
	dibromochloromethane	0.6
	Freon 113	9.1
	tetrachloroethene	20
	trans-1,2-dichloroethane	0.6
	trichloroethene	21
	vinyl chloride	1.7
180-Foot Aquifer Zone	1,1,1-trichloroethane	1.4
	1,1-dichlorethane	1.6
	1,2 dichlorobenzene	0.9
	1,2-dichloroethene(total)	15
	1,2-dichloropropane	1.1
	chloroform	3.1
	cis-1,2-dichloroethene	15
	tetrachloroethene	1.6
	trichloroethene	43
400-Foot Aquifer Zone	No Detections	
Salinas Valley Aquiclude	1,2-dichlorobenzene	1.9
	1,2-dichloroethene (total)	0.5
	cis-1,2-dichloroethene	0.5
	tetrachloroethene	1.0
	trichloroethene	1.9

UNRESOLVED COMMENTS

US EPA 4 December 1997 Comment:

1) Transferee Responsibility / Indemnification for Asbestos:

Public Law 102-484, as amended by Public Law 103-160, provides for indemnification by the military services when property on closing military bases is transferred. This law provides that the military indemnify persons and entities acquiring ownership or control or property at a closing military base from liability for personal injury and property damage resulting from the release or threatened release of a hazardous substance (such as asbestos), unless the person or entity acquiring the property contributed to the release.

Consequently, EPA believes that the asbestos indemnification provision of the final FOST is not appropriate and must be eliminated from the FOST and the deed. If the FOST or the deed is to address the issue of liability for asbestos hazard, they should describe the statutory mechanism and advise the transferee that to the extent that the act or omission of the transferee contributes to the release of asbestos, the transferee will not be entitled to indemnification under the statute. EPA would be willing to work with the Army to craft language which provides protection for the Army which is consistent with the statutory indemnification provision.

Army Response:

Army believes that the standard Army indemnification language is legally sufficient.

2) Transferee Responsibility / Indemnification for LBP

EPA considers the presence of exterior lead-based paint (LBP) to pose a potential CERCLA release to the environment. There are currently indications of releases of lead associated with exterior LBP into the environment at the study areas covered by the subject FOST. Based on the available information regarding releases of lead associated with LBP at the facility, including the age of the structures (pre-1978) and soil sampling at similar structures considered to be representative of those located on the parcel to be transferred, EPA believes that a release has occurred. However, the levels should not present a risk to human health or the environment. Therefore, EPA believes that the parcel is suitable for transfer and that the covenant required by CERCLA section 120 (h) (3) can be given.

The FOST proposes that the transferee will be required to assume responsibility for the remediation of all LBP hazards following the transfer. The Army and the transferee may agree that the transferee will monitor the condition of any LBP hazard, maintain the structures and otherwise properly manage LBP hazards. The average residual lead concentrations in the soil surrounding the buildings and the structures on the parcel to be transferred do not exceed EPA's action level for lead of 400 mg/kg and no remedial action is currently required. However, based on the LBP conditions on the exterior of some buildings on the parcel, the threat of additional releases of lead into the surrounding soil remains. Therefore, where property has been transferred under CERCLA section 120 (h) (3), the United States must also covenant that it will perform any remedial action found necessary after the date of transfer.

Additionally, EPA believes that the provision of the FOST describing the Army's intention to obtain indemnification from the transferee and its successors and assigns is inconsistent with the provisions of Public Law 102-484, as amended by Public Law 103-160, which directs the Secretary of Defense to indemnify transferees of property at closing military bases. The law directs the military service to indemnify persons or entities acquiring ownership or control of property at closing military bases for liability for personal injury or property damage resulting from the release of a hazardous substance except to the extent that the person seeking indemnification contributed to the release. Consequently, EPA believes that the LBP indemnification provision of the draft final FOST is not appropriate and must be eliminated from the FOST and the deed. If the FOST or the deed is to address the issue of liability for LBP hazards, it should describe the statutory mechanism and advise the transferee that to the extent that the act or omission of the transferee contributes to the release of lead associated with LBP, the transferee will not be entitled to indemnification under the statute. EPA would be willing to work with the Army to craft language which provides protection for the Army which is consistent with the statutory indemnification provision.

Army Response:

Army believes that the risk from lead-based paint in the soil around these buildings is negligible based on testing of similar structures. Additionally, Army believes that the standard Army indemnification language is legally sufficient. Army does not agree that lead-based paint in soil is governed under CERCLA, but rather under Title X of Public Law 102-550 for property used for residential habitation.

TABLE 1. LIST OF HOUSING BUILDING NUMBERS
FINDING OF SUITABILITY TO TRANSFER
PATTON PARK DISPOSAL POLYGONS
FORMER FORT ORD, CALIFORNIA

8401	8442	8509	8577	8634	8675	8748
8402	8443	8510	8578	8635	8676	8749
8403	8444	8511	8579	8636	8677	8750
8404	8445	8512	8580	8637	8678	8751
8405	8446	8513	8581	8638	8679	8752
8406	8447	8530	8582	8639	8680	8753
8407	8448	8531	8583	8640	8681	8754
8408	8449	8532	8600	8641	8682	8755
8409	8450	8533	8601	8642	8683	8756
8410	8451	8534	8602	8643	8684	8757
8411	8452	8535	8603	8644	8685	8758
8412	8453	8536	8604	8645	8686	8759
8413	8454	8537	8605	8646	8687	8760
8414	8455	8538	8606	8647	8688	8761
8415	8456	8539	8607	8648	8689	8762
8416	8457	8540	8608	8649	8690	8763
8417	8458	8541	8609	8650	8691	8764
8418	8459	8542	8610	8651	8692	8765
8419	8460	8543	8611	8652	8693	8766
8420	8461	8544	8612	8653	8694	
8421	8462	8545	8613	8654	8695	
8422	8463	8546	8614	8655	8696	
8423	8464	8547	8615	8656	8697	
8424	8465	8548	8616	8657	8698	
8425	8466	8549	8617	8658	8699	
8426	8467	8550	8618	8659	8700	
8427	8468	8551	8619	8660	8701	
8428	8469	8552	8620	8661	8702	
8429	8470	8553	8621	8662	8703	
8430	8471	8554	8622	8663	8704	
8431	8472	8556	8623	8664	8705	
8432	8473	8557	8624	8665	8706	
8433	8500	8558	8625	8666	8707	
8434	8501	8559	8626	8667	8724	
8435	8502	8570	8627	8668	8725	
8436	8503	8571	8628	8669	8742	
8437	8504	8572	8629	8670	8743	
8438	8505	8573	8630	8671	8744	
8439	8506	8574	8631	8672	8745	
8440	8507	8575	8632	8673	8746	
8441	8508	8576	8633	8674	8747	

TABLE 2. LIST OF HOUSING BUILDING NUMBERS FINDING OF SUITABILITY TO TRANSFER ABRAMS PARK DISPOSAL POLYGON FORMER FORT ORD, CALIFORNIA

6006	6108	6224	8354
6007	6109	6227	8355
6008	6110	6228	8356
		6248	8357
6074	6115	6249	8358
6075	6116	6250	8360
6076	6117	6251	8361
6077	6118	6252	8362
6080	6119	6253	8363
6081	6121	6254	
6082	6122	6256	8365
6083	6123	6258	8367
	6124	6259	8368
6084	6125	6260	8369
6085	6126	6263	8370
6086	6127	6264	8371
6087	6128		8372
6088	6129	8325	8373
6089		8326	8374
6090	6200	8327	8375
6091	6201	8328	8376
6092	6202	8329	8377
6093	6203	8330	8378
6094	6206	8331	
6095	6207	8333	8384
6096	6208	8334	8385
6097	6209	8335	8386
6098	6210	8337	8387
6099	6211	8338	8388
6100	6212	8339	8390
	6213	8340	8391
6101	6215	8341	8392
6102	6216	8342	8393
6103	6217	8343	8394
6104	6218	8346	8395
6105	6219	8347	8396
6106	6220	8348	8398
6107	6221	8349	
	6223	8350	

Harding Lawson Associates
Engineering and Environmental Services

Polygon Map
Patton Park Disposal Polygons
Finding of Suitability to Transfer
Former Fort Ord, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
CEG	25894 0017611		1/96	

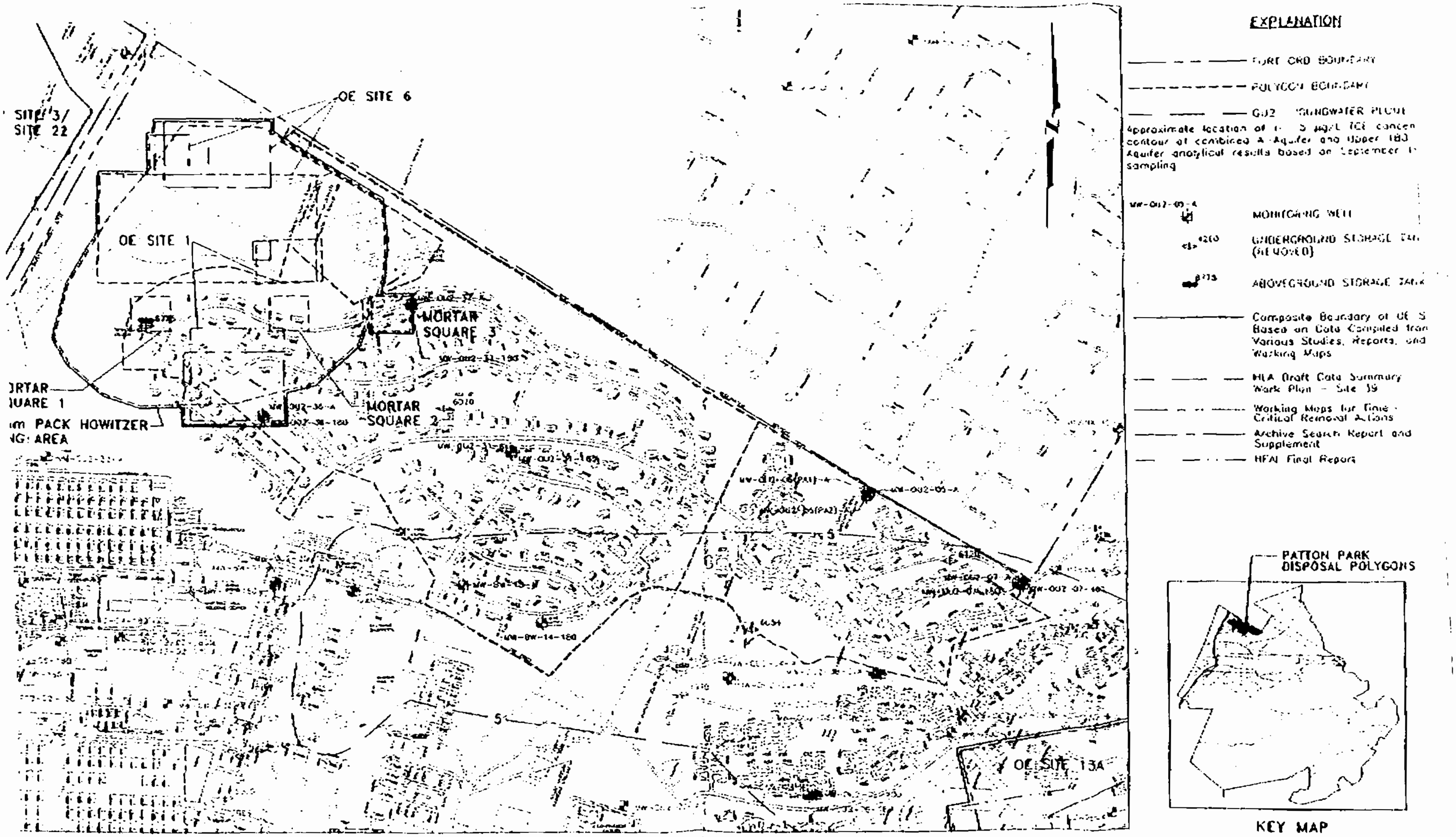
1

Harding Lawson Associates
Engineering and Environmental Services

Polygon Map
Abrams Park Disposal Polygons
Finding of Suitability to Transfer
Former Fort Ord, California

PLATE **2**

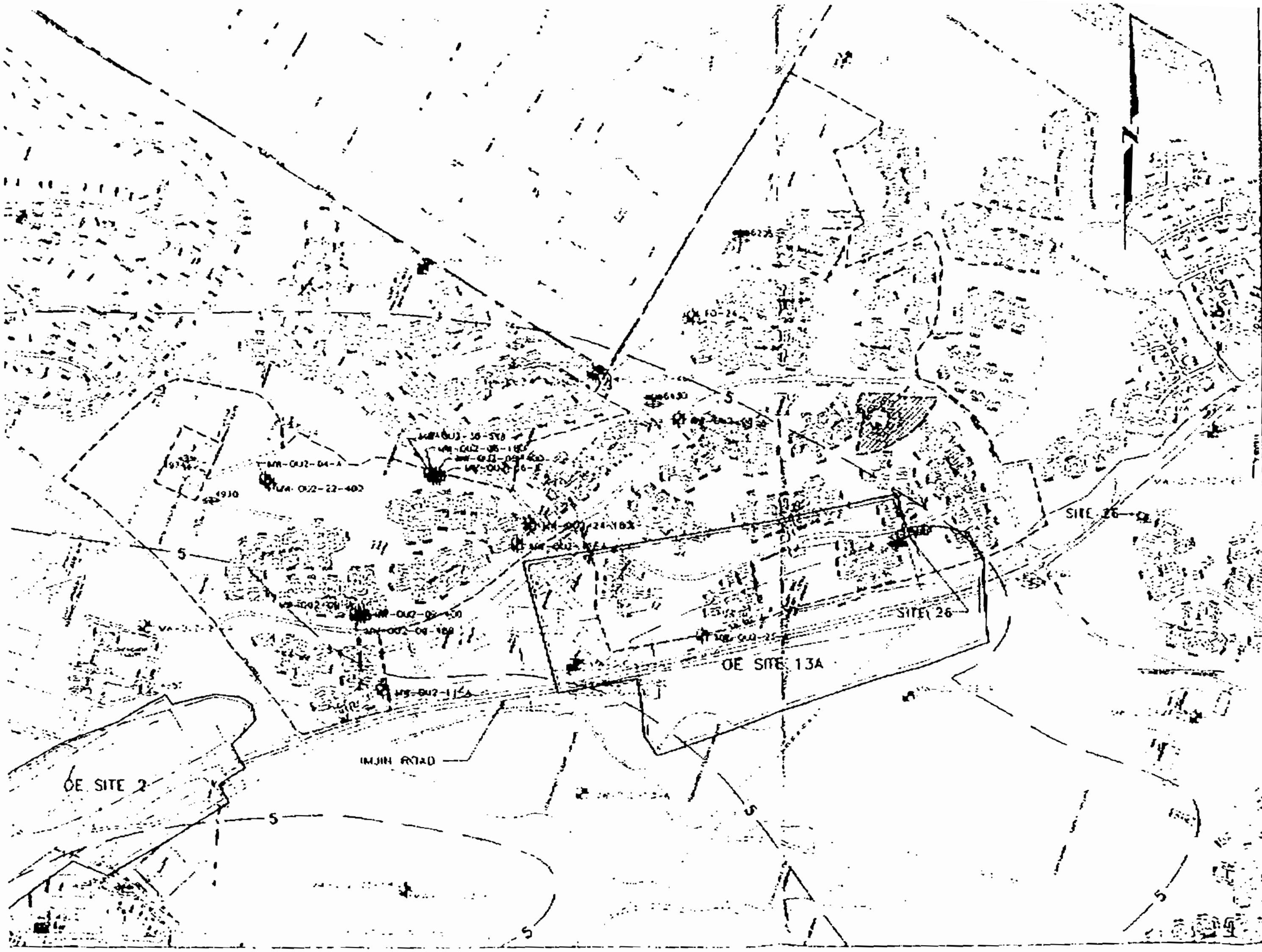
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CFG	25894 001769		11/95	



Harding Lawson Associates
Engineering and
Environmental Services

Monitoring Wells, OU2 Groundwater Plume, Storage Tanks, OE Areas
Patton Park Disposal Polygons
Finding of Suitability to Transfer
Former Fort Ord, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE	PLATE
CEG	25894 0017611		11/96		3



EXPLANATION

FORT ORD BOUNDARY

POLYGON BOUNDARY

OU2 GROUNDWATER PLUME
Approximate location of the 5 µg/L TCE concentration contour of combined A-Aquifer and Upper 180-Foot Aquifer analytical results based on September 1996 sampling

HLA DRAFT DATA SUMMARY WORK PLAN - SITE 39

CMS MAPS 5/15/96 AND 5/22/96

ARCHIVE SEARCH REPORT AND SUPPLEMENT

HFA FINAL REPORT

MW-OU2-02-A MONITORING WELL

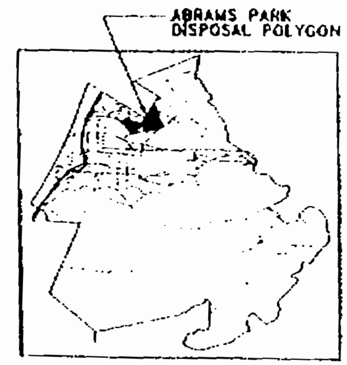
4230 UNDERGROUND STORAGE TANK (REMOVED)

6130 ABOVEGROUND STORAGE TANK

IRP SITE 26 - NO FURTHER ACTION

Composite Boundary of OE Sites Based on Data Compiled from Various Studies, Reports, and Working Maps

NOT PART OF THIS TRANSFER



KEY MAP

SCALE IN FEET (0, 700, 1400)

BOUNDARIES INDICATED ARE APPROXIMATE AND ARE NOT INTENDED AS THE LEGAL DESCRIPTION OF THE PARCEL(S)

Harding Lawson Associates
Engineering and Environmental Services

Monitoring Wells, OU2 Groundwater Plume, Storage Tanks, OE Areas
Abrams Park Disposal Polygon
Finding of Suitability to Transfer
Former Fort Ord, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	25894 001769		11/96	

Monterey. Competent U.S. Army Explosive Ordnance personnel will be dispatched promptly to dispose of such ordnance properly at no expense to the Grantee.

Comments received from U.S. EPA Region IX and California EPA DTSC on the Version 1 FOST were reviewed and incorporated where possible in the Version 2 FOST. All comments were resolved with the exception of one concerning certain language regarding asbestos and one regarding lead-based paint which are attached as unresolved comments.

On the basis of the above information, I conclude that the Property should be assigned Department of Defense (DoD) Environmental Condition Category 4 (areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken) and is transferable under CERCLA § 120(h)(3). The deed for this transaction will contain:

- The covenant under CERCLA § 120 (h)(3)(B)(i) warranting that all remedial action under CERCLA necessary to protect human health and the environment with respect to hazardous substances remaining on the Property has been taken.

- The covenant under CERCLA § 120 (h)(3)(B)(ii) warranting that any remedial action under CERCLA found to be necessary after the date of transfer shall be conducted by the United States.

- The clause under CERCLA § 120 (h)(3)(C) granting the United States access to the Property in any case in which remedial action or corrective action is found to be necessary after the date of transfer.

02 MAR 1998

James E. Mitchell
Brigadier General, GS
Assistant Deputy Chief of Staff for Base Operations Support
Headquarters United States Army Training and Doctrine Command

Appendix E
Traffic and Circulation

CYPRESS KNOLLS
MARINA, CALIFORNIA

TRAFFIC IMPACT ANALYSIS

Prepared For

Firma
San Luis Obispo, CA

June 26, 2006

TABLE OF CONTENTS

1 INTRODUCTION

This report documents a traffic impact study for the proposed Cypress Knolls project in Marina, California. The proposed project consists of the development of retirement housing and associated community center/clubhouse and, possibly, an assisted living facility. The project also consists of the development of affordable residential apartments. The project specifics are set forth in more detail below. It is anticipated that, concurrent with consideration of the Cypress knolls project, the City may consider certain separate actions on properties adjacent to the Cypress knolls project relating to a potential City-owned public park and senior center. These actions may include an amendment to the City General Plan and/or zoning for these two properties. Accordingly, the traffic impacts from these uses also are analyzed in this report. The location of the project site with respect to the local road network is shown on Exhibit 1 and a conceptual site plan is shown on Exhibit 2.

1.1 Project Description

The uses analyzed in this report consist of the following:

Residential

- 596 senior adult housing single-family residential units (up to 50 of which possibly would be built as townhome residential units (attached units).
- an approximately 2,500 square foot storage/maintenance building and associated area for landscaping, repair and other equipment would support the 596 residential units and associated open space and common areas (traffic trips associated with this storage/maintenance building and area are included within the trips identified later in this report for the residential units.)
- 116 affordable apartment units.

Park

- Park – 18 acres.
- The Monterey Peninsula Unified School District has indicated that at some point in the future, it may decide to develop a K-8 school with 850 students on the park area.

Project Community Center Clubhouse

- Community Center – approximately 20,000 square feet (not open to general public – will serve only the project residents).

Senior Center

- Senior Center – approximately 6,000 square feet (open to the public).

Assisted Living

- Assisted Living Facility -- 60 beds (Optional program to be built at the developer's election.)

As stated later in this report, this report analysis assumes under the Existing Plus Project and Background Plus Project conditions that the future potential park site is developed as a park, but assumes under Cumulative Conditions that the site is developed with a K-8 school. Also, the development of the Assisted Living Facility is at the developer's option. This report analyzes the project's traffic impacts with the Assisted Living Facility included as a component of the project. Impacts assuming the project does not include the Assisted Living Facility are described qualitatively.

1.2 Project Access

The Cypress Knolls project site is located east of Highway 1, north of Imjin Parkway and west of California Avenue. Historically the main regional access to the site has been from Highway 1 via the Imjin Parkway (12th Street) interchange. The completion and opening of the Highway 1 / 12th Street / Imjin Parkway interchange during 2003 provides the primary regional access to the project site. Other regionally important highways are Highway 101, the main north-south highway through Santa Clara and Monterey Counties, and the two east-west highways, linking Highway 101 to Highway 1; Highway 156 to the north of Marina; Highway 68 to the south of the project site; and Imjin Parkway, which extends from the project site to the east providing connectivity to Reservation Road, Blanco Road and Davis Road.

The senior adult housing portion of the project will be a gated community with gated entry points located on 3rd Avenue west of California Avenue and on 3rd Avenue near the southerly boundary of the project site. The apartment use would be accessed from 3rd Avenue, but would not be located within the gated portion of the project site. The future potential park site is located northwest of the Imjin Parkway/California Avenue intersection and would be accessed via 4th Avenue. On the northerly portion of the site, a new east-west road, Patton Parkway, would be constructed between California Avenue and the existing high school located near Crescent Avenue. Crescent Avenue would be extended south from Reindollar Avenue to connect with Patton Parkway. Patton Parkway and Crescent Avenue will provide access to the existing high school, the assisted living facility (if constructed) and future potential senior center site.

The traffic study analyzes that project as a gated project. This will prohibit non-project generated traffic to travel through the project site. Impacts associated with not gating the project are described qualitatively.

1.3 Traffic Operation Evaluation Methodologies

Intersection traffic operations were evaluated based on the Level of Service (LOS) concept. LOS is a qualitative description of an intersection and roadway's operation, ranging from LOS A to LOS F. Level of service "A" represents free flow un-congested traffic conditions. Level of service "F" represents highly congested traffic conditions with what is commonly considered unacceptable delay to vehicles on the road segments and at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes.

Intersection operations were evaluated using technical procedures documented in the *2000 Highway Capacity Manual* (HCM). For signalized intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent on a number of factors including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. *Appendix A1* shows the relationship between vehicle delay and the signalized intersection level of service categories. The TRAFFIX 7.7 software program was utilized to model the traffic impact of the different development scenarios and to calculate signalized and un-signalized intersection levels of service.

For all-way (or four-way) stop intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent on a number of factors including the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. *Appendix A2* shows the relationship between vehicle delay and the all-way stop intersection level of service categories.

At one- and two-way stop controlled intersections, the operating efficiency of vehicle movements that must yield to through movements are analyzed. The level of service for vehicle movement on the controlled approaches is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps. *Appendix A3* shows the relationship between the vehicle delay and level of service for two-way stop controlled intersections. The 2000 HCM calculates the level of service of the minor street approaches. Using this data, an overall intersection level of service was calculated. Both are reported in this study because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and are the most critical in terms of delay. Generally, LOS E/F operations on the side street approach are the thresholds that warrant improvements.

The operational analysis of the study freeway segments was based upon the *Highway Capacity Manual (HCM) 2000* methodologies, which uses vehicle density as the criteria for rating levels of service. Vehicle density is defined as passenger cars per mile per lane, and is the ratio of the traffic volume on a freeway segment over a one-hour period, divided by the product of the number of lanes on the segment and the travel speed. Levels of Service Descriptions for freeway segments are included as *Appendix A4*.

The freeway ramps were analyzed using the threshold volumes contained within *Appendix A5*, which are based on *HCM 2000* methodologies.

1.4 Modeling of Right Turn on Red (RTOR)

All of the signalized study intersections allow right turns on red (RTOR), and these right turns can have an effect on the intersection LOS calculations. However, for this study no allowance was made for RTOR, as insufficient information was available regarding the percentage of vehicles turning right on red. Furthermore, right turn overlap signal phasing has been installed at some of the intersections that facilitate right turns. The results of the intersection analyses can thus be seen as reflecting a worst-case scenario.

1.5 Level of Service Standards and Criteria for Significant Impact

The study area covers the jurisdiction of two local agencies: they are the City of Marina and Monterey County. Certain intersections and roadways in the study area fall under the jurisdiction of Caltrans, a state agency. The local agencies and the state agency have different level of service standards.

The City of Marina has established LOS D as the general threshold for acceptable overall traffic operations for both signalized and unsignalized intersections. All study intersections and street segments are under City of Marina jurisdiction, except the Blanco Road/Reservation Road intersection and Highway 1 and its interchanges.

The County of Monterey has established LOS C as its level of service standard. The intersection of Reservation Road and Blanco Road is in the County of Monterey.

The Caltrans level of service standard is the transition between LOS C and LOS D. Caltrans recognizes that achieving LOS C may not always be feasible in all situations, and LOS D is acceptable on a case-by-case basis. Caltrans has jurisdiction over Highway 1 and the Highway 1 interchanges including the intersections at the Highway 1/Imjin Parkway interchange.

The Caltrans LOS C standard would normally apply to the State controlled facilities and the LOS C threshold would apply to the Reservation Road/Blanco Road intersection. However, the Transportation Agency for Monterey County (TAMC) has indicated that LOS D should be used to determine where the regional roadway network would be operating at unacceptable LOS. The regional road network includes all of the State highways and the Marina to Salinas corridor, which includes Reservation Road and Blanco Road. Objective 2 of Goal 1.1 Road and Highway Transportation of the 2005 Regional Transportation Plan states the following:

> *"Design facilities included in TAMC's expenditure plan program of regional transportation projects to operate at LOS C, achieve at least LOS D on the regional roadway network by 2020, and maintain at least LOS D on regional roadways thereafter."*

It should also be noted that the LOS D standard is consistent with Caltrans' long-range goals, as described in the Transportation Concept Report (TCR) for Highway 1. The TCR states the following:

> *"The ability to provide capacity to accommodate rising volumes has become increasingly difficult in California. Historically, District 5 targeted a peak hour concept of LOS C or better for state highways. However, in each county, current operations, existing development patterns, environmental values, local plans, and/or projected growth are such that achieving even LOS D will require major improvements and concerted efforts to manage demand. In some segments, the California Coastal Act prohibits additional capacity."*

Therefore, LOS D was used in this study as the minimally acceptable level of service for

State and County facilities. It should be noted, however, that the conclusions of this report regarding the proposed project's traffic impacts would not change even if LOS C were used as the minimally acceptable level of service for State and County facilities based upon the significance criteria used for this study, as described below.

According to Appendix G of the State CEQA Guidelines, a project would have a significant effect on the environment if it would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. In accordance with the California Environmental Quality Act (CEQA) and agencies and professional standards, specific impact criteria have been applied to the study intersections and road segments to determine if the project specific increase in traffic is substantial in relation to the existing traffic load and capacity of the street system. The significance criteria incorporates the LOS D standard described above, but also establishes criteria for evaluating significance when pre-project operations exceed the LOS D standard. The analysis contained in this traffic study is based upon the significance criteria listed below.

A significant impact at a **signalized study intersection** is defined to occur under the following conditions:

- The addition of project traffic causes pre-project operations to deteriorate from acceptable level (LOS D or better) to an unacceptable level (LOS E, or LOS F), or
- The addition of project traffic increases the pre-project average delay by more than 1.0 second at intersections operating at LOS E or LOS F.

A significant impact at an **unsignalized study intersection** is defined to occur under the following scenarios:

- The addition of project traffic causes operations to deteriorate from an acceptable level (LOS E or better on side street for two-way stop control, LOS D or better for all-way stop control) to an unacceptable level (LOS F on side street for two-way stop control, LOS E for all-way stop control), or
- Two-way or one-way stop controlled intersection: the project adds traffic to any intersection movement that results in an increase to the delay for any approach operating at LOS F pre-project;
- All-way stop control: the project adds traffic to an all-way stop controlled intersection operating at LOS E or worse pre-project that results in an increase to the overall intersection delay, or
- The Caltrans peak-hour volume signal warrant is met, or
- The left-turn channelization warrant is met.

A significant impact on a **study roadway/highway segment** is defined to occur under the following scenarios:

- The addition of project traffic causes a roadway segment operating at an acceptable level (LOS D or better) pre-project to degrade to an unacceptable level (LOS E, or LOS F), or
- The addition of project traffic causes a roadway segment operating at LOS E to degrade to LOS F, or
- The addition of one project trip to a segment operating at LOS F pre-project.

1.6 Scope of Work

The scope of work for this traffic study was developed to identify the potential project and cumulative traffic impacts associated with the development of the Cypress Knolls project. The traffic study includes a traffic impact analysis of intersection traffic operations at 25 intersections, five Highway 1 freeway segments, four freeway ramps and 14 street segment during typical weekday AM and PM peak hours.

Intersections and segments were selected for analysis collaboratively with City staff based on the potential for the project to impact the facility. An initial trip distribution analysis for the project determined that project trips would be oriented to Highway 1, the Reservation Road/Blanco Road/Davis Road corridors, as well as the local Marina Street network. A principal study area was identified bounded by Highway 1 on the west, Reservation Road on the north and Imjin Parkway on the south. Within the study area, the intersections and segments that would potentially be impacted by the project were identified and included in the analysis. Additionally, Caltrans was consulted on the scope of the study and those requests have been addressed. The study intersections and segments are shown on Exhibits 3A and 3B.

The local streets and intersections included in the analysis were identified as potentially having the greatest impact from the project based on preliminary analysis of project trip generation and trip distribution. The boundaries of the study have been selected to include intersections and segments that presently experience some congestion and or may be measurably affected during the peak commute hours. Beyond the limits of the study area, the project trips disperse onto numerous local streets and regional facilities. As the distance from the project increases the number of trips considered reduces and the distribution assumptions are less reliable. Exhibits 7A and 7B corroborate that the number of new trips assigned to local intersections on the outer periphery of the study area is so low that the effect on facilities can not be measured with any degree of confidence.

The anticipated regional traffic impact from all FORA development projects were evaluated as part of the Fort Ord Base Reuse EIR, certified in 1997. The traffic impact identified at that point in time based upon the FORA Reuse Plan were used as the basis for the FORA traffic impact fee and the Capital Improvement Program (CIP).

Recently (April 2005), the FORA CIP was updated as part of the FORA Fee Reallocation Study. The FORA Fee Reallocation Study re-evaluated on-site, off-site and regional improvements with current land use and road network data and projections. The Reallocation Study used the updated AMBAG Travel Demand Model that includes more recent travel survey data to document travel demand and existing traffic conditions throughout the region. The model includes the three AMBAG counties and Santa Clara County. The Study uses the most current Master Plan for CSUMB and the specific plans for Marina Heights, Seaside Highlands, East Garrison and the prior specific plan prepared for Cypress Knolls. The Reallocation Study states: "Overall, the growth projections are consistent with AMBAG's current land use forecast, and are also consistent with the Fort Ord Base Reuse Plan for the former Fort Ord area. However, within the total development envelope under the Base Reuse Plan, the study reflects the current pattern of development and the actual road networks included in the specific plans and other City and County Plans."

The updated FORA CIP as adopted on April 8, 2005 identified new improvements that will better mitigate the projected impacts based on current lane use and circulation plans. The regional impacts that have been identified in the FORA Fee Reallocation Study were mitigated by the improvements included in the Fee Reallocation Program. Because the proposed project is consistent with the Reuse Plan's land use assumptions and plans for the project site, therefore, the proposed project's payment of the FORA development impact fee satisfies its fair share contribution towards regional infrastructure improvements. For this reason, an impact analysis of regional facilities (i.e., Highway 156, Highway 68, Highway 1 north and south of the study area, Highway 101 and Highway 183) is not included in this study.

Caltrans requested that the Highway 1/Lightfighter interchange and the Highway 1/Reservation Road interchanges be studied in addition to the Highway 1/Imjin Parkway (12th Street) interchange. Only the Highway 1/Imjin Parkway (12th Street) interchange was evaluated for this study because it is located immediately adjacent to the project site and will provide primary access between Highway 1 and the project site. Most if not all of the project generated traffic using Highway 1 is expected to access Highway 1 via the Highway 1/Imjin Parkway (12th Street) interchange. The project contribution of vehicle trips to the Lightfighter and Reservation Road interchanges is expected to be deminimus because few project residents and visitors will use these interchanges because they will use the interchange closest to the project site for access to Highway 1.

The study intersections are shown on Exhibit 3A. All study intersections are located within the jurisdiction of the City of Marina expect the Highway 1/Imjin Parkway interchange ramp intersections, which are under the control of Caltrans, and the Reservation Road/Blanco Road intersection, which is under the control of Monterey County.

Exhibit 3B identifies the highway and street study segments. All segments are within the jurisdiction of the City of Marina expect the Highway 1 freeway and ramp segments, which are under the control of Caltrans.

The traffic scenarios evaluated as part of this traffic study are:

1. Existing Traffic Conditions;
2. Existing Plus Project Traffic Conditions;
3. Background (Existing Plus Approved Projects) Traffic Conditions;
4. Background Plus Project Traffic Conditions;
5. Cumulative Without Project Traffic Conditions;
6. Cumulative With Project Traffic Conditions.

Traffic forecasts for this study were developed using a TRAFFIX model for the Marina/FORA area. The model includes approved and planned projects in the Marina/Seaside/FORA area. Peak hour trips generated by each of the projects are estimated using trip generation rates published by the Institute of Transportation

Engineers (ITE), 7th Edition, or San Diego Association of Governments (SANDAG). The SANDAG rates were used where ITE does not provide a rate. For example, SANDAG trip rates were used for the City Park land use and SANDAG AM peak hour trip rates were used for the Specialty Retail land use.

The trips are assigned to the local road network using trip distribution patterns developed by the AMBAG traffic forecasting model. The trip assignments developed for individual development projects are combined with existing traffic volumes to obtain traffic forecasts for the various study scenarios. The process provides an intersection level analysis, which is required for the environmental evaluation of project impacts. The AMBAG model itself does not provide intersection level turning movement traffic forecasts.

The approved and pending projects modeled in the study include commercial retail uses. Not all of the trips generated by these uses will be new trips added to the road network. Some of the trips generated by the commercial retail uses will be captured from the existing or background traffic traveling past the site. The trip generation for some of the commercial retail uses modeled in this study was adjusted to account for the capture of pass-by capture. The Cypress Knolls project does not include any commercial retail uses that would capture trips from the adjacent street network, but other projects including the Marina University Villages and Marina Station projects include commercial retail uses. Traffic impact study guidelines published by Caltrans recommend a pass-by reduction factor of 15%. For this study, pass-by factors greater than 15% were used for some of the land uses. For example, a 25% pass-by rate was used for fast food restaurants and a 30% pass-by rate was used for convenience stores. A pass-by rate of 20% was used for the PM peak hour trips generated by the Marina University Villages commercial retail uses located adjacent to Imjin Parkway. While these rates exceed the pass-by rate recommended by Caltrans, the rates used for this study are lower than rates published by ITE. For example, the PM peak hour ITE pass-by rate for shopping centers is 34%, the pass-by rate for fast food restaurants is 50% and the pass-by capture rate for convenience markets is 61%. The pass-by rates used for this study are less than rates documented by ITE and provide a reasonable worst-case evaluation of the trip generation associated with new development in the area.

1.7 Road Network Assumptions

Exhibit 3C shows the road network configuration assumed for each analysis scenario. The project will construct Patton Parkway and the extension of Crescent Avenue to the south to Patton Parkway in conjunction with the development of the project.

For the analysis of Background Conditions, improvements that are planned to be installed in conjunction with the development of the approved Marina Heights project and first phase of the approved Marina University Villages were assumed to be constructed. In addition, California Avenue between Reindollar Avenue and Carmel Avenue is assumed to be completed. This segment is currently under construction. The Marina Heights improvements include the construction of Main Street and the elimination of the east leg of the California Avenue/3rd Avenue intersection.

The Cumulative Condition road network with and without the project includes improvements included in the Marina Transportation Facilities Impact Fee (TIF) and the Fort Ord Reuse Plan Capital Improvement Program. These improvements include the 2nd Avenue Extension between Del Monte Boulevard and Imjin Parkway. In this scenario, Patton Parkway is extended to the 2nd Avenue Extension. In addition to these links, intersection improvements identified in the Marina TIF program were assumed to be constructed.

2 EXISTING TRAFFIC CONDITIONS

This chapter presents a description of the existing traffic network, existing traffic volumes, intersection levels of service, and an overview of traffic flow conditions within the study area under existing traffic conditions.

2.1 Existing Traffic Network

The primary Regional access to the Cypress Knolls project site is provided by Highway 1. Other significant regional highways are, Highway 101, Highway 156 and Highway 68. Important streets relevant to the Cypress Knolls project are Reservation Road, Del Monte Boulevard, Imjin Parkway, Imjin Road, 2nd Avenue, California Avenue, Fourth Avenue, Third Street, Reindollar Avenue and Crescent Avenue. A brief description of the key roadways serving the Cypress Knolls site is provided below.

Highway 1 is a state highway within Monterey County, providing access to Watsonville and Santa Cruz to the north via Castroville, and Marina, and San Luis Obispo to the south, via Seaside, Monterey, and Carmel. Through its connection to Highway 156 in Castroville, it also provides access to Highway 101 and the greater San Francisco Bay Area. In the vicinity of the project, it is a four-lane freeway north of the southern Del Monte Boulevard interchange and south of Fremont Boulevard, and a six-lane freeway between the southern Del Monte Boulevard and Fremont Boulevard interchanges.

Reservation Road is a major arterial extending from Marina State Park west of Dunes Drive, through the City of Marina, connecting to Highway 68 south of Salinas. Between Marina State Park and Del Monte Boulevard, Reservation Road is two lanes wide with left turn channelization at key intersections. Between Del Monte Boulevard and Blanco Road, Reservation Road is a four-lane divided roadway. East of Blanco Road, it narrows to a two-lane rural highway. Reservation Road is under the jurisdiction of the City of Marina west of Blanco Road and the County of Monterey east of Blanco Road.

Blanco Road is a major arterial extending from Reservation Road to the City of Salinas. Between Reservation Road and the Salinas River Bridge, Blanco Road is four-lanes wide with left turn channelization at key intersections. The remainder of its length to Salinas, it is a two-lane rural highway.

Del Monte Boulevard is a major arterial within western City of Marina, extending from a partial interchange (SB on- and NB off ramps only) with Highway 1 north of Imjin Parkway (Twelfth Street) to Highway 1 north of Marina. In the project vicinity, Del Monte Boulevard is a four-lane divided roadway.

Imjin Parkway is an arterial roadway within the City of Marina city limits. Imjin Parkway is a four-lane divided roadway with left turn channelization east of the Highway 1 interchange to the intersection with Imjin Road.

Imjin Road is a two-lane arterial between Reservation Road and Eighth Street. Imjin Road provides access to the Marina Municipal Airport and the UC-MBEST development located north of Reservation Road, the Marina University Villages project and CSUMB located in southern Marina, and residential developments in between.

2nd Avenue is a four-lane divided arterial between Light Fighter Drive and Imjin Parkway.

California Avenue is a two-lane roadway connecting the former Fort Ord area with central City of Marina. At present there is a disconnected portion of California Avenue between Carmel Avenue and Reindollar Avenue. This missing connection will be constructed in future to enable California Avenue to link Reservation Road to Imjin Parkway.

Fourth Avenue is a northerly extension of General Jim Moore Boulevard, serving as the primary north-south roadway through the CSUMB campus and has been functioning as an important two-lane arterial in the former Fort Ord road network.

Reindollar Avenue is a two-lane roadway within the southern portion of central City of Marina, providing access to adjacent businesses and residential neighborhoods.

Abrams Drive is a two-lane roadway within former Fort Ord military housing areas. Much of the housing has remained unoccupied since the closure of the army base. However, some of the homes are currently on CSUMB property and are being used for student, staff, and faculty housing.

2.2 Existing Transit Systems

The largest single public transit provider in Monterey County is the Monterey-Salinas Transit (MST). The Monterey-Salinas Transit operates from five key transit centers, the Monterey Transit Plaza, Salinas Transit Center, Watsonville Transit Center, Edgewater Transit Exchange, and Marina Transit Exchange. Each of these centers operates on a time-transfer "pulse" schedule providing easy connections and quick transfers to multiple routings.

MST currently operates two public bus routes that service the Cypress Knolls area. Route 17 travels on Imjin Parkway between Imjin Road and 3rd Avenue and a segment of Reindollar Road between Vaughn and Bostick. Route 16 travels on Imjin Parkway between Highway 1 and 2nd Avenue. Neither bus route provides direct connections to Cypress Knolls. MST Route 20 provides a direct link to Salinas and Monterey and Route 27 provides service to Watsonville and Monterey from the Marina Transit Center.

2.3 Existing Bikeway and Pedestrian Facilities

There are three basic types of bicycle facilities in the Monterey Peninsula. Each type is described below:

- Bike path (Class I) - A completely separate right-of-way designed for the exclusive use of cyclists and pedestrians, with minimal crossings for motorists.

- Bike lane (Class II) - A lane on a regular roadway, separated from the motorized vehicle right-of-way by paint striping, designated for the exclusive or semi-exclusive use of bicycles. Bike lanes allow one-way bike travel. Through travel by motor vehicles or pedestrians is prohibited, but crossing by pedestrians and motorists is permitted.
- Bike route (Class III) - Provides shared use of the roadway, designated by signs or permanent markings and shared with motorists.

Bike facilities

The majority of the roadways in close proximity to the Cypress Knolls project site do not have dedicated bicycle lanes. Existing bikeways in the project vicinity are shown on Exhibit 4B. A Class 1 bikeway is located along Imjin Parkway from Imjin Road to Highway 1 and a Class 2 bikeway is located along California Avenue from Imjin Parkway to its current terminus.

Pedestrian facilities

The existing road and associated pedestrian walkways in the former Fort Ord were designed to serve the needs of a military base. There are thus limited adequate existing pedestrian routes in the proximity of the proposed Cypress Knolls site. A sidewalk is provided on California Avenue between Imjin Parkway and Reindollar Avenue on the east side of the road.

2.4 Existing Traffic Data

To establish existing traffic flow conditions, new traffic counts were conducted at the study intersections during the weekday AM (i.e. 7:00 – 9:00 am) and PM (i.e. 4:00 – 6:00 pm) peak hours. The date the intersection volumes were collected at each intersection are shown in *Appendix B*. From the peak period traffic counts, the AM and PM peak hour turning movement volumes were identified.

Most of the intersections were counted in 2004. Counts were conducted at the following five intersections in 2005:

1. Imjin Parkway/Preston Drive (January 2005)
2. Imjin Parkway/2nd Avenue (February 2005)
3. California Avenue/Carmel Avenue (April 2005, PM peak hour)
4. Reindollar Avenue/Redwood Avenue (April 2005)
5. Del Monte Boulevard/Reindollar Avenue (March 2005)

Because all of the counts were not collected on the same day and in different years, the counts did not necessarily balance between intersections. The intersection traffic volumes were balanced between adjacent intersections along the arterial corridors to account for variations in the counts. Along each corridor, the intersection with the highest approach volume was selected as the controlling volume and volumes at the other intersections along the corridor were balanced between intersections to the controlling volume, regardless of the year that the count was collected. This provides a reasonable worst-case analysis as the highest volume of traffic observed over the last two years was used for the study. The existing peak hour traffic volumes are presented on Exhibits 5A and 5B.

AM and PM peak period counts of Highway 1 traffic were performed in January of 2005 to establish existing traffic volumes on Highway 1. Peak period traffic counts collected at the ramp intersections at the Highway 1/Reservation Road and Highway 1/Del Monte Boulevard (North) interchanges in January and February of 2005 were used with the peak hour volumes at the Highway 1/Imjin Parkway interchange to establish Highway 1 segment volumes from south of the Imjin Parkway interchange to north of the Del Monte Boulevard (North) interchange.

The following discussion provides an evaluation of operating conditions for the study intersections, freeway segments and ramps under existing traffic conditions.

2.5 Existing Conditions Intersection Operations

Existing conditions AM and PM intersection levels of service are summarized on Exhibits 6A & 6B. The LOS calculation sheets for existing traffic conditions can be found in *Appendix C.* The traffic signal warrant and channelization warrant worksheets are included as *Appendix D.*

All but one of the study intersections operate at or better than the operational LOS standards utilized for this study. Currently, the Southbound Highway 1 Ramps/Imjin Parkway intersection (Intersection #16) is operating at unacceptable levels during the AM and PM peak hours.

In addition, the following unsignalized intersections are experiencing LOS F operations on the stop-controlled minor street approaches during one or both of the peak commute periods:

Intersection #2: California Avenue/Reservation Road;
Intersection #19: Third Avenue/Imjin Parkway; and
Intersection #20: Fourth Avenue/Imjin Parkway.

2.6 Existing Traffic Conditions - Roadway Segment Operations

Existing morning and evening peak hour volumes on the study highway and street segments are tabulated on Exhibit 8A. These are based upon the turning volumes illustrated on Exhibits 5A and 5B and the freeway counts performed on Highway 1 at the Imjin Parkway overcrossing.

Threshold volumes provided in *Appendix A5* were used in the evaluation and serve primarily as a general guide as to whether roadway segments operate properly. However, other factors may affect traffic flow conditions on roadway segments including intersection channelization design, type of traffic control devices, bicycle and pedestrian volume, driveway activities, average travel speed, and on-street parking activities. The weaving section level of service calculation worksheets are contained in *Appendix K.*

All of the study road segments and freeway ramps currently operate at acceptable levels of service.

3 EXISTING PLUS PROJECT TRAFFIC CONDITIONS

This section of the report describes the analyses of the study road network under Existing Plus Project traffic conditions. The section includes the analysis of project trip generation, distribution and assignment.

3.1 Project Traffic Scenario Description

As described in Section 1.1 ("Project Description") of this report, the Cypress Knolls project will primarily consist of a retirement community consisting of 596 units located in a gated community that includes a Community Center Clubhouse. Other items described in Section 1.1 would be located outside of the gated community. In addition, the project includes a 20 acre park site. Exhibit 9 shows a summary of the project land use.

3.2 Project Trip Generation

Exhibit 9 contains the trip generation estimate for the project, which is based upon trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation*, 7th Edition, 2003 and San Diego Association of Governments (SANDAG) *Vehicular Traffic Generation Rates*, 2003.

The ITE trip generation rates for the Senior Adult Housing - Detached land use category was used to estimate the trip generation for the senior/retirement housing component of the project. The Senior Adult Housing trip rates are based on survey of existing senior/retirement communities that have demographic characteristics similar to the proposed project.

Because ITE does not publish trip rates for a park, the SANDAG City Park trip rates were used to estimate the volume of traffic that would be associated with the park should the City determine in the future to proceed with that project.

The project would generate 4,630 daily trips, with 266 trips generated during the AM peak hour and 363 trips generated during the PM peak hour. Potentially, the park site may be developed as a K-8 school in the future. For this study, the analysis of Existing Plus Project Conditions and Background Plus Project evaluates the park site developed as a park. For the analysis of Cumulative Conditions, a K-8 school is assumed to be developed on the park site because, even though the City would not be amending the General Plan and/or zoning to designate this site for a school (but rather would be making such amendments to allow a park) the School District has expressed interest in possibly developing the park site with the school at some point in the future.

3.3 Project Trip Distribution and Assignment

A trip distribution for the project was developed based on origin/destination matrices provided by AMBAG for Marina. Exhibit 10 shows the project trip distribution. As previously discussed, the forecasting process using the TRAFFIX model provides an intersection level analysis that is not provided by the AMBAG model.

Exhibits 11A and 11B show the project trips assigned to the 25 study intersections. The project trips in Exhibits 11A and 11B were added to the existing traffic volumes to create Existing Plus Project traffic volumes. These traffic volumes are shown on Exhibits 12A and 12B.

The development of the Cypress Knolls project will impact the access to the existing school and Head Start facility that are currently accessed via 3rd Avenue. Access to these facilities will be provided by the construction of Patton Parkway and the Crescent Avenue extension to Patton Parkway.

3.4 Existing Plus Project Traffic Conditions - Intersection Impacts

The traffic that would be generated by the project was combined with the existing traffic to provide existing plus project traffic volumes. Existing plus project morning and evening peak hour turning volumes are illustrated on Exhibit 12A and 12B. Exhibits 6A and 6B tabulate corresponding morning and evening peak hour levels of service. Level of service calculation worksheets are presented in *Appendix E.*

Based upon the significance criteria described in Section 1.5, the project will significantly impact the following intersections:

Intersection #16: Southbound Highway 1 Ramps/Imjin Parkway;
Intersection #19: Third Avenue/Imjin Parkway; and
Intersection #20: Fourth Avenue/Imjin Parkway.

Mitigation measures to reduce the project's impact at the four intersections are described below. The mitigated intersection level of service calculations are contained in *Appendix L.*

Southbound Highway 1 Ramps/Imjin Parkway – Intersection # 16: The project would add traffic to the southbound Highway 1 ramp approach to Imjin Parkway, which operates at LOS F under Existing Conditions. This is a significant project impact. To mitigate the project's impact to the intersection, the following improvement would be required:

o Signalize the intersection.

This improvement is included in the City of Marina Capital Improvement Program as Traffic Intersection (TI) 22. The improvement is also included in the TIF, toward which the project will contribute. The City is scheduled to construct this improvement in the 2007/2008 timeframe. The Cypress Knolls project will pay its share of the cost of this improvement and mitigate its impact through the payment of the TIF.

Third Avenue/Imjin Parkway – Intersection # 19: The project would add traffic to the southbound and northbound Third Avenue approaches to Imjin Parkway. These approaches operate at LOS F under existing conditions during the AM and PM peak hours. The delay on the approaches currently operating at LOS F increase with project trips added to the intersection creating a significant project impact. Widening the southbound and northbound approaches to provide more lanes on these approaches would not mitigate the incremental delay caused by the project at this intersection. Signalization of the intersection would mitigate the incremental delay, but the peak hour volume traffic signal warrants would not be met at the intersection based on Existing Plus Project Condition AM and PM peak hour volumes. The City's Capital Improvement Program includes constructing a traffic signal at the intersection (TI 6). This improvement is included in the City's TIF. The project's payment of the City of Marina TIF will mitigate the project's impact at this location.

However, traffic signals are not installed unless the need for the signal is established by an engineering study that includes an evaluation of peak hour and 8-hour volumes at the intersection. To mitigate the project's impact at this prior to the installation of the signal, the following improvement would be required:

- o Modify the median opening at the Imjin Parkway/Third Avenue intersection to prohibit left turns and through movements from the Third Avenue approaches to Imjin Parkway.

The developer will be required to install these interim improvements. The median closure can be accomplished using channelizers so that the closure can be easily reversed in the future when the signal is installed. Left turn movements from the Third Avenue approaches can be accomplished by either turning right onto Imjin Parkway from Third Avenue and performing a u-turn movement at an another intersection along Imjin Parkway or by accessing the signalized intersection of Imjin Parkway and 2nd Avenue via the local street network (i.e., 12th Street or 9th Street). Closure of the median opening on Imjin Parkway at Third Avenue should be reassessed as new development in the area occurs.

<u>Fourth Avenue/Imjin Parkway – Intersection # 20:</u> The project will add traffic to the intersection that would cause the existing LOS F operations on the 4th Avenue approaches to worsen, resulting in a significant impact. Widening the southbound and northbound approaches to provide more lanes on these approaches will not mitigate the incremental delay caused by the project at this intersection. Signalization of the intersection would mitigate the incremental delay. The City's Capital Improvement Program includes constructing a traffic signal at the intersection (TI 9). This improvement is included in the City's TIF. The project's payment of the City of Marina TIF will mitigate the project's impact at this location.

The peak hour volume traffic signal warrants would not be met at the intersection based on Existing Plus Project Condition AM and PM peak hour volumes. To mitigate the project's impact at this intersection prior to installation of the signal, the following improvement would be required:

- o Modify the median opening at the Imjin Parkway/Fourth Avenue intersection to prohibit left turns and through movements from the Fourth Avenue approaches to Imjin Parkway.

The developer shall be required to install these improvements. The median closure can be accomplished using channelizers so that the closure can be easily reversed in the future. Left turn movements from the Fourth Avenue approaches can be accomplished by either turning right onto Imjin Parkway from Fourth Avenue and performing a u-turn movement at the another intersection along Imjin Parkway or by accessing the signalized intersection of Imjin Parkway and 2nd Avenue via the local street network (i.e., 12th Street or 9th Street). Closure of the median opening on Imjin Parkway at Fourth Avenue should be reassessed by the City as new development in the area occurs.

The City's CIP provides for signalization of the Imjin Parkway intersections at 2nd Avenue, Third Avenue, Fourth Avenue, California Avenue and Imjin Road, creating five signalized intersection within an approximate two mile segment of Imjin Parkway. These signals will need to be linked as a coordinated system to maintain efficient operations along corridor. As described above, restricting some movements at some intersections may be desirable, at least in the near-term. It may be feasible to restrict movements longer term at some intersections, particularly the Fourth Avenue intersection, but this would depend on how the local area develops and on the circulation system developed for the area. Besides Cypress Knolls, Monterey Peninsula College is developing a satellite campus on the north side of Imjin Parkway at Third Avenue that will have an estimated capacity of over 8,000 students. The FORA Authority is developing office space on the north side of Imjin Parkway at 2nd Avenue. University Villages is developing on both the north and south sides of Imjin Parkway. It is recommended that a sub-area study be prepared by the City of the Imjin Parkway corridor to evaluate circulation and access alternatives for the area. 12th Street is located north of and parallel to Imjin Parkway and is a key east-west circulation route in the corridor area. However, its current alignment between Third Avenue and 2nd Avenue may not provide the most efficient circulation pattern given the projects that are being proposed for the area. The ability to provide and maintain efficient operations along the Imjin Parkway corridor depends, in part, on coordinating the access provided to all new develop located on the north side of Imjin Parkway. The sub-area study could be accomplished in conjunction with the Project Study Report of the Highway 1/Imjin Parkway interchange.

3.5 Existing Plus Project Traffic Conditions - Road Segments

Existing Plus Project Condition morning and evening peak hour volumes on the study street segments are tabulated on Exhibit 8A. These are based upon turning volumes illustrated on Exhibits 12A & 12B. Exhibit 8A also tabulates corresponding street segment levels of service. The roadway segment level of service is based on the threshold volumes as shown in *Appendix A5* and the HCM 2000 methodologies. The weaving section level of service calculation worksheets are contained in *Appendix K.*

Under Existing Plus Project Conditions, all the study highway and street segments would operate at acceptable levels of service. The project will not significantly impact any of the street and highway segments analyzed for this study.

3.6 Existing Plus Project Traffic Conditions – Potential Impacts With Alternative Project Description

The Assisted Living Facility is proposed as an optional component of the project and, if constructed, it would be located on Patton Parkway, outside of the gated portion of the project site. The Assisted Living Facility would generate 10 AM peak hour trips and 23 PM peak hour trips, which is a relatively small volume of trips. If the Assisted Living Facility is not constructed, there would be no change to the findings and conclusions of the analysis of Existing Plus Project Conditions.

The project is proposed to be a gated facility. The land uses that would be located within the gated portion of the site include the senior housing, community center and club facility. The assisted living, apartments and park/school uses would be located outside of the project gates.

Whether the facility is gated or not would not impact the circulation patterns or the number of trips generated within the gated portion of the site; trips generated within the gated portion of the site access the site via California Avenue and Imjin Parkway. The gates will prohibit the use of Third Avenue as a link between 12th Street and California Avenue. This will limit the access/circulation opportunities for the development located generally on the north side of Imjin Parkway on either side of Third Avenue. This includes the Cypress Knolls apartment land use and the Monterey Peninsula College Satellite Campus, which is located at along Third Avenue north of Imjin Parkway.

If the project was not gated, traffic volumes on Third Avenue between Imjin Parkway and California Avenue would be higher than modeled in this study. Existing traffic would use the route to travel between the Imjin Road and California Avenue corridors. Trips generated by the Cypress Knolls apartment project would also use Third Avenue to access California Avenue. Should the project not be gated, traffic calming measures would be appropriate on Third Avenue through the project site to reduce the desirability of Third Avenue through the project site for circulation between Imjin Parkway and California Avenue. Potentially, traffic volume increases on the Third Avenue approaches to California Avenue and Imjin Parkway as a result of no gates could require additional lanes on these intersection approaches due to increased use of Third Avenue. Opening Third Avenue could reduce traffic volumes on Imjin Parkway between Third Avenue and California Avenue and on California Avenue between Third Avenue and Imjin Parkway, resulting in better traffic operations on these segments.

4 BACKGROUND TRAFFIC CONDITIONS

This chapter presents a description of the traffic network, traffic volumes, and intersection levels of service within the study area under background (existing plus approved projects) traffic conditions.

4.1 Approved Projects Description

A number of other projects have been approved within the study area that have not yet been constructed. These projects include projects approved by the City of Marina, and projects approved by other agencies. Exhibit 13 provides a list of these projects as well as the trip generation associated with these projects. The list of approved projects was compiled from traffic studies prepared for other projects in the Monterey Peninsula area. In addition, the planning departments at the various Monterey Peninsula jurisdictions were contacted to provide an updated list of approved projects. The locations of the approved projects are shown on the map provided in *Appendix F*. These projects will impact the study street network prior to impacts being experienced by the proposed project because these projects are planned to be completed before the project is completed.

Included in the background projects is an account for the anticipated growth of CSUMB and the number of trips that would be generated. An estimation of the CSUMB trip generation under background conditions was based on the phased student and staff growth provided by the University. Also included in the Background Condition is the Marina Heights project and Phase 1 of the Marina University Villages project, including the traffic improvements provided by or required of those projects (in the case of University Villages, the improvements to be provided or required concurrent with Phase I development were included). The assumptions utilized for the Background Condition development are consistent with the assumptions used for the traffic analysis for the University Villages project.

The approved projects, as well as CSUMB at the background level would generate a total of 122,805 daily trips, with 6,884 trips during the AM peak hour and 11,287 trips during the PM peak hour. These trips were assigned to the area road network and subsequently added to the existing traffic volumes to create the background traffic volumes depicted on Exhibits 14A and 14B.

4.2 Background Traffic Conditions - Intersection Operations

The traffic that would be generated by the approved projects and CSUMB growth was combined with the existing traffic to provide Background Conditions traffic volumes. Background morning and evening peak hour turning volumes are illustrated on Exhibit 14A & 14B. Exhibits 6A & 6B tabulate corresponding morning and evening peak hour levels of service. The Background Condition level of service worksheets are presented in *Appendix G.* The intersection levels of service shown on Exhibits 6A and 6B are based upon existing intersection geometrics.

The following intersections would operate at unacceptable levels under Background Conditions:

Intersection #3: Imjin Road/Reservation Road;
Intersection #4: Imjin Road/Reservation Road;
Intersection #19: Third Avenue/Imjin Parkway;
Intersection #20: Fourth Avenue/Imjin Parkway;
Intersection #21: California Avenue/Imjin Parkway;
Intersection #25: Imjin Road/Preston Drive.

4.3 Background Traffic Conditions - Road Segments

Background morning and evening peak hour volumes on the study street segments are tabulated on Exhibit 8A. These are based upon turning volumes illustrated on Exhibits 14A & 14B. Exhibit 8A also tabulates corresponding street segment levels of service. The roadway segment level of service is based on the threshold volumes as shown in *Appendix A5* and the HCM 2000 methodologies. The weaving section level of service calculation worksheets are contained in *Appendix K.*

All the study highway and street segments would operate at acceptable levels of service under Background Conditions except the northbound Highway 1 segment south of Imjin Parkway, which would operate at LOS E during the PM peak hour.

Third Avenue/Imjin Parkway – Intersection # 19: This intersection was analyzed assuming all turning movements are allowed. The project will cause the average delay experienced by vehicles on the Third Avenue approaches to Imjin Parkway, which operate at LOS F under Background Conditions, to increase. This is a significant project impact. The peak hour volume traffic signal warrant would be met during the PM peak hour. To mitigate the project's impact at this intersection, the following improvement would be required:

- o Signalize the intersection.

The City's Capital Improvement Program (which also includes anticipated timing for included improvements) includes constructing a traffic signal at the intersection (TI 6). This improvement is included in the City's TIF. The project's payment of the City of Marina TIF will mitigate the project's impact at this location.

Fourth Avenue/Imjin Parkway – Intersection # 20: The project will add traffic to the intersection that would cause the existing LOS F operations on the 4th Avenue approaches to worsen, resulting in a significant impact. Signalization of the intersection would mitigate the incremental delay. The City's Capital Improvement Program includes constructing a traffic signal at the intersection (TI 9). This improvement is included in the City's TIF. The project's payment of the City of Marina TIF will mitigate the project's impact at this location.

Background Plus Project peak hour volumes do not approach levels that would warrant the installation of a traffic signal. To mitigate the project's impact at this intersection prior to installation of the signal, the following improvement would be required:

- o Modify the median opening at the Imjin Parkway/Fourth Avenue intersection to prohibit left turns and through movements from the Fourth Avenue approaches to Imjin Parkway.

The developer shall be required to install these improvements. The median closure can be accomplished using channelizers so that the closure can be easily reversed in the future. Left turn movements from the Fourth Avenue approaches can be accomplished by either turning right onto Imjin Parkway from Fourth Avenue and performing a u-turn movement at the another intersection or by accessing the signalized intersection of Imjin Parkway and 2nd Avenue via the local street network (i.e., 12th Street or 9th Street). Closure of the median opening on Imjin Parkway at Fourth Avenue should be reassessed as new development in the area occurs.

California Avenue/Imjin Parkway – Intersection # 21: This intersection operates at LOS F under Background Conditions during the AM peak hour and the proposed project would increase the delay at this intersection 9.7 seconds, creating a significant project impact. Adding a right turn lane on the southbound California Avenue approach to Imjin Parkway would mitigate the project impact.

5 BACKGROUND PLUS PROJECT TRAFFIC CONDITIONS

This section of the report describes the analyses of the study road network under Background Plus Project traffic conditions. The section includes the analysis of project trip generation, distribution and assignment.

5.1 Background Plus Project Traffic Volumes

The project trip assignments shown in Exhibits 11A and 11B were adjusted to account for the completion of California Avenue between Carmel Avenue and Reindollar Avenue, which is included Background Condition road network. The adjusted project trip assignments were added to the background traffic volumes to create Background plus Project traffic volumes. These traffic volumes are shown on Exhibits 15A and 15B.

5.2 Background Plus Project Traffic Conditions – Intersection Impacts

Exhibits 6A and 6B tabulate corresponding morning and evening peak hour levels of service. Level of service calculation worksheets are presented in *Appendix H.*

Based upon the significance criteria described in Section 1.5, the project would create significant impacts at the following intersections:

Intersection #19: Third Avenue/Imjin Parkway;
Intersection #20: Fourth Avenue/Imjin Parkway; and
Intersection #21: California Avenue/Imjin Parkway.

In addition, a left turn is warranted on the northbound California Avenue approach to Patton Parkway (Intersection #13).

Mitigation measures for the Background Plus Project Condition are described below. The mitigated intersection level of service calculations are contained in *Appendix M.*

<u>California Avenue/Patton Parkway -- Intersection # 13:</u> The left turn warrant will be met for the northbound left turn movement from California Avenue to Patton Parkway based upon the AM peak volumes. This is a significant project impact. To mitigate the project's impact at this intersection, the following improvement would be required:

- Add a left turn lane on the northbound California Avenue approach to Patton Parkway.

This project is not currently included in the City's CIP or the FORA CIP and it is not a condition of development for any other approved projects. Construction of this improvement at the time that Patton Parkway is constructed by the project would mitigate the project's impact at this intersection. The left turn lane can be added to California Avenue without requiring additional right-of-way.

This improvement is included in the City of Marina Capital Improvement Program as Traffic Intersection (TI) 25. The improvement is also included in the TIF, toward which the project will contribute. The Cypress Knolls project will pay its share of the cost of this improvement and mitigate its impact through the payment of the TIF.

5.3 Background Plus Project Traffic Conditions - Road Segments

Background Plus Project Condition morning and evening peak hour volumes on the study street segments are tabulated on Exhibit 8A. These are based upon turning volumes illustrated on Exhibits 15A & 15B. Exhibit 8A also tabulates corresponding street segment levels of service. The roadway segment level of service is based on the threshold volumes as shown in *Appendix A5* and the HCM 2000 methodologies. The weaving section level of service calculation worksheets are contained in *Appendix K.*

Based upon the significance criteria described in Section 1.5, the project would not significantly impact the study road and highway segments.

5.4 Background Plus Project – Potential Impacts With Alternative Project Description

If the Assisted Living Facility were removed from the project, there would be no change to the findings and conclusions of the analysis of Background Plus Project Conditions.

The discussion in the Existing Plus Project section concerning the gating of the project is also appropriate for the Background Plus Project Condition. With approved projects developed, the volume of traffic that could use Third Avenue as a link between California Avenue and Imjin Parkway would be higher than with the Existing Plus Project Condition.

6 CUMULATIVE WITHOUT PROJECT CONDITIONS

This section describes the analysis results of the study intersection and roadway segment operations under cumulative traffic conditions without the project developed. Traffic projections for the Cumulative Without Project Condition were developed by modeling the traffic generated by several additional proposed and anticipated developments in the Marina/Seaside area. The TRAFFIX software program was used to model the traffic generated by these projects and assign the traffic to the road network. The traffic from cumulative projects was added to Background traffic volumes to obtain Cumulative Without Project traffic volumes. The cumulative traffic condition is defined as traffic conditions roughly twenty years beyond existing conditions. However, it is uncertain when or if the projects modeled for the Cumulative Condition will be fully developed and occupied. The horizon year for the Cumulative Condition is at least Year 2025.

6.1 Cumulative Development Projects Trip Generation

Various approved and proposed projects throughout the Cities of Marina and Seaside, as well as in the surrounding FORA areas are anticipated to be developed, or at least partially developed within the next fifteen to twenty years. The list of cumulative projects includes projects that have been approved for development, such as the East Garrison project and Phases II and higher of the University Villages project, and projects that are currently under environmental review, such as Marina Station. Projects have also been included that have previously been proposed in other planning documents, but that have not completed environmental review. These projects include UCMBEST in Marina, Del Rey Oaks Resort, Monterey Peninsula College and Fort Ord Offices.

For this scenario, it was assumed that the cumulative projects would be fully built out. Furthermore, the expected number of students at CSUMB Master Plan level was used to determine the anticipated number of trips that would be generated by CSUMB. It should be noted that these assumptions for buildout are based on a conservative approach for the buildout of these cumulative projects and will likely change over time due to market conditions, development decisions and other conditions beyond this traffic study.

Exhibit 16 shows the list of cumulative projects and the trip generation for the cumulative projects. The cumulative projects would generate a total of 232,954 daily trips, with 15,093 trips generated during the AM peak hour, and 22,601 trips during the PM peak hour. The locations of the cumulative projects are shown on the map provided in *Appendix K.*

6.2 Cumulative Without Project –Trip Distribution and Assignment

For the purpose of this traffic scenario, the distribution of the estimated project trips was based upon origin/destination matrices provided by AMBAG for the FORA traffic zone and the Marina traffic zone. Furthermore, the locations and proximity of CSUMB campus activities, other future FORA projects and other existing and future land uses in the area were considered in the project trip distribution. The traffic assignment accounts for anticipated linked trips that will occur between the residential and commercial uses within the Marina University Villages area as well as the CSUMB campus, and existing and planned surrounding residential developments as part of the FORA Reuse Plan. The linked trips have been taken into consideration in the cumulative project trip distribution to avoid double counting of trips on the study intersections and road network.

Exhibits 17A and 17B show Cumulative Condition AM and PM peak hour traffic volumes. These volumes were achieved by combing the traffic assignment for the cumulative projects with the Background Plus Project Condition traffic volumes.

6.3 Cumulative Without Project – Road Network

Under this traffic scenario, all improvements included in the City of Marina TIF and FORA CIP, the 2004 CSUMB Master Plan Transportation and Circulation study, as well as improvements not included in these plans by the University Villages and Marina Heights projects. The Cumulative Condition road network includes the 2nd Avenue Extension between Del Monte Boulevard and Imjin Parkway, which is included in the City's TIF program. Patton Parkway between California Avenue and Crescent Avenue is included in the Cumulative Without Project road network because it is included in the City's TIF. The Crescent Avenue Extension between Reindollar Avenue and Patton Parkway and Patton Parkway between Crescent Avenue and 2nd Avenue are included in the Cumulative Without Project road network because these projects are included in the FORA Capital Improvement Program and are funded by FORA fees.

As part of the CSUMB network changes 4th Avenue will be realigned to intersect 8th Street at the existing intersection with California Avenue. Also, 5th Avenue will be realigned to the intersection of Imjin Road and 8th Street to create the primary access to the CSUMB campus from the north. Refer to Exhibit 3C for the future study road network used in the traffic analysis for the cumulative traffic scenario.

6.4 Cumulative Without Project – Intersection Operations

The traffic that would be generated by the cumulative projects was combined with the Background Condition traffic volumes to provide Cumulative Without Project traffic volumes. Cumulative morning and evening peak hour turning volumes are illustrated on Exhibit 17A and 17B. Exhibits 6A & 6B tabulate corresponding morning and evening peak hour levels of service, the details of which are presented in *Appendix J.*

The following intersections do not operate within acceptable levels under the Cumulative Without Project Condition:

Intersection #1: Del Monte Boulevard/Reservation Road
Intersection #3: Imjin Road/Reservation Road
Intersection #4: Blanco Road/Reservation Road
Intersection #16: SB Highway 1 Ramps/Imjin Parkway;
Intersection #18: 2nd Avenue/Imjin Parkway
Intersection #19: Third Avenue/Imjin Parkway
Intersection #20: Fourth Avenue/Imjin Parkway
Intersection #21: California Avenue/Imjin Parkway

Intersection #23: Imjin Road/Imjin Parkway;
Intersection #24: Imjin Road/Abrams Drive (North);
Intersection #25: Imjin Road/Preston Drive.

6.5 Cumulative Without Project Traffic Conditions - Road Segments

Cumulative Without Project Condition morning and evening peak hour volumes on the study street segments are tabulated on Exhibit 8A. These are based upon turning volumes illustrated on Exhibits 17A & 17B. Exhibit 8A also tabulates corresponding street segment levels of service. The roadway segment level of service is based on the threshold volumes as shown in *Appendix A5* and the HCM 2000 methodologies. The weaving section level of service calculation worksheets are contained in *Appendix K.*

The following highway and street segment deficiencies would occur under Cumulative Without Project Conditions:

Segment #1: Highway 1 northbound between Del Monte North and Nashua interchanges would operate at LOS F during the PM peak hour.

Segment #2: Highway 1 northbound between Reservation Road and interchanges would operate at LOS E during the PM peak hour.

Segment #3: Highway 1 northbound between Del Monte South and Reservation Road interchanges would operate at LOS E during the PM peak hour.

Segment #4: Highway 1 northbound between Imjin Parkway and Del Monte South interchanges would operate at LOS E during the PM peak hour.

Segment #5: Highway 1 southbound between Lightfighter and Del Monte South interchanges would operate at LOS E during the AM peak hour.

Segment #5: Highway 1 northbound between Lightfighter and Del Monte South interchanges would operate at LOS F during the PM peak hour.

Segment #5: Highway 1 southbound between Lightfighter and Del Monte South interchanges would operate at LOS E during the PM peak hour.

Segment #8: Highway 1 southbound on-ramp at Imjin Parkway would operate at LOS F during the PM peak hour.

Segment #13: Southbound Highway 1 weaving section between Del Monte Boulevard and Imjin Parkway would operate at LOS E during the AM peak hour and LOS E during the PM peak hour.

Segment #16: Reservation Road west of California Avenue would operate at LOS E during the PM peak hour.

Segments #23 through #26: Imjin Parkway from 2nd Avenue to Imjin Road would operate at LOS F during the PM peak hour. Segment #23 (Imjin Parkway between 2nd Avenue and 3rd Avenue) would operate at LOS F during the AM peak hour.

7 CUMULATIVE WITH PROJECT CONDITIONS

This section describes the analysis results of the study intersection and roadway segment operations under cumulative traffic conditions with the project developed. The traffic assignment for the project was combined with the Cumulative Without Project volumes to obtain Cumulative With Project Condition traffic volumes.

The project trip assignments utilized for the Background Plus Project analysis were adjusted to account for the completion of the 2^{nd} Avenue Extension between Imjin Parkway and Del Monte Boulevard and the extension of Patton Parkway from Crescent Avenue to the 2^{nd} Avenue extension. These links are included in the Cumulative Condition road network, but are not elements of the Existing Condition or Background Condition road networks because construction of the links is not a condition of development for any new development project, but they are included in the Marina TIF and FORA CIP.

In order to facilitate an analysis of cumulative with and without the proposed project, all of the cumulative projects shown on Exhibit 16 were assumed for purposes of this report to be fully built out. This assumption may be unrealistic, however, given that applications for the proposed project are actually currently under review, whereas applications for some of the cumulative projects have not been filed yet. This approach to the analysis presents the worst-case view of the proposed project's cumulative traffic impacts.

7.1 Cumulative With Project Traffic Conditions – Intersection Impacts

Cumulative with project morning and evening peak hour turning volumes are illustrated on Exhibit 18A and 18B. Exhibits 6A & 6B tabulate corresponding morning and evening peak hour levels of service, the details of which are presented in *Appendix K.*

Based on the significance criteria presented in Section 1.5, the project would create a significant impact in conjunction with other cumulative development at the following intersections:

Intersection #16: Southbound Highway 1 Ramps/Imjin Parkway
Intersection #18: 2^{nd} Avenue/Imjin Parkway
Intersection #19: Third Avenue/Imjin Parkway.

Exhibits 7A and 7B list the improvements required to mitigate incremental project impacts at the cumulative level. The required improvements are described below. The mitigated intersection level of service calculations are contained in *Appendix N.*

<u>Southbound Highway 1 Ramps/Imjin Parkway – Intersection # 16:</u> Under Cumulative Without Project Conditions, the Southbound Highway 1 Ramps/Imjin Parkway intersection would operate at LOS F during the AM and PM peak hours. The project would add traffic that would increase the average vehicle delay by 7.9 seconds during the AM peak hour and 10.1 seconds during the PM peak hour. This is a significant project

impact. To mitigate the project's impact to the intersection, the following improvement would be required:

o Reconstruct the interchange to eliminate the intersection between the southbound off-ramp and the southbound on-ramp. This would require the construction of a loop ramp to serve one of these two movements.

The reconstruction of the interchange is required to serve regional traffic increases at the Highway 1/Imjin Parkway interchange. Accordingly, imposing an improvement of this magnitude on a single project is infeasible due to the costs associated with reconstructing the interchange. It is therefore beyond the scope of this project. This improvement is included in the City of Marina Capital Improvement Program as and element of Roadway (R) 48 (Construct New Interchange). The Highway 1/Imjin Parkway interchange reconstruction project is not included in the City's TIF or the FORA CIP.

The City's TIF includes the preparation of a Project Study Report for the Highway 1/Imjin Parkway interchange. The PSR study will evaluate alternative interchange designs to serve long-range traffic volumes at the interchange. Through the payment of the City's TIF, the project will contribute its fair share towards the development of a long-range improvement plan for the Highway 1/Imjin Parkway interchange. Should the funding for the improvements identified in the PSR be added to the City's TIF prior to the issuance of the building permits for this project, this project will pay its fair share of the costs of the improvements. However, because the improvement project has not been identified at this time and is unfunded, the project's incremental cumulative impact to the Southbound Highway 1 Ramps/Imjin Parkway intersection would be significant and unavoidable.

<u>2nd Avenue/Imjin Parkway – Intersection # 18:</u> This intersection would operate at LOS C during the weekday AM peak hour and LOS F during the weekday PM peak hour under Cumulative Without Project Conditions. The proposed project will increase the delay at the intersection during the Cumulative Condition PM peak hour by 4.6 seconds, creating a significant project impact. The traffic analysis prepared for the University Villages project established that the additional improvements that would be required to achieve acceptable operations at this intersection with an at-grade intersection would not be feasible. The planned Project Study Report (PSR) for the Highway 1/Imjin Parkway intersection will evaluate alternative designs for this intersection including the feasibility of grade separating Imjin Parkway and 2nd Avenue at this location. The improvements at the 2nd Avenue/Imjin Parkway intersection have been linked to the Highway 1/Imjin Parkway interchange design project because of the close proximity between the two locations and because improvements at one location will affect design requirements at the other location. The improvements that would be required to mitigate the project's incremental cumulative impact to the 2nd Avenue/Imjin Parkway will be identified in the PSR. Should the funding for improvements identified in the PSR be added to the City's TIF prior to the issuance of the building permits for this project, this project will pay its fair share of the costs of the improvements. However, because a funded improvement project that would mitigate the project's incremental cumulative impact to this intersection does not currently exist. Therefore, the project's incremental cumulative impact at this location is significant and unavoidable.

Third Avenue/Imjin Parkway – Intersection # 19 would operate at LOS F during the AM and PM peak hours under Cumulative Without Project Conditions. The proposed project will increase the delay at the intersection by 21.4 seconds during the AM peak hour and 26.7 seconds during the PM peak hour, creating a significant impact. The following improvement would be required to mitigate the project's incremental cumulative impact:

- Add a right turn lane on the southbound Third Avenue approach to Imjin Parkway and modify the traffic signal at this intersection to include a right turn overlap phase.

Construction of this improvement by the project would mitigate the project's incremental cumulative impact to this intersection. Based upon design plans prepared for Imjin Parkway, additional right-of-way on the west side of Third Avenue would be required to implement this improvement. Additional right-of-way 12 feet in width extending on the west side of Third Avenue for a distance of 400 feet would be required. The property located west of Third Avenue and north of Imjin Parkway is the site of the Monterey Peninsula College Fort Ord 12th Street Campus.

The additional right turn lane on the southbound intersection approach is not currently in the City's CIP. The installation of a traffic signal at this intersection is included in the City's CIP and TIF. It is recommended that the additional right turn lane be added to the TIF. Should the project be incorporated into the City's CIP and TIF, payment of the TIF would mitigate the project's cumulative impact at this location.

7.2 Cumulative With Project Traffic Conditions - Road Segments

Cumulative Condition morning and evening peak hour volumes on the study street segments are tabulated on Exhibit 8A. These are based upon turning volumes illustrated on Exhibits 18A & 18B. Exhibit 8A also tabulates corresponding street segment levels of service. The roadway segment level of service is based on the threshold volumes as shown in *Appendix A5* and the HCM 2000 methodologies. The weaving section level of service calculation worksheets are contained in *Appendix K.*

The project would significantly impact the following highway and road segments:

Segment #1: Northbound Highway 1 north of Del Monte North interchange;
Segment #5: Northbound Highway 1 south of Imjin Parkway;
Segment #8: Southbound Highway 1 Off-Ramp at Imjin Parkway;
Segment #22: Imjin Parkway between Highway 1 and 2nd Avenue;
Segment #23: Imjin Parkway between 2nd Avenue and Third Avenue;
Segment #24: Imjin Parkway between Third Avenue and Fourth Avenue;
Segment #25: Imjin Parkway between Fourth Avenue and California Avenue; and
Segment #26: Imjin Parkway between California Avenue and Imjin Road.

The following improvements would be required to mitigate project impacts at these locations.

<u>Northbound Highway 1 North of Del Monte Boulevard North (Segment #1)</u> would operate at LOS F during the PM peak hour under Cumulative Without Project Conditions. The proposed project would add trips to this highway segment, resulting in a significant impact. The following improvement would be required to mitigate the incremental cumulative project impact on this segment:

- o Add a third lane on northbound Highway 1 between the Del Monte North interchange and the Nashua Road-Molera Road interchange.

This improvement is not currently included in long-range improvement plans for Highway 1. The Caltrans Route Concept Report for Highway 1 includes widening four lane segments of Highway 1 to six lanes. However, there is currently no funded improvement that would widen this segment of Highway 1. Therefore, the project's incremental cumulative impact to Highway 1 north of Del Monte Boulevard North would be a significant and unavoidable impact.

<u>Northbound Highway 1 South of Imjin Parkway (Segment #5)</u> would operate at LOS F during the PM peak hour under Cumulative Without Project Conditions. The proposed project would add trips to this highway segment, resulting in a significant impact. The following improvement would be required to mitigate the incremental cumulative project impact on this segment:

- o Add a fourth lane on northbound Highway 1 south of Imjin Parkway.

This improvement is not currently included in long-range improvement plans for Highway 1. Widening Highway 1 beyond the existing 6-lane section south of Imjin Parkway is not anticipated in the Caltrans Route Concept Report for Highway 1. The project's impact to Highway 1 south of Imjin Parkway would be a significant and unavoidable impact.

<u>Southbound Highway 1 On-Ramp at Imjin Parkway (Segment #8)</u> would operate at LOS F during the AM and PM peak hours under Cumulative Without Project Conditions. The proposed project would add trips to this highway ramp, resulting in a significant impact. The following improvement would be required to mitigate the incremental cumulative project impact on this segment:

- o Widen the southbound on-ramp to Highway 1 from Imjin Parkway to two-lanes.

This improvement is included in the City of Marina Capital Improvement Program as and element of Roadway (R) 48 (Construct New Interchange). The Highway 1/Imjin Parkway interchange reconstruction project is not included in the City's TIF or the FORA CIP.

The reconstruction of the interchange is required to serve regional traffic increases at the Highway 1/Imjin Parkway interchange. Accordingly, imposing an improvement of this magnitude on a single project is infeasible due to the costs associated with reconstructing the interchange. It is therefore beyond the scope of this project.

Before any work can be done at the State highway interchange Caltrans will require a study to identify the long term design for the interchange and the interim measures that would be consistent with that design. The City's TIF includes the preparation of such a Project Study Report (PSR) for the Highway 1/Imjin Parkway interchange. The City's TIF includes the preparation of a Project Study Report for the Highway 1/Imjin Parkway interchange. The PSR study will evaluate alternative interchange designs to serve long-range traffic volumes at the interchange. Through the payment of the City's TIF, the project will contribute its fair share towards the development of a long-range improvement plan for the Highway 1/Imjin Parkway interchange. Should the funding for the improvements identified in the PSR be added to the City's TIF prior to the issuance of the building permits for this project, this project will pay its fair share of the costs of the improvements. However, because the improvement project has not been identified at this time and is unfunded, the project's incremental cumulative impact to the southbound Highway 1 on-ramp at Imjin Parkway would be significant and unavoidable.

<u>Imjin Parkway Between Highway 1 and 2nd Avenue (Segment #22)</u> would operate at LOS C during the AM peak hour and LOS D during the PM peak hour under Cumulative Without Project Conditions. The proposed project would add trips to this street segment that would decrease the PM peak hour LOS to "E," resulting in a significant impact. The following improvement would be required to mitigate the incremental cumulative project impact on this segment:

- o Widen Imjin Parkway between Highway 1 and 2nd Avenue to 8 lanes.

Such a project is not consistent with the City General Plan which calls for a six lane Imjin Parkway. Accordingly, widening Imjin Parkway to 8 lanes is considered to be infeasible. Therefore, the project's impact at this location is significant and unavoidable.

<u>Imjin Parkway Between 2nd Avenue and Imjin Road (Segments #23-26)</u> would operate at LOS F during the PM peak hour under Cumulative Without Project Conditions. Segment 23 between 2nd Avenue and 3rd Avenue would operate at LOS F during the AM peak hour under Cumulative Without Project Conditions. The proposed project would add trips to these street segments, resulting in a significant impact. The following improvement would be required to mitigate the incremental cumulative project impact on this segment:

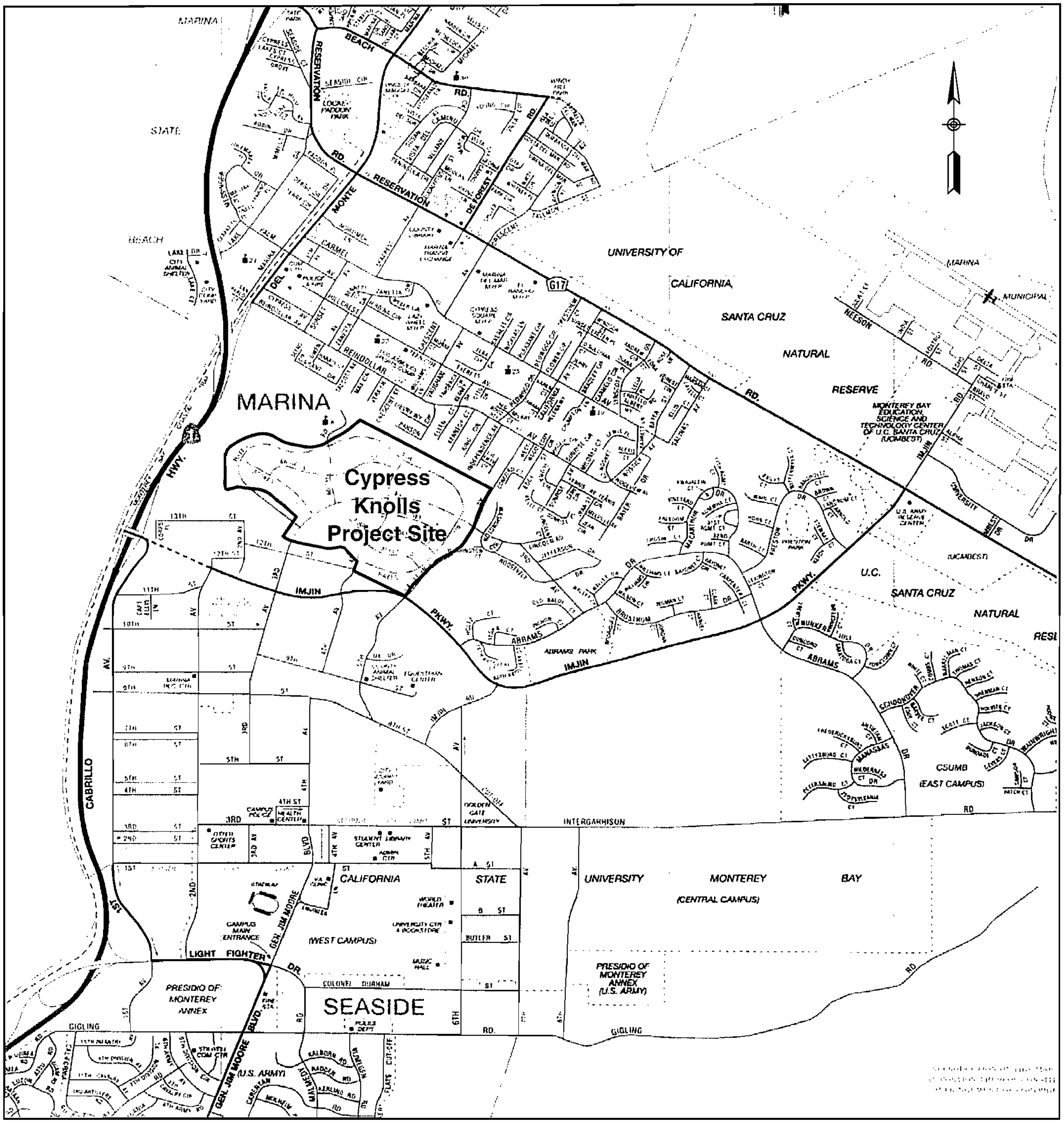
- o Widen Imjin Parkway between 2nd Avenue and Imjin Road to 6 lanes.

This improvement is not included in the City's CIP or TIF program. Widening these segments of Imjin Parkway to 6 lanes is included in the City's General Plan. The CIP and TIF do include intersection improvements to widen Imjin Parkway to 6 lanes at 2nd Avenue, California Avenue and Imjin Road. Widening at these intersections would leave gaps in the Imjin Parkway widening to 6 lanes at Third Avenue, Fourth Avenue and Abrams Drive (south). Widening Imjiin Parkway to 6 lanes at the intersections of Third Avenue, Fourth Avenue and Abrams Drive (south) to provide a continuous 6 lane section of roadway would mitigate the project's incremental cumulative impact. However, it would be appropriate in this case to incorporate the widening of Imjin Parkway to 6 lanes into the TIF program; it is recommended that widening be added to the TIF. The payment of fees by the project developer to the TIF would mitigate the project's incremental cumulative impact to this facility.

7.2 Cumulative With Project – Potential Impacts With the Alternative Project Description

If the Assisted Living Facility were removed from the project, there would be no change to the findings and conclusions of the analysis of Cumulative With Project Conditions.

The discussion in the Existing Plus Project section concerning the gating of the project is also appropriate for the Cumulative With Project Condition. Third Avenue between California Avenue and 12th Street would be used for local circulation. This would reduce volumes on Imjin Parkway and California Avenue as previously described. Traffic calming measures may be appropriate, under this situation, on Third Avenue. Additional approach lanes could be required on the southbound Third Avenue approach to Imjin Parkway and on the eastbound Third Avenue approach to California Avenue as a result of higher volumes on these approaches.



HIGGINS ASSOCIATES

4-094 Project Location Map.xls
1-Project Location

EXHIBIT 1
PROJECT LOCATION MAP

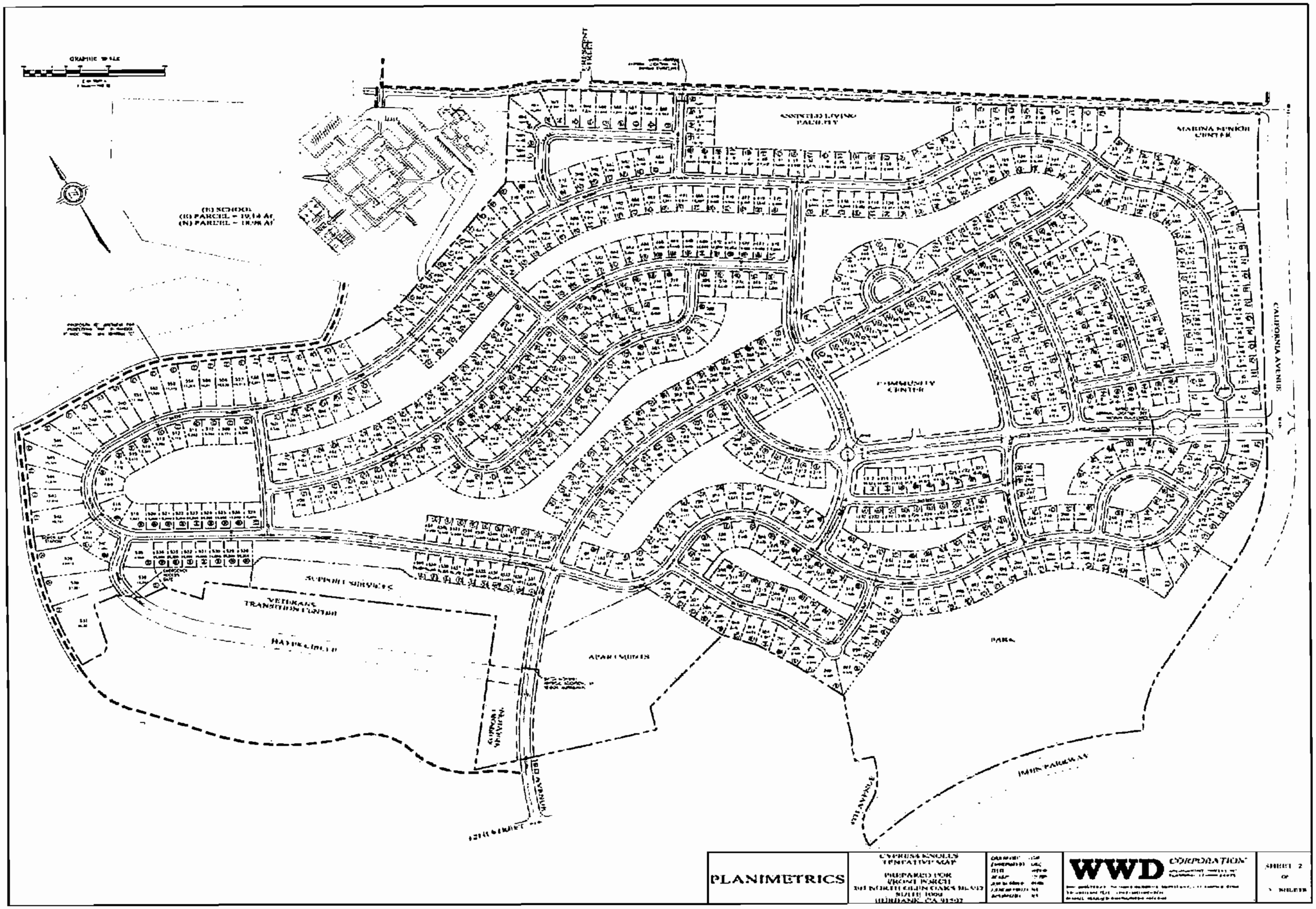
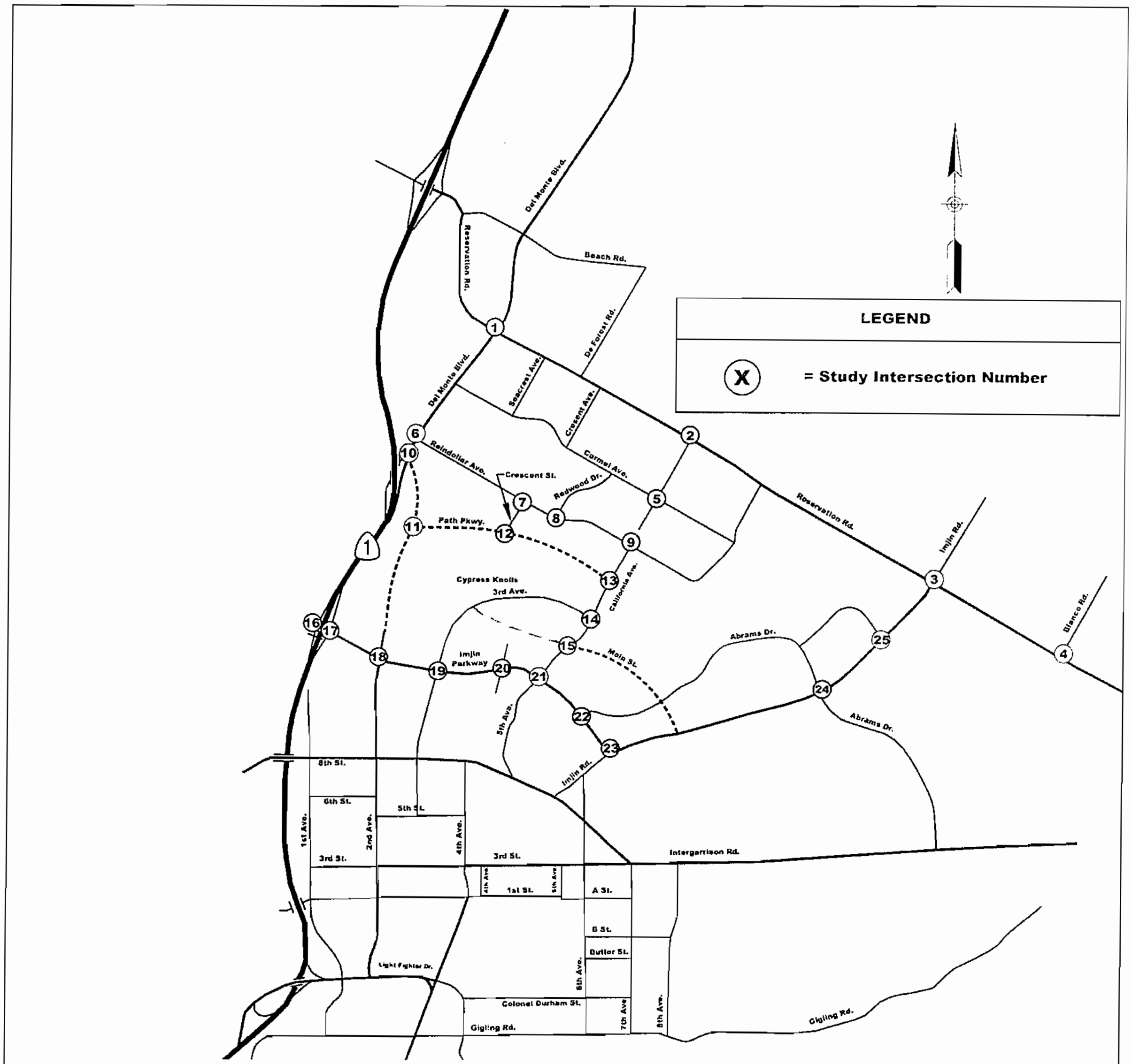


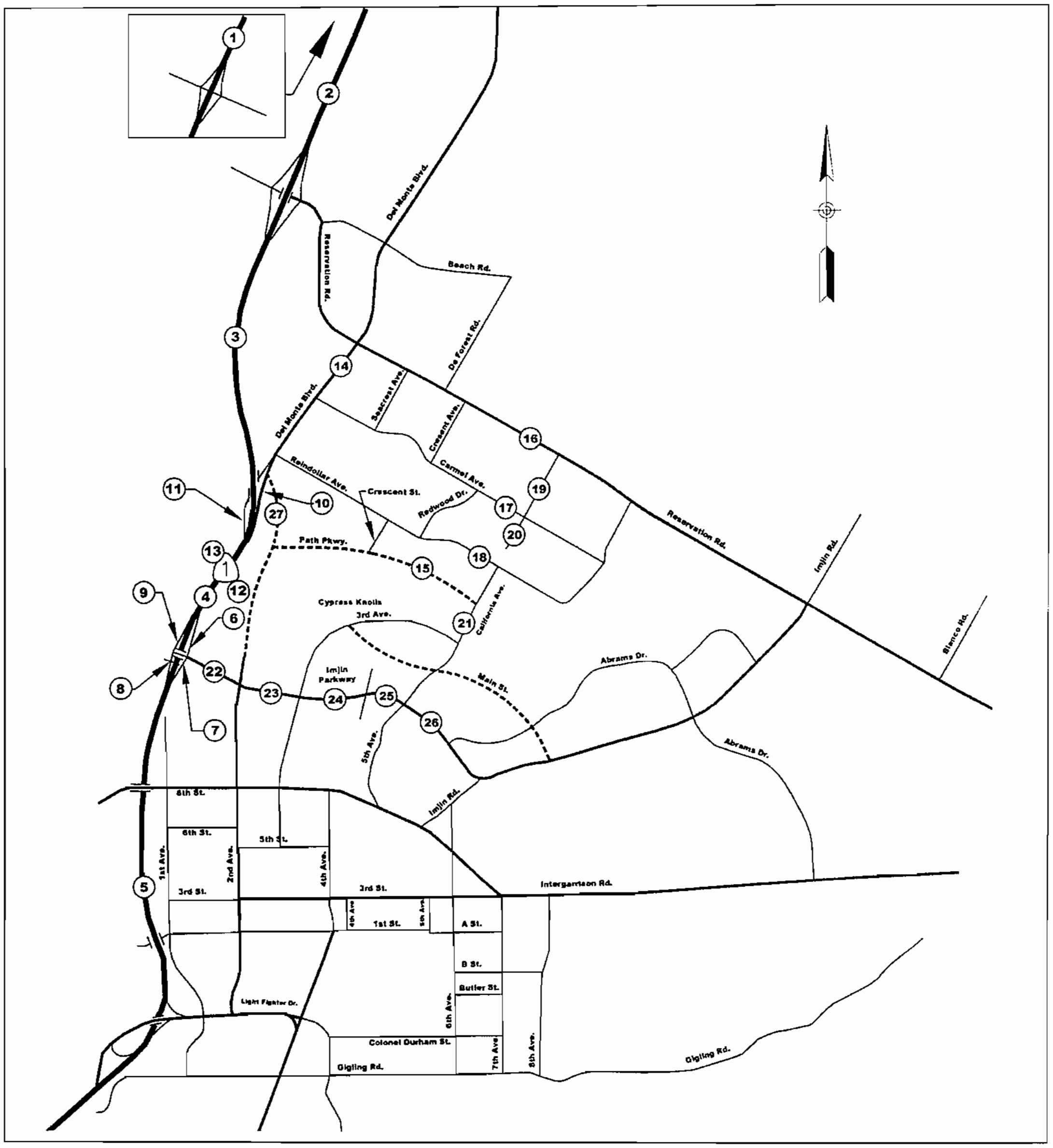
EXHIBIT 2
PROJECT SITE PLAN



	Intersection	Jurisdiction	Level of Service Standard	Traffic Control		
				Existing	Background	Cumulative
1.	Del Monte Boulevard/Reservation Road	Marina	D	Signal	Signal	Signal
2.	California Avenue/Reservation Road	Marina	D	Two-Way Stop	Signal	Signal
3.	Imjin Parkway/Reservation Road	Marina	D	Signal	Signal	Signal
4.	Blanco Road/Reservation Road	Monterey County	D	Signal	Signal	Signal
5.	California Avenue/Carmel Avenue	Marina	D	All-Way Stop	All-Way Stop	All-Way Stop
6.	Del Monte Boulevard/Reindollar Avenue	Marina	D	Signal	Signal	Signal
7.	Crescent Avenue/Reindollar Avenue	Marina	D	One-Way Stop	One-Way Stop	One-Way Stop
8.	Redwood Drive/Reindollar Avenue	Marina	D	One-Way Stop	One-Way Stop	One-Way Stop
9.	California Avenue/Reindollar Avenue	Marina	D	All-Way Stop	All-Way Stop	Signal
10.	Del Monte Boulevard/2nd Avenue Extension (future)	Marina	D	-	-	Signal
11.	2nd Avenue Extension/Patton Parkway (future)	Marina	D	-	One-Way Stop	One-Way Stop
12.	Crescent Avenue/Patton Parkway (future)	Marina	D	-	One-Way Stop	One-Way Stop
13.	California Avenue/Patton Parkway (future)	Marina	D	-	One-Way Stop	One-Way Stop
14.	California Avenue/3rd Avenue	Marina	D	All-Way Stop	All-Way Stop	All-Way Stop
15.	California Avenue/Main Street (future)	Marina	D	-	Signal	Signal
16.	Southbound Highway 1 ramps/Imjin Parkway (12th Street)	Caltrans	D	One-Way Stop	Signal	Loop Ramps
17.	Northbound Highway 1 ramps/Imjin Parkway (12th Street)	Caltrans	D	One-Way Stop	One-Way Stop	One-Way Stop
18.	2nd Avenue/Imjin Parkway/	Marina	D	Signal	Signal	Signal
19.	3rd Avenue/Imjin Parkway	Marina	D	Two-Way Stop	Two-Way Stop	Signal
20.	4th Avenue/Imjin Parkway	Marina	D	Two-Way Stop	Two-Way Stop	Signal
21.	California Avenue/Imjin Parkway	Marina	D	Signal	Signal	Signal
22.	Abrams Drive (South)/Imjin Parkway	Marina	D	One-Way Stop	Signal	Signal
23.	Imjin Road/Imjin Parkway	Marina	D	Signal	Signal	Signal
24.	Imjin Road/Abrams Drive (north)	Marina	D	Signal	Signal	Signal
25.	Imjin Parkway/Preston Drive	Marina	D	Signal	Signal	Signal

Notes:
1. All-way stop: Stop signs on all intersection approaches.
Two-way stop: Stop signs on two intersection approaches.
One-way stop: Stop sign on one intersection approach.

EXHIBIT 3A
STUDY INTERSECTIONS



Freeway Segments

1. Highway 1, between Nashua/Molera Road and Del Monte Blvd. (North)
2. Highway 1, between Del Monte Blvd. (North) and Reservation Road
3. Highway 1, between Reservation Road and Del Monte Blvd. (South)
4. Highway 1, between Del Monte Blvd. (South) and Imjin Parkway
5. Highway 1, between Imjin Parkway and Lightfighter

Freeway Ramps

6. Highway 1 Northbound On-Ramp at Imjin Parkway
7. Highway 1 Northbound Off-Ramp at Imjin Parkway
8. Highway 1 Southbound On-Ramp at Imjin Parkway
9. Highway 1 Southbound Off-Ramp at Imjin Parkway
10. Highway 1 Northbound Off-Ramp at Del Monte Blvd. (South) Interchange
11. Highway 1 Southbound On-Ramp at Del Monte Blvd. (South) Interchange

Weaving Segments

12. Highway 1 Northbound between Imjin Parkway and Del Monte Blvd. (South)
13. Highway 1 Southbound between Del Monte Blvd. (South) and Imjin Pkwy.

Street Segments

14. Del Monte Boulevard south of Reservation Road
15. Patton Parkway west of California Avenue
16. Reservation Road west of California Avenue
17. Carmel Avenue west of California Avenue
18. Reindollar Avenue west of California Avenue
19. California Avenue between Reservation Road and Carmel Avenue
20. California Avenue between Carmel and Reindollar Avenue
21. California Avenue between Patton Parkway and 3rd Avenue
22. Imjin Parkway between Highway 1 and 2nd Avenue
23. Imjin Parkway between 2nd Avenue and 3rd Avenue
24. Imjin Parkway between 3rd Avenue and 4th Avenue
25. Imjin Parkway between 4th Avenue and California Avenue
26. Imjin Parkway between California Avenue and Imjin Road
27. 2nd Avenue Extension south of Del Monte Boulevard

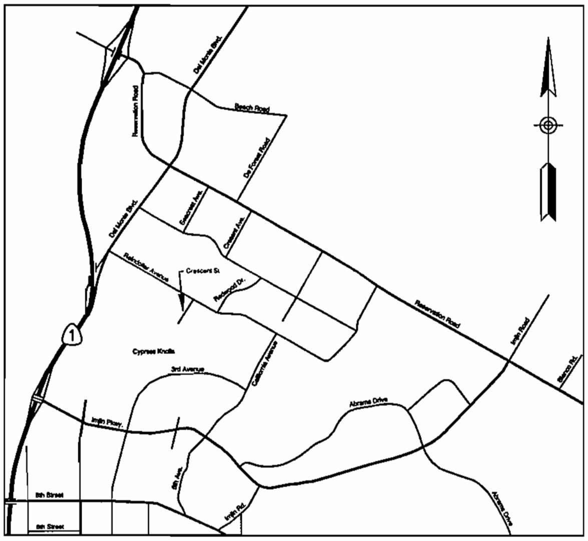
LEGEND

(X) = **Study Segment Number**

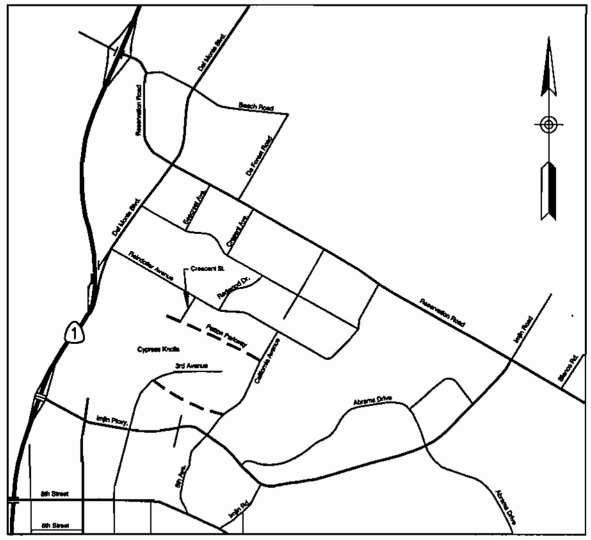
------- = **Future Road**

EXHIBIT 3B
STUDY SEGMENTS

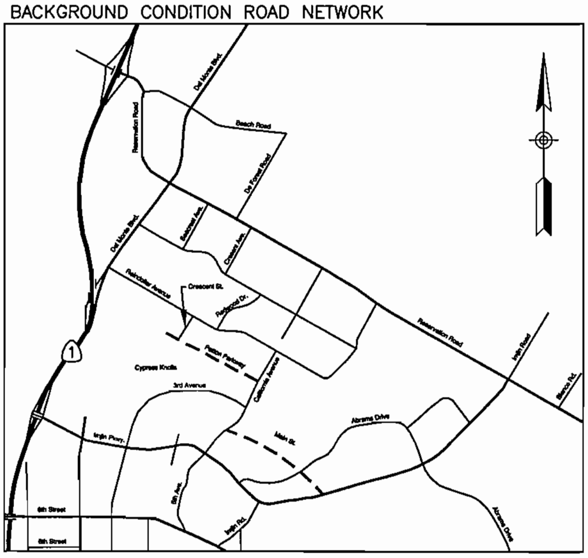
EXISTING ROAD NETWORK



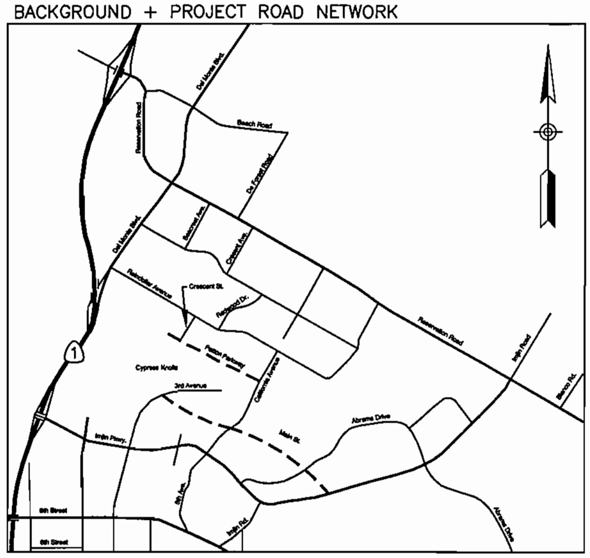
EXISTING + PROJECT ROAD NETWORK



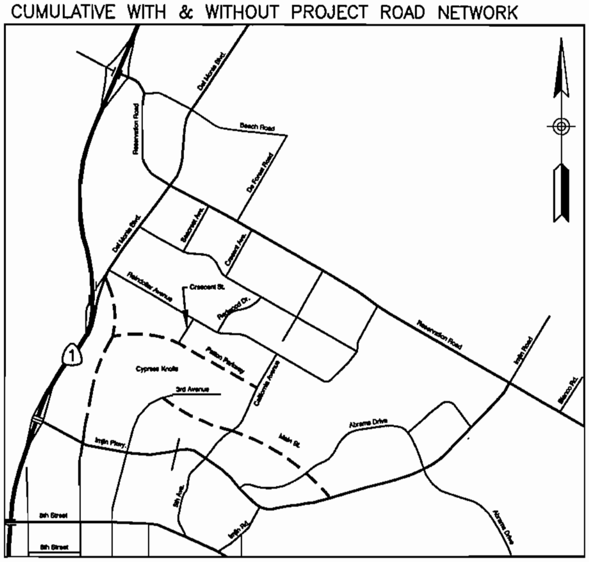
BACKGROUND CONDITION ROAD NETWORK



BACKGROUND + PROJECT ROAD NETWORK



CUMULATIVE WITH & WITHOUT PROJECT ROAD NETWORK



NOTES

1. Improvements assumed for the Existing Plus Project Condition road network:
   a. Construct Patton Parkway between California Avenue and the existing High School.
   b. Extend Crescent Avenue south of Reindollar to Patton Parkway

2. Improvements assumed in the Background Condition road network:
   a. Construct Main Street between Imjin Parkway and California Avenue
   b. Remove 3rd Ave. east of California in conjunction with the development of Marina Heights
   c. Complete California Avenue between Reindollar and Tamara Court
   d. Construct Patton Parkway between California Avenue and the 2nd Avenue Extension
   e. Extend Crescent Avenue south of Reindollar to Patton Parkway

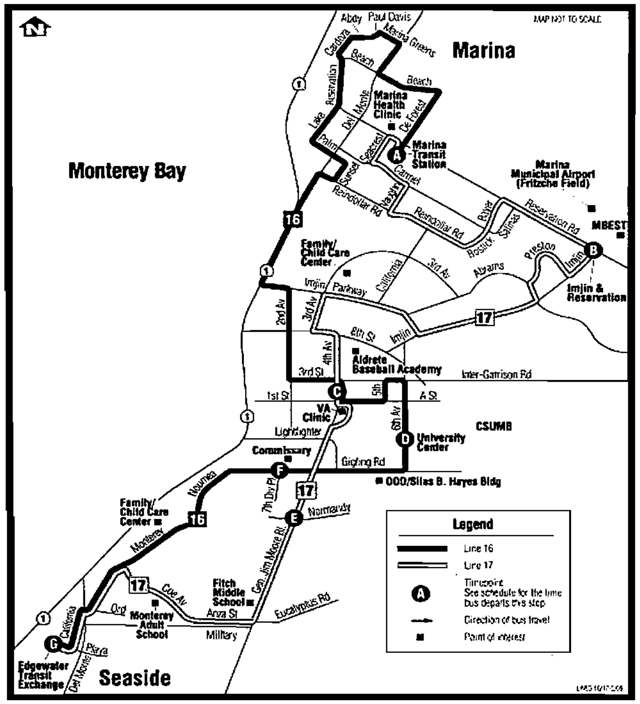
3. Improvements assumed in the Background Plus Project Condition road network:
   a. Construct Main Street between Imjin Parkway and California Avenue
   b. Remove 3rd Ave. east of California in conjunction with the development of Marina Heights
   c. Complete California Avenue between Reindollar and Tamara Court
   d. Construct Patton Parkway between California Avenue and the 2nd Avenue Extension
   e. Extend Crescent Avenue south of Reindollar to Patton Parkway

4. Improvements assumed in the Cumulative road network:
   a. Construct Main Street between Imjin Parkway and California Avenue
   b. Remove 3rd Ave. east of California in conjunction with the development of Marina Heights
   c. Complete California Avenue between Reindollar and Tamara Court
   d. Construct Patton Parkway between California Avenue and the 2nd Avenue Extension
   e. Extend Crescent Avenue south of Reindollar to Patton Parkway
   f. Extend 2nd Avenue between Imjin Parkway and Del Monte Blvd.

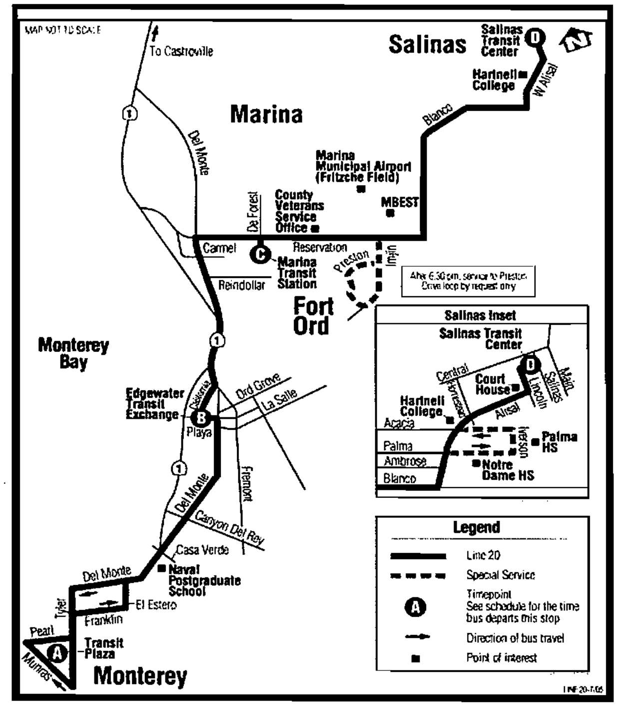
EXHIBIT 3C
ROAD NETWORKS

HIGGINS ASSOCIATES

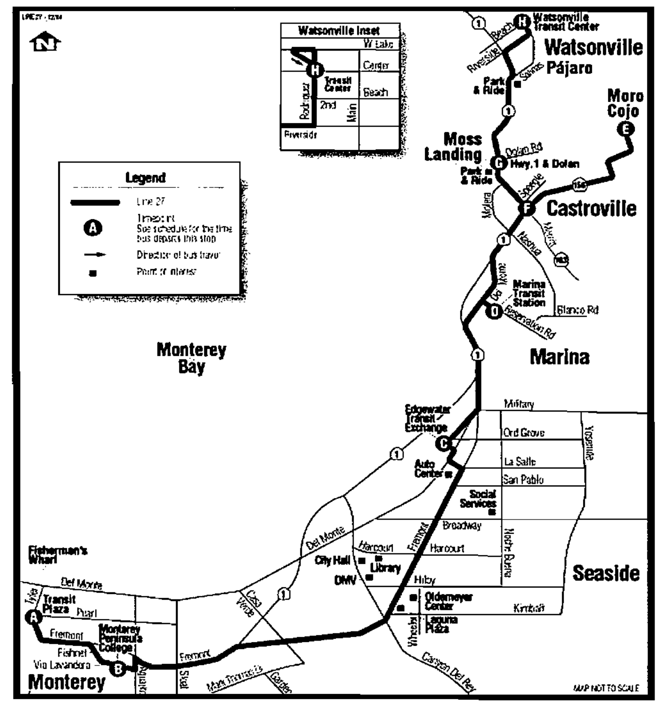
Drawing: J:\2004\051-100\4-094\4-094 Road Networks.dwg
Layout: Study Intersections



MST Routes 16 and 17 in the City of Marina



MST Route 20 to Salinas and Monterey



MST Route 26 to Watsonville and Monterey

HIGGINS ASSOCIATES

4-094 Bus Routes.xls
4A-MST Bus Routes

EXHIBIT 4A
MST BUS ROUTES

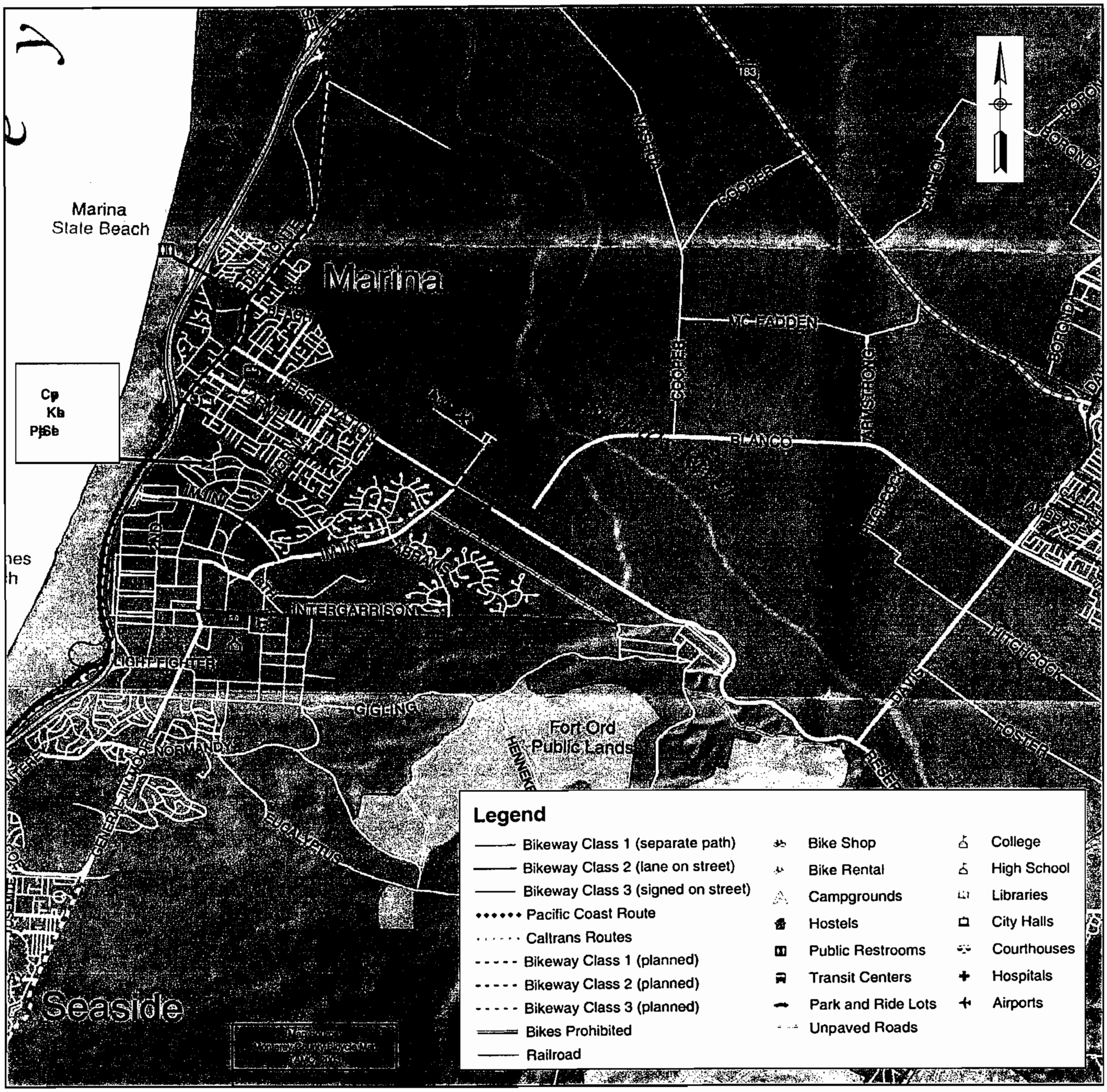
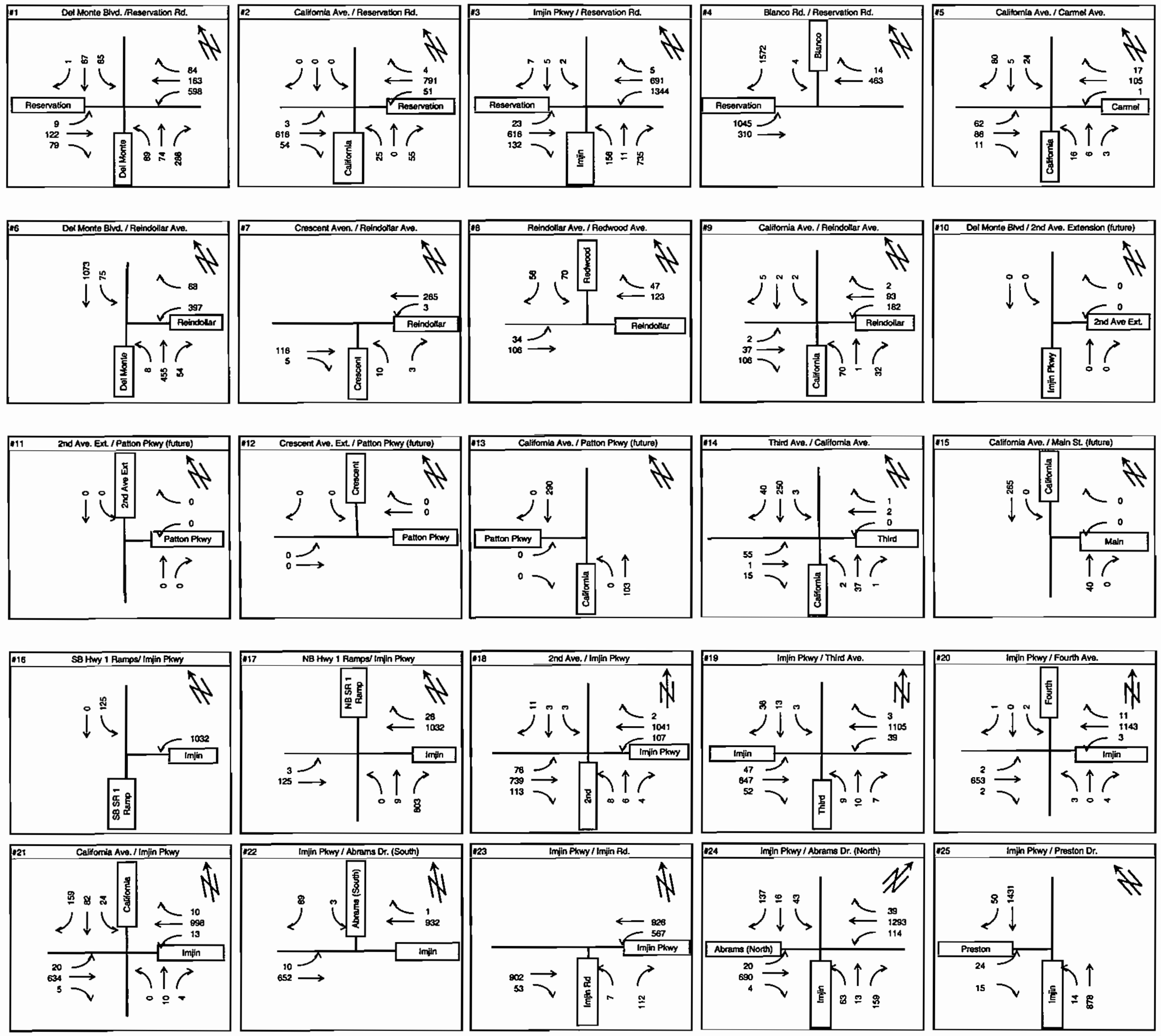


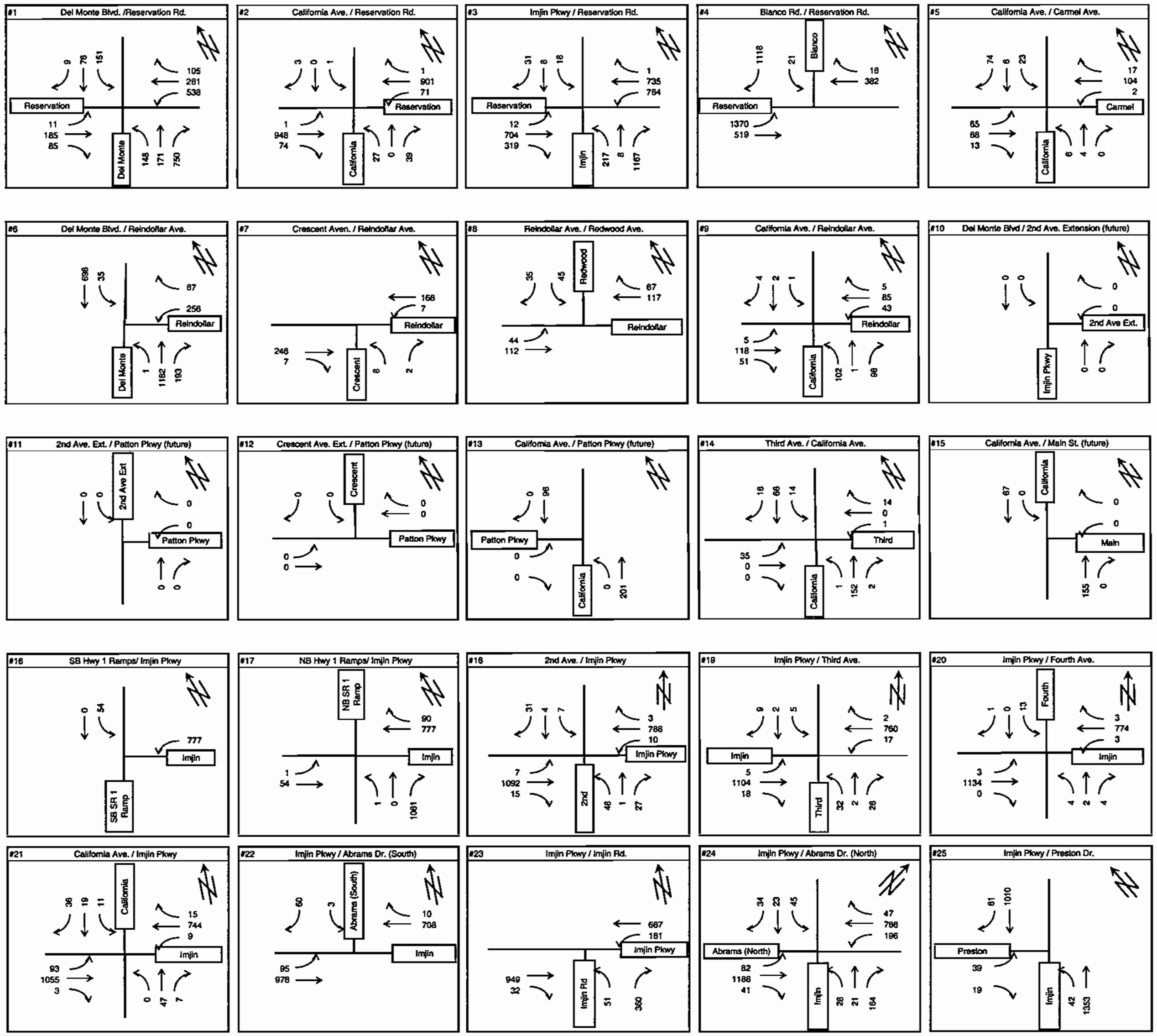
EXHIBIT 4B
EXISTING BICYCLE FACILITIES IN THE VICINITY OF THE PROJECT SITE



HIGGINS ASSOCIATES

4-094 Existing AM.xls
Existing AM

EXHIBIT 5A
EXISTING CONDITIONS
AM PEAK HOUR VOLUMES



HIGGINS ASSOCIATES

EXHIBIT 5B

	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Jurisdiction	LOS Standard	Existing Conditions				Existing + Project Conditions				Background Conditions				Background + Project Conditions				Cumulative Conditions Without Project				Cumulative Conditions With Project			
							AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr	
							Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Del Monte Blvd.	Reservation Road	NB 1-L, 1-T, 2-R SB 2-L, 1-T, 1-T/R EB 1-L/T, 1-T/R WB 2-L, 1-T, 1-R	Signal	Marina	D	18.2	B	20.8	C	18.3	B	20.8	C	20.7	C	25.0	C	20.7	C	25.0	C	28.4	C	58.6	E	28.4	C	58.8	E
2	California Avenue	Reservation Road	NB 1-L/T, 1-R SB 1-L/T/R EB 1-L, 1-T, 1-T/R WB 1-L, 1-T, 1-T/R	Stop Sign WA	Marina	D	1.2 18.6	A C	2.7 69.5	A F	1.2 18.6	A C	2.7 69.5	A F	15.6	B	14.2	B	16.4	B	15.1	B	18.1	B	24.7	C	18.9	B	27.0	C
3	Imjin Road	Reservation Road	NB 2-L, 1-T/R, 1-R SB 1-L, 1-T, 1-R EB 2-L, 2-T, 1-R WB 2-L, 2-T, 1-R	Signal	Marina	D	39.8	D	52.6	D	41.2	D	54.9	D	133.5	F	213.9	F	134.3	F	214.7	F	56.3	E	207.5	F	56.6	E	208.3	F
4	Blanco Road	Reservation Road	SB 2-L, 2-R EB 2-L, 2-T WB 1-T, 1-R	Signal *W/Mitigation*	Montery County	D	17.8	B	14.9	B	17.9	B	15.3	B	46.5	D	124.4	F	47.0	D	125.3	F	260.4	F	279.7	F	261.3	F	280.7	F
5	California Avenue	Carmel Avenue	NB 1-L, 2-T/R SB 1-L, 1-T/R EB 1-L/T, 1R WB 1-L/T, 1-R	All-Way Stop	Marina	D	8.7	A	8.3	A	8.7	A	8.3	A	13.5	B	12.0	B	14.4	B	12.8	B	24.1	C	22.8	C	27.1	D	26.2	D
6	Del Monte Blvd.	Reindollar Avenue	NB 1-L, 2-T, 1-R SB 1-L, 2-T WB 1-L, 1-L/T/R	Signal	Marina	D	17.1	B	11.4	B	17.3	B	11.8	B	16.9	B	11.4	B	17.1	B	11.7	B	18.7	B	14.2	B	18.7	B	14.3	B
7	Crescent Avenue	Reindollar Avenue	NB 1-L/R EB 1-T/R WB 1-L/T	Stop Sign WA	Marina	D	0.4 10.7	A B	0.4 11.7	A B	1.7 11.5	A B	1.4 13.2	A B	2.4 11.3	A B	2.7 13.0	A B	2.5 11.5	A B	3.1 13.2	A B	4.3 13.2	A B	5.7 18.0	A C	4.5 13.4	A B	6.2 19.3	A C
8	Redwood Avenue	Reindollar Avenue	SB 1-L/R EB 1-L/T WB 1-T/R	Stop Sign WA	Marina	D	4.0 11.6	A B	2.8 10.7	A B	4.3 11.6	A B	3.3 11.1	A B	4.4 10.8	A B	2.8 10.4	A B	4.3 10.9	A B	2.8 10.5	A B	4.0 11.4	A B	2.5 11.0	A B	4.0 11.5	A B	2.5 11.0	A B
9	California Avenue	Reindollar Avenue	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	All-Way Stop	Marina	D	9.2	A	9.2	A	9.3	A	9.5	A	10.2	B	12.0	B	10.8	B	13.3	B	16.7	B	13.8	B	16.7	B	13.8	B
10	Del Monte Blvd	2nd Avenue Ext. (Future)	NB 2-T SB 2-T	No Control	Marina	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.0	B	37.3	D	16.5	B	38.9	D
11	2nd Avenue Ext. (Future)	Patton Parkway (Future)	Future	Future	Marina	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4 16.1	A C	0.6 17.7	A C	1.5 16.6	A C	0.9 18.2	A C
12	Crescent Avenue	Patton Parkway (Future)	Future	Future	Marina	D	N/A	N/A	N/A	N/A	2.0 9.1	A A	2.1 8.8	A A	N/A	N/A	N/A	N/A	1.5 10.0	A B	2.0 9.0	A A	3.8 8.6	A A	5.4 8.4	A A	3.7 8.7	A A	4.8 8.6	A A
13	California Avenue	Patton Parkway (Future)	NB 1-T SB 1-T	No Control	Marina	D	N/A	N/A	N/A	N/A	2.8 11.0	A B	1.5 10.2	A B	2.4 13.6	A B	0.8 12.2	A B	2.5 14.4	A B	1.0 12.9	A B	1.0 21.3	A C	0.5 26.3	A D	1.2 23.0	A C	0.7 27.7	A D

Notes:
1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. WA = Worst Approach
4. * = Delay greater than 300 seconds or calculation overflow.
5. N/A = Not Applicable.
6. Levels of service in bold represent significant impact.

HIGGINS ASSOCIATES

4-094 Int LOS-3a.xls
Intersection LOS 1-13

EXHIBIT 6A
Intersection Levels of Service
Intersections 1 - 13

#	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Jurisdiction	LOS Standard	Existing Conditions AM Peak Hr Delay (sec)	Existing Conditions AM Peak Hr LOS	Existing Conditions PM Peak Hr Delay (sec)	Existing Conditions PM Peak Hr LOS	Existing Plus Project Conditions AM Peak Hr Delay (sec)	Existing Plus Project Conditions AM Peak Hr LOS	Existing Plus Project Conditions PM Peak Hr Delay (sec)	Existing Plus Project Conditions PM Peak Hr LOS	Background Conditions AM Peak Hr Delay (sec)	Background Conditions AM Peak Hr LOS	Background Conditions PM Peak Hr Delay (sec)	Background Conditions PM Peak Hr LOS	Background + Project Conditions AM Peak Hr Delay (sec)	Background + Project Conditions AM Peak Hr LOS	Background + Project Conditions PM Peak Hr Delay (sec)	Background + Project Conditions PM Peak Hr LOS	Cumulative Conditions Without Project AM Peak Hr Delay (sec)	Cumulative Conditions Without Project AM Peak Hr LOS	Cumulative Conditions Without Project PM Peak Hr Delay (sec)	Cumulative Conditions Without Project PM Peak Hr LOS	Cumulative Conditions With Project AM Peak Hr Delay (sec)	Cumulative Conditions With Project AM Peak Hr LOS	Cumulative Conditions With Project PM Peak Hr Delay (sec)	Cumulative Conditions With Project PM Peak Hr LOS
14	California Avenue	Third Avenue	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	All-Way Stop	Marina	D	10.2	B	7.9	A	11.1	B	8.3	A	14.3	B	9.9	A	N/A	N/A	N/A	N/A	0.8	A	0.4	A	N/A	N/A	N/A	N/A
15	California Avenue	Main Street (Future)	NB 1-T SB 1-T	Future	Marina	D	N/A	N/A	N/A	N/A	9.1	A	8.2	A	10.6	B	8.3	A	15.7	B	10.5	A	9.5	A	6.4	A	11.5	B	7.8	A
16	SB Hwy 1 Ramps	Imjin Pwy	SB 1-L/T WB 1-L	Stop Sign WA *W/Mitigation*	Caltans	D	* *	F F	119.8 *	F F	***** * *15.6*	**F** **F** *B*	**279.1** * *6.2*	**F** **F** *A*	17.6	B	22.3	C	18.2	B	23.2	C	88.1	F	148.5	F	**96.0** -	**F** -	**158.6** -	**F** -
17	NB Hwy 1 Ramps	Imjin Parkway	NB 1-L/T, 1-R EB 1-L/T WB 1-T, 1-R	Stop Sign WA	Caltrans	D	0.3 32.3	A D	0.0 17.4	A C	0.3 35.2	A D	0.0 18.4	A C	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
18	2nd Avenue	Imjin Parkway	NB 1-L, 1-T, 1-R SB 1-L, 1-T, 1-R EB 1-L, 1-T, 1-T/R WB 1-L, 1-T, 1-T/R	Signal *W/Mitigation*	Marina	D	9.7	A	7.3	A	10.1	B	7.8	A	20.1	C	34.1	C	20.3	C	36.8	D	20.3	C	36.8	E	30.3	C	**80.3**	F
19	Third Avenue	Imjin Parkway	NB 1-L, 1-T/R SB 1-L, 1-T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Stop WA *W/Mitigation*	Marina	D	2.9 82.3	A F	3.3 92.9	A F	**7.6** **120.9** -	**B** **F** -	**8.6** **212.1** -	**B** **F** -	47.9 *	E F	412.2 *	F F	***** * *80.7*	**F** **F** *F*	***** * *62.8*	**F** **F** *E*	189.9	F	342.8	F	**211.3** *178.9*	**F** *F*	**369.5** *259.4*	**F** *F*
20	Fourth Avenue	Imjin Parkway	NB 1-L/T/R SB 1-L/T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Stop WA *W/Mitigation*	Marina	D	0.2 51.8	A F	0.8 65.3	A F	**1.6** **128.5** -	**A** **F** -	**6.5** **235.9** -	**A** **F** -	0.6 315.6	A F	* *	F F	**8.3** ***** -	**A** **F** -	***** ***** -	**F** **F** -	86.1	F	146.3	F	86.4	F	147.3	F
21	California Avenue	Imjin Parkway	NB 1-L/T/R SB 1-L/T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Signal *W/Mitigation*	Marina	D	17.3	B	9.4	A	24.0	C	12.7	B	79.7	E	40.8	D	**89.8** *60.9*	**F** *E*	47.5 *42.9*	D *D*	61.3	E	46.6	D	61.5	E	48.6	D
22	Abrams Drive (South)	Imjin Parkway	SB 1-L/R EB 1-L, 2-T WB 1-T, 1-T/R	Stop WA	Marina	D	0.9 15.0	A B	0.9 13.1	A B	1.0 15.4	A B	1.2 13.4	A B	11.3	B	11.8	B	11.7	B	12.5	B	36.8	D	47.9	D	37.4	D	49.3	D
23	Imjin Road	Imjin Parkway	NB 1-L,1-L/R,1-R EB 1-T, 1-T/R WB 1-L, 2-T	Signal	Marina	D	17.4	B	19.5	B	17.6	B	19.4	B	20.0	B	25.9	C	20.2	C	26.3	C	42.0	D	164.4	F	42.7	D	165.4	F
24	Abrams Drive (North)	Imjin Road	NB 1-L/T, 1-R SB 1-L/T, 1-R EB 1-L, 1-T, 1-R WB 1-L, 1-T, 1-R	Signal	Marina	D	33.4	C	45.6	D	33.9	C	46.7	D	15.4	B	36.0	D	15.4	B	36.2	D	89.5	F	177.8	F	89.9	F	178.4	F
25	Imjin Road	Preston Drive	NB 1-L,1-T SB 1-T, 1-R EB 1-L/R	Signal	Marina	D	10.4	B	9.8	A	8.1	A	8.0	A	62.4	E	157.9	F	62.7	E	158.9	F	25.5	C	139.9	F	25.6	C	140.4	F

Notes:
1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. WA = Worst Approach
4. * = Delay greater than 300 seconds or calculation overflow.
5. N/A = Not Applicable.
6. Levels of service in bold represent significant impact.

EXHIBIT 6B
Intersection Levels of Service
Intersections 14 - 25

Intersection						Existing Plus Project	Background + Project Buildout Conditions	Cumulative Plus Project Conditions
	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	LOS Standard			
1	Del Monte Blvd.	Reservation Road	NB 1-L, 1-T, 2-R SB 2-L, 1-T, 1-T/R EB 1-L/T, 1-T/R WB 2-L, 1-T, 1-R	Signal	D	None Required.	None Required.	None Required.
2	California Avenue	Reservation Road	NB 1-L/T, 1-R SB 1-L/T/R EB 1-L, 1-T, 1-T/R WB 1-L, 1-T, 1-T/R	Stop Sign	D	None Required.	None Required.	None Required.
3	Imjin Road	Reservation Road	NB 2-L, 1-T/R, 1-R SB 1-L, 1-T, 1-R EB 2-L, 2-T, 1-R WB 2-L, 2-T, 1-R	Signal	D	None Required.	None Required.	None Required.
4	Blanco Road	Reservation Road	SB 2-L, 2-R EB 2-L, 2-T WB 1-T, 1-R	Signal	D	None Required.	None Required.	None Required.
5	California Avenue	Carmel Avenue	NB 1-L, 2-T/R SB 1-L, 1-T/R EB 1-L/T, 1R WB 1-L/T, 1-R	All-Way Stop	D	None Required.	None Required.	None Required.
6	Del Monte Blvd.	Reindollar Avenue	NB 1-L, 2-T, 1-R SB 1-L, 2-T WB 1-L, 1-L/T/R	Signal	D	None Required.	None Required.	None Required.
7	Crescent Avenue	Reindollar Avenue	NB 1-L/R EB 1-T/R WB 1-L/T	Stop Sign	D	None Required.	None Required.	None Required.
8	Redwood Avenue	Reindollar Avenue	SB 1-L/R EB 1-L/T WB 1-T/R	Stop Sign	D	None Required.	None Required.	None Required.
9	California Avenue	Reindollar Avenue	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	All-Way Stop	D	None Required.	None Required.	None Required.
10	Del Monte Blvd	2nd Avenue Ext. (Future)	NB 2-T SB 2-T	Future	D	N/A	N/A	None Required.
11	2nd Avenue Ext. (Future)	Patton Parkway (Future)	Future	Future	D	N/A	N/A	None Required.
12	Crescent Avenue	Patton Parkway (Future)	Future	Future	D	None Required.	None Required.	None Required.
13	California Avenue	Patton Parkway (Future)	NB 1-T SB 1-T	Future	D	None Required.	Provide NB L.	Provide NB L.

Notes:
1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. NBL = Northbound Left-Turn Lane, NBR = Northbound Right-Turn Lane, NBT = Northbound Through Lane, etc.

EXHIBIT 7A
Intersection Mitigations
Intersections 1 - 13

Intersection						Existing Plus Project	Background + Project Buildout Conditions	Cumulative Plus Project Conditions
	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	LOS Standard			
14	California Avenue	Third Avenue	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Stop Sign	D	None Required.	None Required.	None Required.
15	California Avenue	Main Street (Future)	NB 1-T SB 1-T	Future	D	None Required.	None Required.	None Required.
16	SB Hwy 1 Ramps	Imjin Parkway	SB 1-L/T WB 1-L	Stop Sign	D	Signalize.	None Required.	Construct Loop Ramp for either southbound on movement or southbound off movement.
17	NB Hwy 1 Ramps	Imjin Parkway	NB 1-L/T, 1-R EB 1-L/T WB 1-T, 1-R	Stop Sign	D	None Required.	None Required.	None Required.
18	2nd Avenue	Imjin Parkway	NB 1-L, 1-T, 1-R SB 1-L, 1-T, 1-R EB 1-L, 1-T, 1-T/R WB 1-L, 1-T, 1-T/R	Signal	D	None Required.	None Required.	Additional at-grade improvements are not feasible. Ultimate intersection design alternatives will be studied in conjunction with Highway 1/Imjin Parkway PSR.
19	Third Avenue	Imjin Parkway	NB 1-L, 1-T/R SB 1-L, 1-T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Stop	D	Prohibit left turns and through movements from the Third Avenue approaches to Imjin Parkway.	Signalize.	Add SB R with overlap.
20	Fourth Avenue	Imjin Parkway	NB 1-L/T/R SB 1-L/T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Stop	D	Prohibit left turns and through movements from the Fourth Avenue approaches to Imjin Parkway.	Prohibit left turns and through movements from the Fourth Avenue approaches to Imjin Parkway.	None Required.
21	California Avenue	Imjin Parkway	NB 1-L/T/R SB 1-L/T/R EB 1-L,1-T, 1-T/R WB 1-L,1-T, 1-T/R	Signal	D	None Required.	Add SB R.	None Required.
22	Abrams Drive (South)	Imjin Parkway	SB 1-L/R EB 1-L, 2-T WB 1-T, 1-T/R	Stop	D	None Required.	None Required.	None Required.
23	Imjin Road	Imjin Parkway	NB 2-L, 1-R EB 1-T, 1-T/R WB 1-L, 2-T	Stop Sign	D	None Required.	None Required.	None Required.
24	Abrams Drive (North)	Imjin Road	NB 1-L/T, 1-R SB 1-L/T, 1-R EB 1-L, 1-T, 1-R WB 1-L, 1-T, 1-R	Signal	D	None Required.	None Required.	None Required.
25	Imjin Road	Preston Drive	NB 1-L,1-T SB 1-T, 1-R EB 1-L/R	Stop	D	None Required.	None Required.	None Required.

Notes:
1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. NBL = Northbound Left-Turn Lane, NBR = Northbound Right-Turn Lane, NBT = Northbound Through Lane, etc.

EXHIBIT 7B
Intersection Mitigations
Intersections 14 - 25

Road Segment		Type	Direction	LOS Std.	Existing Conditions						Existing + Project Conditions					
					AM Peak Hr			PM Peak Hr			AM Peak Hr			PM Peak Hr		
					Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]	LOS
Freeway Segments																
1 Highway 1	Between Nashua / Molera Rds. & Del Monte North interchange	4-Lane Freeway	NB	D	1,171	10	A	2,857	24	C	1,187	10	A	2,870	24	C
		4-Lane Freeway	SB	D	1,783	19	C	1,400	12	B	1,792	19	C	1,419	12	B
2 Highway 1	Between Del Monte North interchange & Reservation Rd.	4-Lane Freeway	NB	D	1,073	9	A	2,696	23	C	1,088	9	A	2,707	23	C
		4-Lane Freeway	SB	D	1,685	17	B	1,361	12	B	1,692	17	B	1,378	12	B
3 Highway 1	Between Reservation Rd & Del Monte South interchange	4-Lane Freeway	NB	D	982	8	A	2,634	24	C	997	8	A	2,645	24	C
		4-Lane Freeway	SB	D	1,929	20	C	1,345	12	B	1,936	20	C	1,362	12	B
4 Highway 1	Between Del Monte South interchange & Imjin Parkway	6-Lane Freeway	NB	D	1,499	8	A	4,210	24	C	1,514	9	A	4,221	24	C
		6-Lane Freeway	SB	D	3,407	24	C	2,300	13	B	3,414	24	C	2,317	13	B
5 Highway 1	Between Imjin Parkway & Lightfighter	6-Lane Freeway	NB	D *With Mitigation*	2,283	13	B	5,182	31	D	2,302	13	B	5,227	32	D
		6-Lane Freeway	SB	D	4,314	32	D	3,023	17	B	4,348	33	D	3,052	18	B
Freeway Ramps[3]					AM Peak Hr Volume		LOS	PM Peak Hr Volume		LOS	AM Peak Hr Volume		LOS	PM Peak Hr Volume		LOS
6 Hwy 1 NB Onramp	At Imjin Parkway	1-Lane Ramp	NB	D	40		A	91		A	55		A	102		A
7 Hwy 1 NB Offramp	At Imjin Parkway	1-Lane Ramp	NB	D	812		A	1,062		A	931		A	1,106		A
8 Hwy 1 SB Onramp	At Imjin Parkway	1-Lane Ramp	SB	D *With Mitigation*	1,032		A	777		A	1,066		A	806		A
9 Hwy 1 SB Offramp	At Imjin Parkway	1-Lane Ramp	SB	D	125		A	54		A	132		A	71		A
10 Hwy 1 NB Offramp	At Del Monte South	2-Lane Ramp	SB	D	517		A	1,376		A	517		A	1,376		A
11 Hwy 1 SB Onramp	At Del Monte South	1-Lane Ramp	SB	D	1,478		C	955		B	1,478		C	955		B
Weaving Segments					Volume		LOS	Volume		LOS	Volume		LOS	Volume		LOS
12 Highway 1 NB	Between Imjin Parkway & Del Monte Blvd. South	6-Lane Freeway	W_1 W_2	D	510 21		A	1,347 50		C	510 36		A	1,347 61		C
13 Highway 1 SB	Between Del Monte Blvd. South & Imjin Parkway	6-Lane Freeway	W_1 W_2	D	1,453 76		D	943 38		C	1,453 83		D	943 55		C

Road Segment	Direction	Background Conditions						Background + Project Conditions					
		AM Peak Hr			PM Peak Hr			AM Peak Hr			PM Peak Hr		
		Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]	LOS
Freeway Segments													
1 Highway 1	NB	1,539	13	B	3,346	30	D	1,555	13	B	3,359	30	D
	SB	2,097	19	C	1,963	18	C	2,106	20	C	1,982	18	C
2 Highway 1	NB	1,441	12	B	3,184	29	D	1,456	12	B	3,195	29	D
	SB	1,899	19	C	1,923	18	B	2,006	19	C	1,940	18	B
3 Highway 1	NB	1,373	12	B	3,373	31	D	1,388	12	B	3,384	31	D
	SB	2,232	21	C	1,949	18	B	2,239	21	C	1,966	18	C
4 Highway 1	NB	1,963	11	A	4,892	30	D	1,978	11	B	4,903	30	D
	SB	3,785	23	C	3,046	19	C	3,792	23	C	3,063	19	C
5 Highway 1	NB	2,794	16	B	6,194	43	E	2,815	16	B	6,240	43	E
	SB	4,897	33	D	3,927	24	C	4,938	33	D	3,960	24	C
Freeway Ramps[3]		AM Peak Hr Volume		LOS	PM Peak Hr Volume		LOS	AM Peak Hr Volume		LOS	PM Peak Hr Volume		LOS
6 Hwy 1 NB Onramp	NB	305		A	435		A	320		A	446		A
7 Hwy 1 NB Offramp	NB	1,136		A	1,737		A	1,157		A	1,763		A
8 Hwy 1 SB Onramp	SB	1,435		B	1,360		B	1,474		B	1,393		B
9 Hwy 1 SB Offramp	SB	323		A	479		A	330		A	496		A
10 Hwy 1 NB Offramp	SB	591		A	1,520		A	591		A	1,520		A
11 Hwy 1 SB Onramp	SB	1,553		C	1,096		B	1,553		C	1,096		B
Weaving Segments		Volume		LOS	Volume		LOS	Volume		LOS	Volume		LOS
12 Highway 1 NB	W_1 W_2	538 252		A	1,426 330		C	538 267		A	1,428 341		C
13 Highway 1 SB	W_1 W_2	1,472 226		D	996 378		D	1,472 233		D	996 393		D

Road Segment	Direction	Cumulative Without Project Conditions						Cumulative + Project Conditions				
		AM Peak Hr			PM Peak Hr			AM Peak Hr			PM Peak Hr	
		Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]	LOS	Volume	Density[1]
Freeway Segments												
1 Highway 1	NB	2,081	18	B	4,342	47	F	2,097	18	B B	4,355	47
	SB	2,892	25	C	2,789	24	C	2,901	25	C	2,808	25
2 Highway 1	NB	1,964	17	B	4,083	42	E	1,979	17	B	4,094	43
	SB	2,724	24	C	2,748	24	C	2,731	24	C	2,765	24
3 Highway 1	NB	1,938	16	B	4,279	44	E	1,953	16	B	4,290	45
	SB	2,975	28	D	2,824	25	C	2,982	28	D	2,841	25
4 Highway 1	NB	2,845	16	B	6,062	42	E	2,860	16	B	6,073	42
	SB	4,773	30	D	4,274	25	C	4,780	30	D	4,291	25
5 Highway 1	NB	4,613	28	D	6,083	58	F	4,635	28	D C	6,129	59
	SB	6,000	43	E	5,940	43	E	6,039	44	E	5,973	43
Freeway Ramps[3]		AM Peak Hr Volume		LOS	PM Peak Hr Volume		LOS	AM Peak Hr Volume		LOS	PM Peak Hr Volume	
6 Hwy 1 NB Onramp	NB	431		A	771		A	446		A	782	
7 Hwy 1 NB Offramp	NB	2,202		A	2,792		B	2,224		A	2,638	
8 Hwy 1 SB Onramp	SB	1,866		D	2,390		F	1,905		D A	2,424	
9 Hwy 1 SB Offramp	SB	638		A	724		A	646		A	742	
10 Hwy 1 NB Offramp	SB	907		A	1,783		A	907		A	1,783	
11 Hwy 1 SB Onramp	SB	1,797		D	1,448		C	1,797		D	1,448	
Weaving Segments		Volume		LOS	Volume		LOS	Volume		LOS	Volume	
12 Highway 1 NB	W_1 W_2	897 434		C	1,760 736		D	897 449		C	1,760 747	
13 Highway 1 SB	W_1 W_2	1,781 600		E	1,424 895		E	1,781 607		E	1,424 712	

EXHIBIT 8A
Levels of Service
Road Segments (1)

HIGGINS ASSOCIATES

4-094 Segment LOSc - Seg LOS

Road Segment		Type	Direction	LOS Std.	Existing Conditions				Existing + Project Conditions				Background Conditions				Background + Project Conditions				Cumulative Without Project Conditions				Cumulative + Project Conditions		
					AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr
Road Segments																											
14 Del Monte Blvd.	South of Reservation Road	5-Lane Arterial w/left-turn lane	Two-Way	D	1,193	A	1,788	A	1,197	A	1,775	A	1,314	A	2,005	A	1,318	A	2,009	C	2,422	A	3,409	C	2,424	A	3,414
15 Patton Parkway	West of California Avenue	2-Lane Collector	Two-Way	D	N/A		N/A		184	A	70	A	N/A		N/A		183	A	72	A	78	A	32	A	88	A	49
16 Reservation Rd.	West of California Avenue	4-Lane Arterial w/left-turn lane	Two-Way	D	1,491	A	1,954	A	1,491	A	1,954	A	1,915	A	2,720	C	1,937	A	2,748	C	2,586	C	3,542	E	2,602	C	3,563
17 Carmel Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	360	A	350	A	360	A	350	A	476	A	493	A	477	A	495	A	726	B	855	C	726	B	855
18 Reindollar Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	313	A	365	A	299	A	389	A	234	A	335	A	249	A	355	A	297	A	407	A	305	A	416
19 California Avenue	Between Reservation and Carmel	2-Lane Arterial	Two-Way	D	185	A	211	A	185	A	210	A	496	A	569	A	529	A	612	A	646	A	780	A	674	A	817
20 California Avenue	Between Carmel and Reindollar	2-Lene Arterial	Two-Way	D	42	A	31	A	43	A	31	A	398	A	448	A	438	A	501	A	728	A	908	A	761	A	952
21 California Avenue	Between Patton Parkway and 3rd Avenue	2-Lane Arterial	Two-Way	D	386	A	297	A	476	A	358	A	634	A	604	A	696	A	691	A	1,003	A	1,227	B	1,044	A	1,280
22 Imjin Parkway	Between Highway 1 and 2nd Avenue	4-Lane Expressway	Two-Way	D *With Mitigation*	1,988	B	1,982	B	2,063	B	2,085	B	3,202	C	4,012	D	3,284	C	4,119	D	5,163	C	6,677	D	5,247	C *B*	6,786
23 Imjin Parkway	Between 2nd Avenue and 3rd Avenue	4-Lane Expressway	Two-Way	D *With Mitigation*	1,896	B	1,894	B	1,992	B	2,023	B	2,811	C	3,418	C	2,913	C	3,550	C	5,035	F	6,684	F	5,130	F *C*	6,806
24 Imjin Parkway	Between 3rd Avenue and 4th Avenue	4-Lane Expressway	Two-Way	D *With Mitigation*	1,804	B	1,916	B	1,930	B	1,973	B	2,874	C	3,587	C	2,914	C	3,643	D	4,241	D	5,881	F	4,252	D *C*	5,875
25 Imjin Parkway	Between 4th Avenue and California Avenue	4-Lane Expressway	Two-Way	D *With Mitigation*	1,816	B	1,931	B	1,967	B	2,038	B	2,888	C	3,602	D	2,948	C	3,700	D	4,329	D	5,902	F	4,340	D *C*	5,917
26 Imjin Parkway	Between California Avenue and Imjin Road	4-Lane Expressway	Two-Way	D *With Mitigation*	1,683	A	1,841	B	1,733	A	1,914	B	2,757	C	3,462	C	2,789	C	3,513	C	4,239	D	5,739	F	4,255	D *C*	5,760
27 2nd Avenue	South of Del Monte Boulevard	4-Lane Arterial	Two-Way	D	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		544	A	789	A	557	A	806

Notes:
1. Vehicle density is measured in passenger cars per mile per lane during the specific noted peak hour period.
2. Capacities given for each service level assume the same level of service for the adjoining merging roadway as well as level of service being determined by volume-to-capacity and not attainable speed. Level of service will be controlled by freeway leve
3. Based on the Caltrans Highway Design Manual, Section 504.4 (5) & (6) and 504.5.
4. Levels of service shown in italics represent level of service with mitigation.
5. W_1, W_2 = Larger and smaller weaving movements within analyzed weaving segment
6. Levels of service in bold represent significant project impacts.
7. NW = No weave.
8. Traffic on the Del Monte on-ramp to southbound Highway 1 is a directional ramp that enters its own lane on the freeway. Levels of service for this ramp are based upon the capacity of a single freeway lane.

	LOS A	LOS B	LOS C	LOS D	LOS E
1-Lane Freeway Ramp[3]	500	750	1,050	1,300	1,500
2-Lane Freeway Ramp[3]	1,000	1,500	2,100	2,600	2,800
1-Lane Freeway Ramp with Dedicated Lane[9]	770	1,200	1,700	2,000	2,200

EXHIBIT 8A
Levels of Service
Road Segments (2)

Road Segment			Type	Direction	LOS Std.	Existing Plus Conditions	Background Plus Project Conditions	Cumulative Plus Project Conditions
Freeway Segments								
1	Highway 1	Between Nashua / Molera Rds. & Del Monte North interchange	4-Lane Freeway	NB	D	None Required	None Required	Add 3rd NB lane on Hwy 1
2	Highway 1	Between Del Monte North interchange & Reservation Rd.	4-Lane Freeway	NB	D	None Required	None Required	None Required
3	Highway 1	Between Reservation Rd. & Del Monte South interchange	4-Lane Freeway	NB	D	None Required	None Required	None Required
4	Highway 1	Between Del Monte South interchange & Imjin Parkway	6-Lane Freeway	NB	D	None Required	None Required	None Required
5	Highway 1	Between Imjin Parkway & Lightfighter	6-Lane Freeway	NB	D	None Required	None Required	Add 4th NB lane on Hwy 1
Freeway Ramps								
6	Hwy 1 NB Onramp	At Imjin Parkway	1-Lane Ramp	NB	D	None Required	None Required	None Required
7	Hwy 1 NB Offramp	At Imjin Parkway	1-Lane Ramp	NB	D	None Required	None Required	None Required
8	Hwy 1 SB Onramp	At Imjin Parkway	1-Lane Ramp	SB	D	None Required	None Required	Add 2nd Lane
9	Hwy 1 SB Offramp	At Imjin Parkway	1-Lane Ramp	SB	D	None Required	None Required	None Required
10	Hwy 1 NB Offramp	At Del Monte South	2-Lane Ramp	SB	D	None Required	None Required	None Required
11	Hwy 1 SB Onramp	At Del Monte South	1-Lane Ramp	SB	D	None Required	None Required	None Required
Weaving Segments								
12	Highway 1 NB	Between Imjin Parkway & Del Monte Blvd. South	6-Lane Freeway	NB	D	None Required	None Required	None Required
13	Highway 1 SB	Between Del Monte Blvd. South & Imjin Parkway	6-Lane Freeway	SB	D	None Required	None Required	None Required

EXHIBIT 8B
Recommended Mitigation for Road Segments (1)

Road Segment		Type	Direction	LOS Std.	Existing Plus Conditions	Background Plus Project Conditions	Cumulative Plus Project Conditions
Road Segments							
14 Del Monte Blvd.	South of Reservation Road	5-Lane Arterial w/left-turn lane	Two-Way	D	None Required	None Required	None Required
15 Patton Parkway	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
16 Reservation Rd.	West of California Avenue	4-Lane Arterial w/left-turn lane	Two-Way	D	None Required	None Required	None Required
17 Carmel Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
18 Reindollar Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
19 California Avenue	Between Reservation and Carmel	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
20 California Avenue	Between Carmel and Reindollar	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
21 California Avenue	Between Patton Parkway and 3rd Avenue	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
22 Imjin Parkway	Between Highway 1 and 2nd Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 4th EB and 4th WB lanes (Not consistent with City of Marina General Plan.)
23 Imjin Parkway	Between 2nd Avenue and 3rd Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
24 Imjin Parkway	Between 3rd Avenue and 4th Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
25 Imjin Parkway	Between 4th Avenue and California Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
26 Imjin Parkway	Between California Avenue and Imjin Road	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
27 2nd Avenue	South of Del Monte Boulevard	4-Lane Arterial	Two-Way	D	None Required	None Required	None Required

EXHIBIT 8B
Recommended Mitigation for Road Segments (2)

HIGGINS ASSOCIATES

Re6ą		Tę	Dę	LOS Std	Existing Plus Conditions	Background Plus Project Conditions	Cumulative Conditions
Re6ą							
14 Del Monte Blvd.	South of Reservation Road	5-Lane Arterial w/left-turn lane	Two-Way	D	None Required	None Required	None Required
15 Patton Parkway	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
16 Reservation Rd.	West of California Avenue	4-Lane Arterial w/left-turn lane	Two-Way	D	None Required	None Required	None Required
17 Carmel Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
18 Reindollar Avenue	West of California Avenue	2-Lane Collector	Two-Way	D	None Required	None Required	None Required
19 California Avenue	Between Reservation and Carmel	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
20 California Avenue	Between Carmel and Reindollar	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
21 California Avenue	Between Patton Parkway and 3rd Avenue	2-Lane Arterial	Two-Way	D	None Required	None Required	None Required
22 Imjin Parkway	Between Highway 1 and 2nd Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 4th EB and 4th WB lanes (Not consistent with City of Marina General Plan.)
23 Imjin Parkway	Between 2nd Avenue and 3rd Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
24 Imjin Parkway	Between 3rd Avenue and 4th Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
25 Imjin Parkway	Between 4th Avenue and California Avenue	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
26 Imjin Parkway	Between California Avenue and Imjin Road	4-Lane Expressway	Two-Way	D	None Required	None Required	Add 3rd EB and 3rd WB lanes
27 2nd Avenue	South of Del Monte Boulevard	4-Lane Arterial	Two-Way	D	None Required	None Required	None Required

HIGGINS ASSOCIATES

4-094 Segment LOSc.xls - Seg Mtl

EXHIBIT 8B

ReM(p r

Re6(p)

			PEAK HOUR TRIP RATES								
				AM PEAK HOUR				PM PEAK HOUR			
LAND USE	ITE LAND USE CODE	PROJECT SIZE	DAILY TRIP RATES	PEAK HOUR RATES	% OF DAILY TRIPS	% IN	% OUT	PEAK HOUR RATE	% OF DAILY TRIPS	% IN	% OUT
Senior Adult Housing - Detached	251	546 Units	3.71	0.20	5%	0.38	0.62	0.26	7%	0.61	0.39
Senior Adult Housing - Townhome	251	50 Units	3.71	0.20	5%	0.38	0.62	0.26	7%	0.61	0.39
Assisted Living	254	60 Beds	2.74	0.17	6%	0.73	0.27	0.38	14%	0.36	0.64
Club Facility	495	20,000 SF	22.88	1.62	7%	0.61	0.39	1.64	7%	0.29	0.71
Apartments	220	116 Units	6.72	0.51	8%	0.20	0.80	0.62	9%	0.65	0.35
City Park	SDTG	17.60 Acres	50.00	2.00	4%	0.50	0.50	4.00	8%	0.50	0.50
K-8 School	552	850 Students	1.62	0.53	33%	0.55	0.45	0.15	9%	0.52	0.48
Senior Center	495	6,000 SF	22.88	1.62	7%	0.61	0.39	1.64	7%	0.29	0.71

			PROJECT TRIP GENERATION - PROJECT CONDITIONS								
				AM PEAK HOUR				PM PEAK HOUR			
LAND USE	ITE LAND USE CODE	PROJECT SIZE	DAILY TRIPS	PEAK HOUR TRIPS	% OF DAILY TRIPS	TRIPS IN	TRIPS OUT	TOTAL PEAK HOUR	% OF DAILY TRIPS	TRIPS IN	TRIPS OUT
Senior Adult Housing - Detached	251	546 Units	2,026	109	5%	41	68	142	7%	87	55
Senior Adult Housing - Townhome	251	50 Units	186	10	5%	4	6	13	7%	8	5
Assisted Living	254	60 Beds	164	10	6%	7	3	23	14%	8	15
Club Facility	495	20,000 SF	458	32	7%	20	13	33	7%	10	23
Apartments	220	116 Units	780	59	8%	12	47	72	9%	47	25
City Park	SDTG	18 Acres	880	35	4%	18	18	70	8%	35	35
Senior Center	495	6,000 SF	137	10	7%	6	4	10	7%	3	7
TOTAL PROJECT TRIPS -- PROJECT CONDITION			**4,630**	**266**	**6%**	**108**	**158**	**363**	**8%**	**197**	**166**

			PROJECT TRIP GENERATION - CUMULATIVE								
				AM PEAK HOUR				PM PEAK HOUR			
LAND USE	ITE LAND USE CODE	PROJECT SIZE	DAILY TRIPS	PEAK HOUR TRIPS	% OF DAILY TRIPS	TRIPS IN	TRIPS OUT	TOTAL PEAK HOUR	% OF DAILY TRIPS	TRIPS IN	TRIPS OUT
Senior Adult Housing - Detached	251	546 Units	2,026	109	5%	41	68	142	7%	87	55
Senior Adult Housing - Townhome	251	50 Units	186	10	5%	4	6	13	7%	8	5
Assisted Living	254	60 Beds	164	10	6%	7	3	23	14%	8	15
Club Facility	495	20,000 SF	458	32	7%	20	13	33	7%	10	23
Apartments	220	116 Units	780	59	8%	12	47	72	9%	47	25
City Park	SDTG	17.60 Acres	880	36	4%	18	18	70	8%	35	35
K-8 School (Cumulative Project)	552	850 Students	1,377	451	33%	248	203	128	9%	66	61
Senior Center	495	6,000 SF	137	10	7%	6	4	10	7%	3	7
TOTAL PROJECT TRIPS -- CUMULATIVE CONDITION			**6,007**	**717**	**12%**	**356**	**361**	**490**	**8%**	**263**	**227**

Notes:

1. Trip generation rates published by Institute of Transportation Engineers, "Trip Generation," 7th Edition, 2003, except City Park.
2. City Park trip rates from "San Diego Traffic Generators," San Diego Association of Governments, 1998.
3. Club Facility: 90% of the trips generated by this use will be modeled as internal trips and 10% as external trips.
4. Analysis of Existing Plus Project and Background Plus Project includes the trips generated by the park. Analysis of Cumulative Conditions includes the K-8 school.

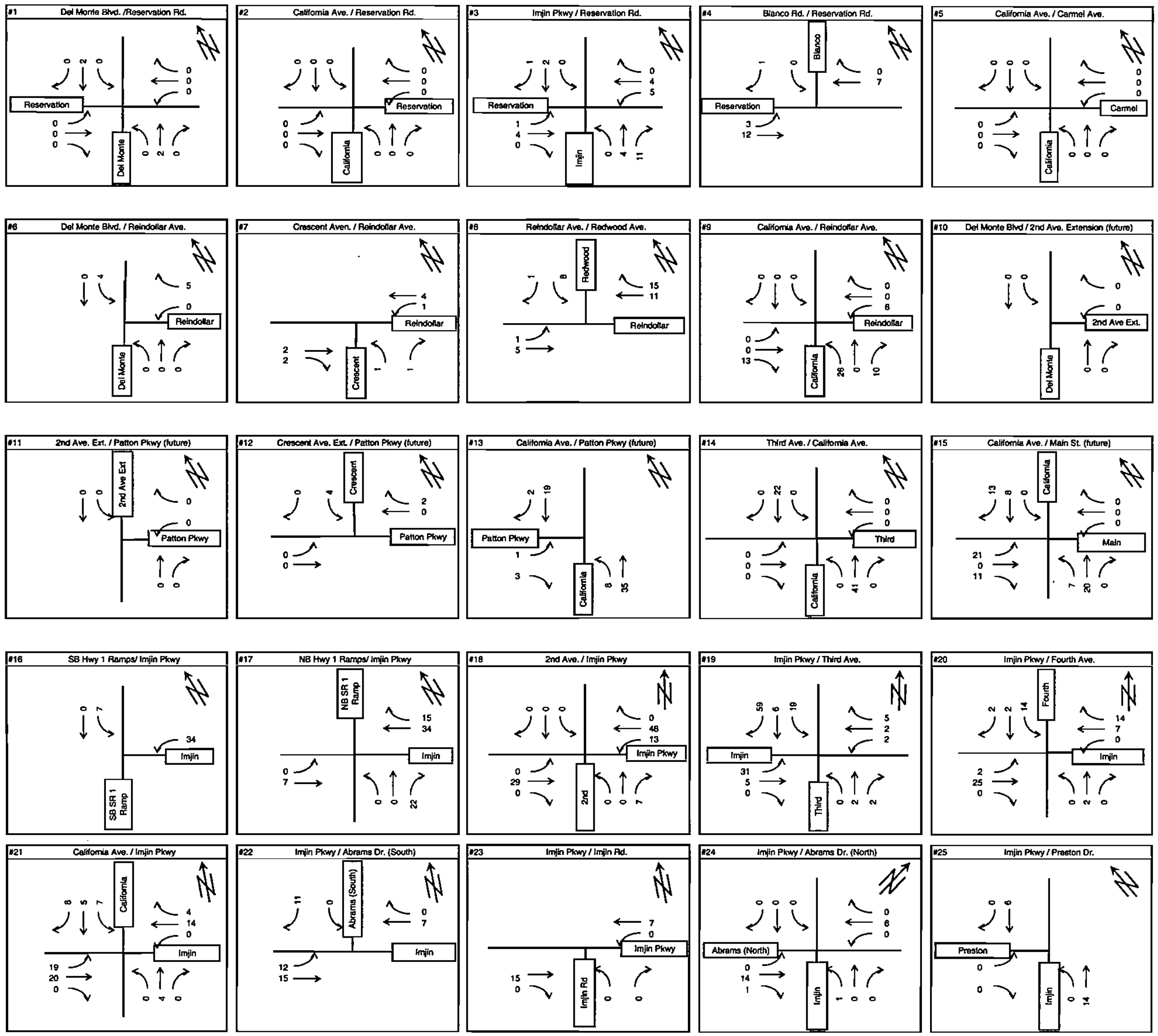
EXHIBIT 9
CYPRESS KNOLLS
TRIP GENERATION

CYPRESS KNOLLS TRIP DISTRIBUTION		
AREA	Residential Asst Lvng Senior Center Club House	Park
Hwy 1 North	12%	0%
Marina	27%	80%
Blanco Road	3%	0%
Reservation Road East/Davis	10%	0%
CSUMB/MUV	11%	20%
Hwy 1 South/Gnl Jim Moore	37%	0%
Total	100%	100%

Notes:

1. Primary trip distribution pattern derived from traffic assignments for the Marina area developed by the AMBAG traffic forecasting model.

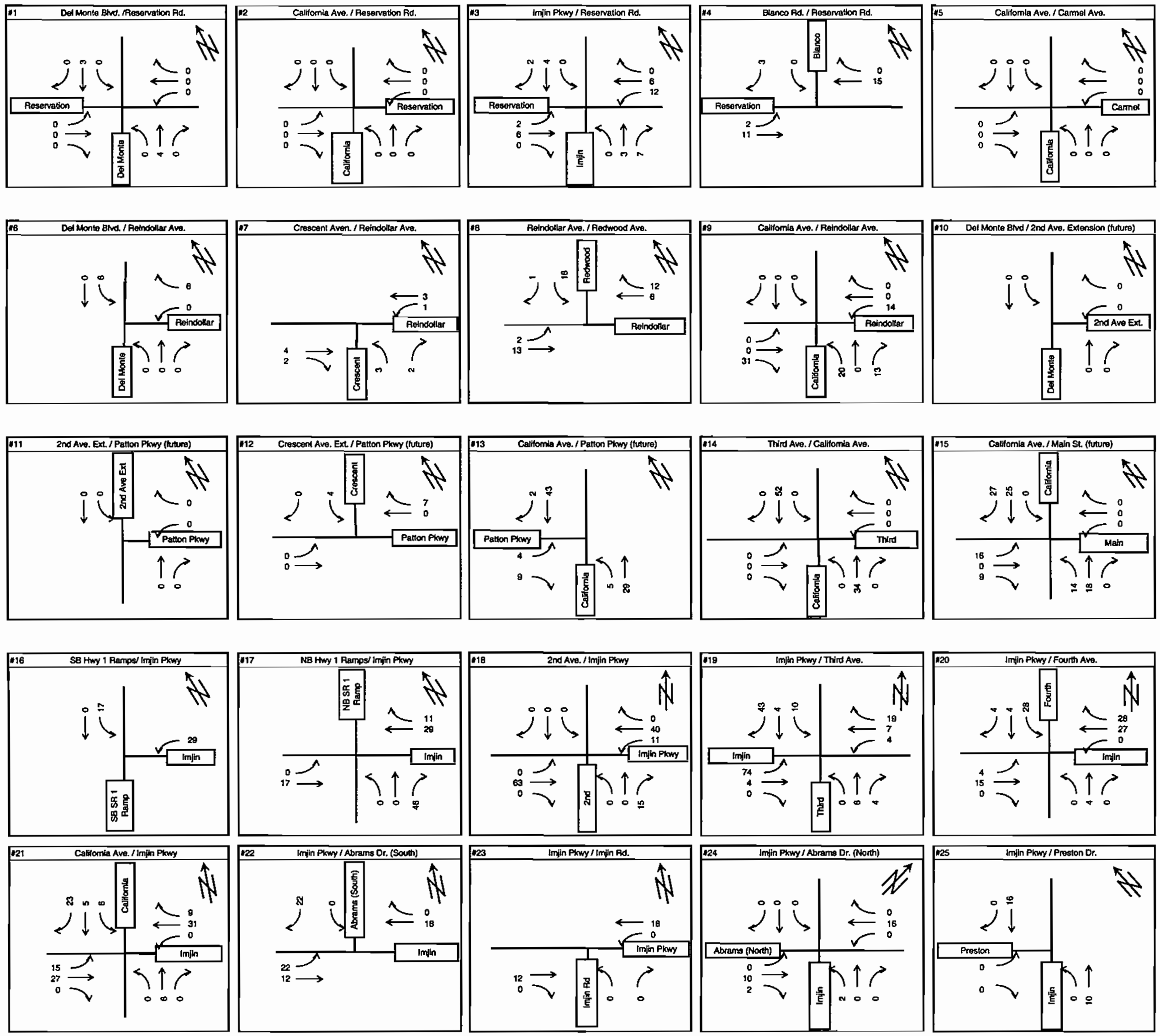
EXHIBIT 10
PROJECT
TRIP DISTRIBUTION



HIGGINS ASSOCIATES

4-094 Project Trips AM.xls - Project Trips AM

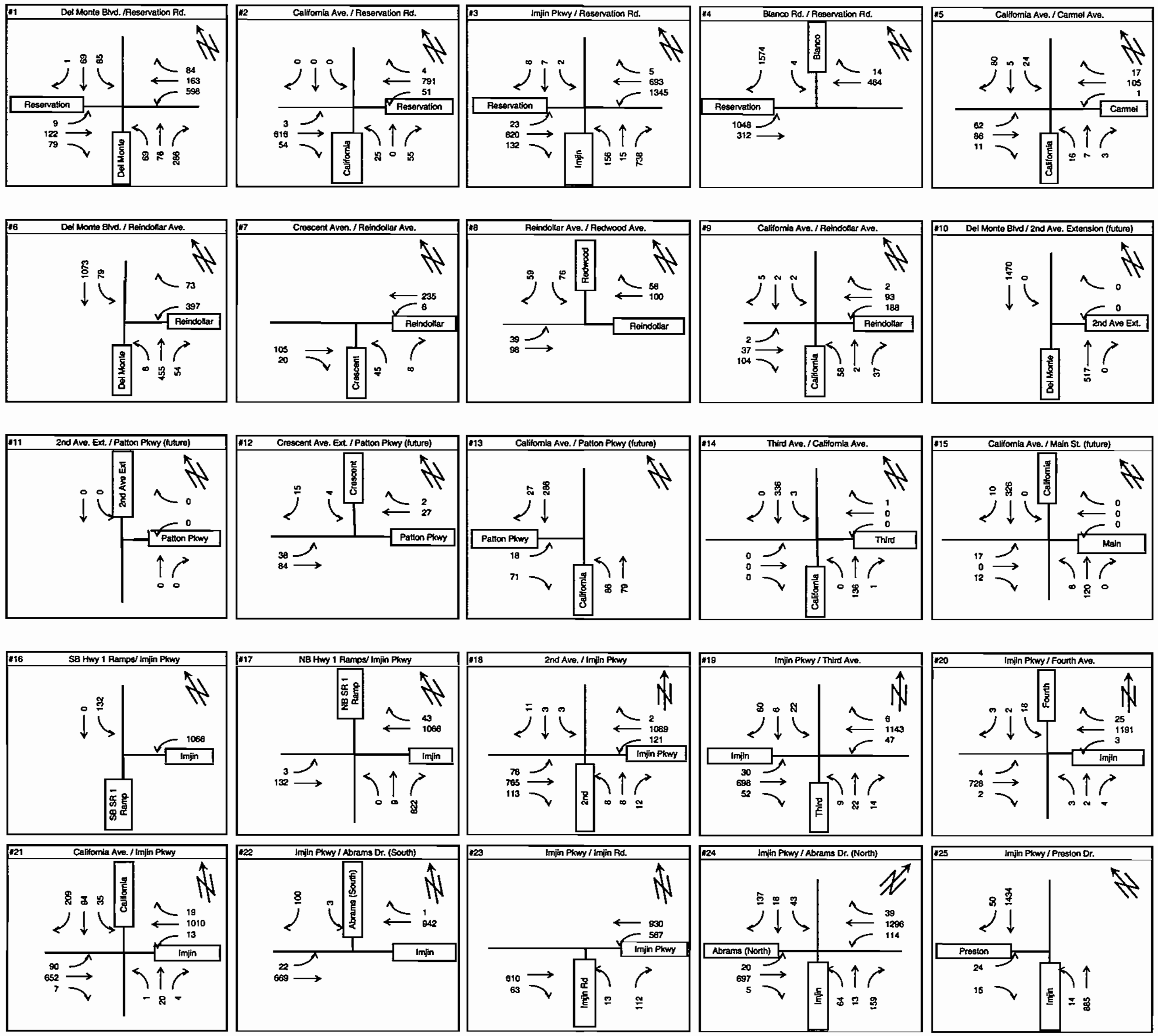
EXHIBIT 11A
AM Peak Hour
Project Trip Assignment



HIGGINS ASSOCIATES

4-094 Project Trips PM.xls - Project Trips PM

EXHIBIT 11B
PM Peak Hour
Project Trip Assignment



HIGGINS ASSOCIATES

4-094 Existing Plus Project AM.xls - Existing Plus Project AM

EXHIBIT 12A
Existing With Project
AM Peak Hour Volumes

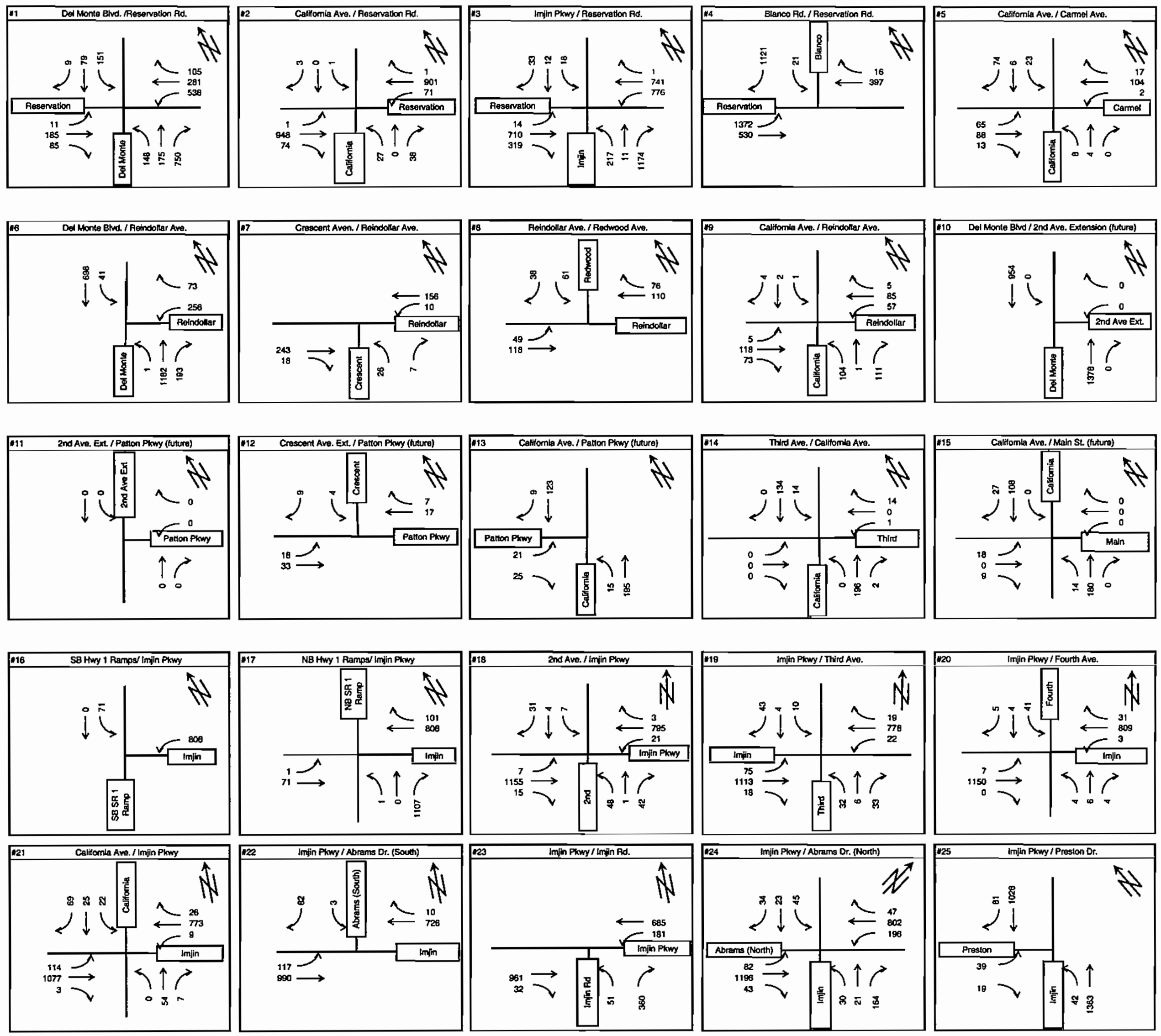


EXHIBIT 12B
Existing With Project
PM Peak Hour Volumes

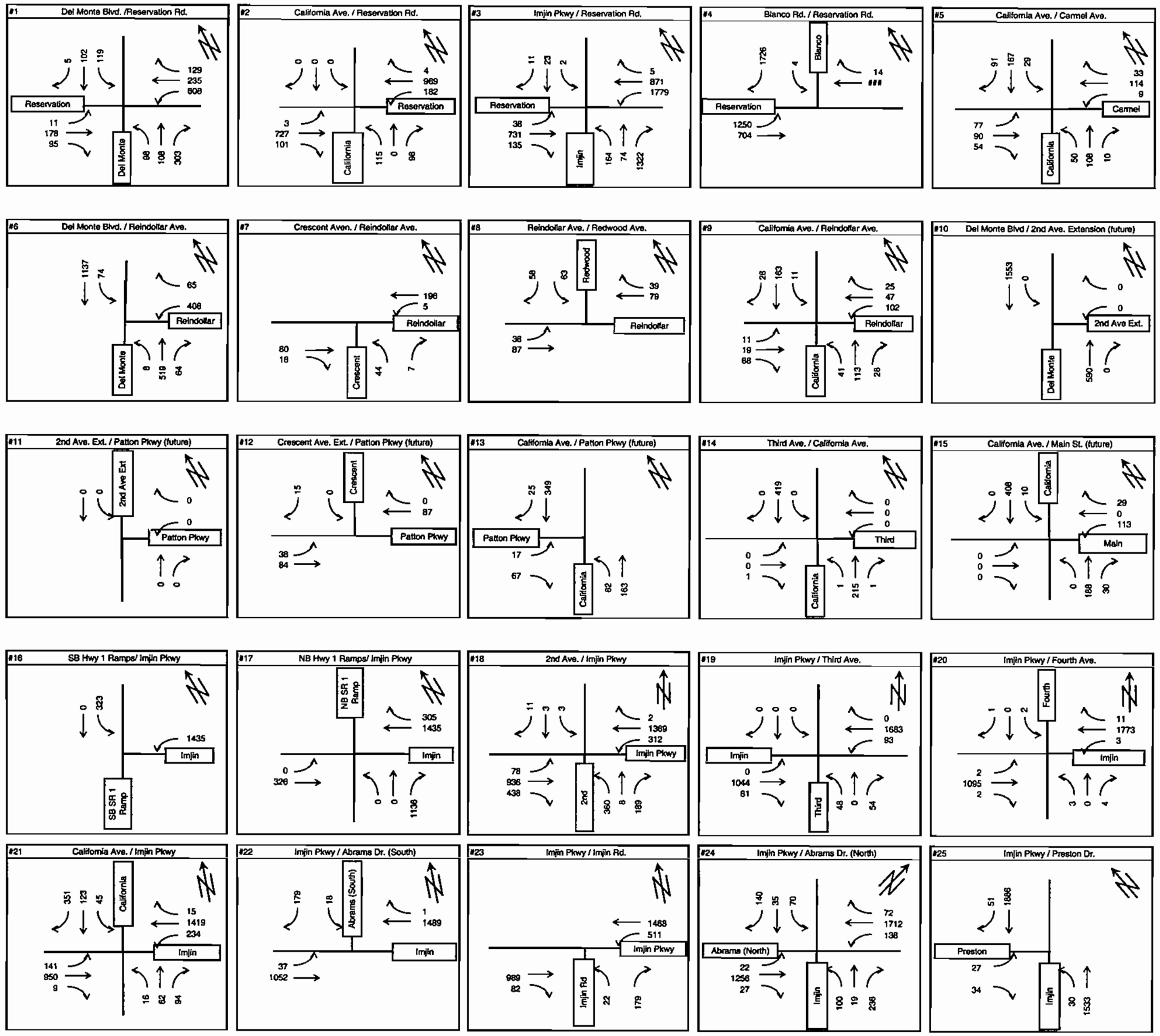
HIGGINS ASSOCIATES

TRIP GENERATION FOR APPROVED PROJECTS

PROJECT	SIZE	DAILY TRIP RATE	DAILY TRIPS	AM PEAK HOUR: PEAK HOUR VOL.	AM PEAK HOUR: (% OF DAILY)	AM PEAK HOUR: IN	AM PEAK HOUR: OUT	PM PEAK HOUR: PEAK HOUR VOL.	PM PEAK HOUR: (% OF DAILY)	PM PEAK HOUR: IN	PM PEAK HOUR: OUT
City of Marina:											
1. Marina Heights Subdivision [2]											
Townhomes	102 Units	5.86	598	45	(8%)	8	37	55	(9%)	37	18
Single-Family Detached Housing	948 Units	9.57	9,072	711	(8%)	177	534	958	(11%)	613	345
2. CSUMB North Campus Housing [3]	492 Units	-	2,627	204	(8%)	46	158	261	(10%)	169	92
3. CSUMB Students (2010) [3]	1,994 Students	-	4,354	384	(9%)	307	77	384	(9%)	116	268
4. Reservation Road Condominiums	14 Units	5.86	82	6	(7%)	1	5	7	(9%)	5	2
5. Paddon Place Subdivision	15 Units	9.57	144	11	(8%)	3	8	15	(10%)	10	5
6. 249 Carmel	10 Units	9.57	96	8	(8%)	2	6	10	(10%)	7	3
7. Crescent/Carmel Subdivision	14 Units	9.57	134	11	(8%)	3	8	14	(10%)	9	5
8. Hotel - 323 Reservation Road [4]	39 Rooms	8.92	348	26	(7%)	15	11	27	(8%)	13	14
9. Marina University Villages [5]											
Phase 1	- -	-	48,241	1,958	(4%)	1,056	902	4,282	(9%)	2,195	2,087
10. MBEST [6]	- -	-	5,631	385	(7%)	301	84	604	(11%)	201	403
11. Marina Landing Redevelopment [7]	300,000 S.F.	-	11,886	357	(3%)	218	139	1,044	(9%)	530	514
12. 3200 Seaside											
Single-Family Detached Housing	17 Units	9.57	163	13	(8%)	3	10	17	(10%)	11	6
Carriage Units	12 Units	6.72	81	6	(7%)	1	5	7	(9%)	5	2
13. 3110 Seacrest	7 Units	9.57	67	5	(7%)	1	4	7	(10%)	5	2
City of Seaside:											
14. First Tee - Golf Course [8]	- -	-	1,028	43	(4%)	32	11	79	(8%)	29	50
15. Seaside Highlands [9]	238 Homes	9.57	2,278	179	(8%)	45	134	240	(11%)	156	84
16. Seaside Resort [10]	- -	-	5,672	267	(5%)	145	122	362	(6%)	180	182
17. Monterey School of Law	300 Students	-	-	16	(-)	13	3	63	(-)	50	13
18. Marriott Courtyard Hotel	143 Rooms	8.23	1,177	74	(5%)	41	33	87	(6%)	51	36
19. Chili's - Restaurant [11]	250 seats	4.83	1,208	118	(10%)	61	57	105	(9%)	61	44
20. Outback Steakhouse - Restaurant [11]	220 seats	4.83	1,063	103	(10%)	54	49	92	(9%)	53	39
21. Starbucks w/ drive-thru [12]	1,400 S.F.	-	-	-		-	-	-		-	-
22. Home Depot (Former K-Mart Bldg.)	85,000 S.F.	29.80	2,533	102	(4%)	55	47	208	(8%)	98	110
23. Autozone [13]	6,815 S.F.	58.84	401	14	(3%)	7	7	51	(13%)	25	26
24. Seaside Auto Center Redvelopment [14]	- -	-	-	-		-	-	-		-	-
City of Monterey:											
25. Ryan Ranch Business Park (Buildout)	226,000 S.F.	-	5,222	324	(6%)	258	66	232	(4%)	52	180
Unincorporated Monterey County:											
26. CSUMB East Campus Housing [15]	125 Homes	9.57	1,196	94	(8%)	24	70	126	(11%)	81	45
27. East Garrison [16]	- -	-	12,391	975	(8%)	247	728	1,315	(11%)	793	522
28. Monterra Ranch	249 Homes	9.57	2,383	187	(8%)	47	140	144	(6%)	82	62
29. Pasadera	43 Homes	9.57	412	32	(8%)	8	24	254	(62%)	144	110
30. Harper 14 Lots of Record	14 Homes	9.57	134	11	(8%)	3	8	14	(10%)	9	5
31. Oaks Subdivision	11 Homes	9.57	105	8	(8%)	2	6	11	(10%)	7	4
32. Laguna Seca Business Park	double in size	-	1,380	152	(11%)	129	23	138	(10%)	48	90
33. Tanimura Family Residential	73 Lots	9.57	699	55	(8%)	14	41	74	(11%)	48	26
TOTAL APPROVED PROJECTS			122,805	6,884	(6%)	3,327	3,557	11,287	(9%)	5,893	5,394

Notes:
1. Traffic volumes are based on trip generation rates quoted by the Institute of Transportation Engineers, *Trip Generation*, 6th Edition, 1997, and 7th Edition, 2003, unless otherwise noted.
2. Trip generation from *Marina Heights Environmental Impact Report Traffic Study*, Higgins Associates, April 2003.
3. Trip generation from *California State University at Monterey Bay (CSUMB) 2004 Master Plan Update Traffic Impact Study Report*, Higgins Associates, July 26, 2004.
4. Trip generation for hotel land use assumes 100% occpuancy.
5. Trip generation from *Marina University Villages Mixed Use Development Traffic Impact Study Report*, Higgins Associates, December 17, 2004.
6. Unversity of California Monterey Bay Education, Science and Technology Center (UCMBEST Center) Traffic Analysis Report, Higgins Associates, October 31, 2003. Assumes 25% of project is built out by year 2010.
7. Daily and PM peak hour trip generation from *Environmental Impact Report For The Proposed Marina Landing Shopping Center Project*, Earth Metrics Inc., February 1998. AM peak hour trip generation derived based upon same derivation assumptions as utilized in said report.
8. Trip generation from *The First Tee Traffic Analysis Study*, Higgins Associates, July 2002.
9. Trip generation based upon analysis in *Hayes Housing Development Traffic Analysis Study*, Higgins Associates, December 2000. Project is currently under construction and is partially occupied. Total units reduced based upon information provided by the City of Seaside.
10. Trip generation from *Transportation Impact Analysis for Seaside Resort*, Fehr & Peers, May 2004.
11. These restaurants not anticipated to be open during AM peak hour.
12. It is anticipated that all trips generated by Starbucks would be pass-by trips, i.e. existing vehicles that would be diverted into the facility, versus new trips to the study network.
13. No directional distribution provided by ITE for this land use during AM peak hour; assumed 50% in/50% out.
14. Seaside Auto Center Redevelopment would only reconfigure the access roadways to the auto center, and reconstruct the internal roadways.
15. Trip generation from *CSUMB East Campus Housing Traffic Study*, Wilbur Smith Associates, January 2004.
16. Full buildout of East Garrison development will not occur until 2030. Fifty percent of the development is assumed to be constructed by the year 2010. Trip generation represents trips external to the development itself.

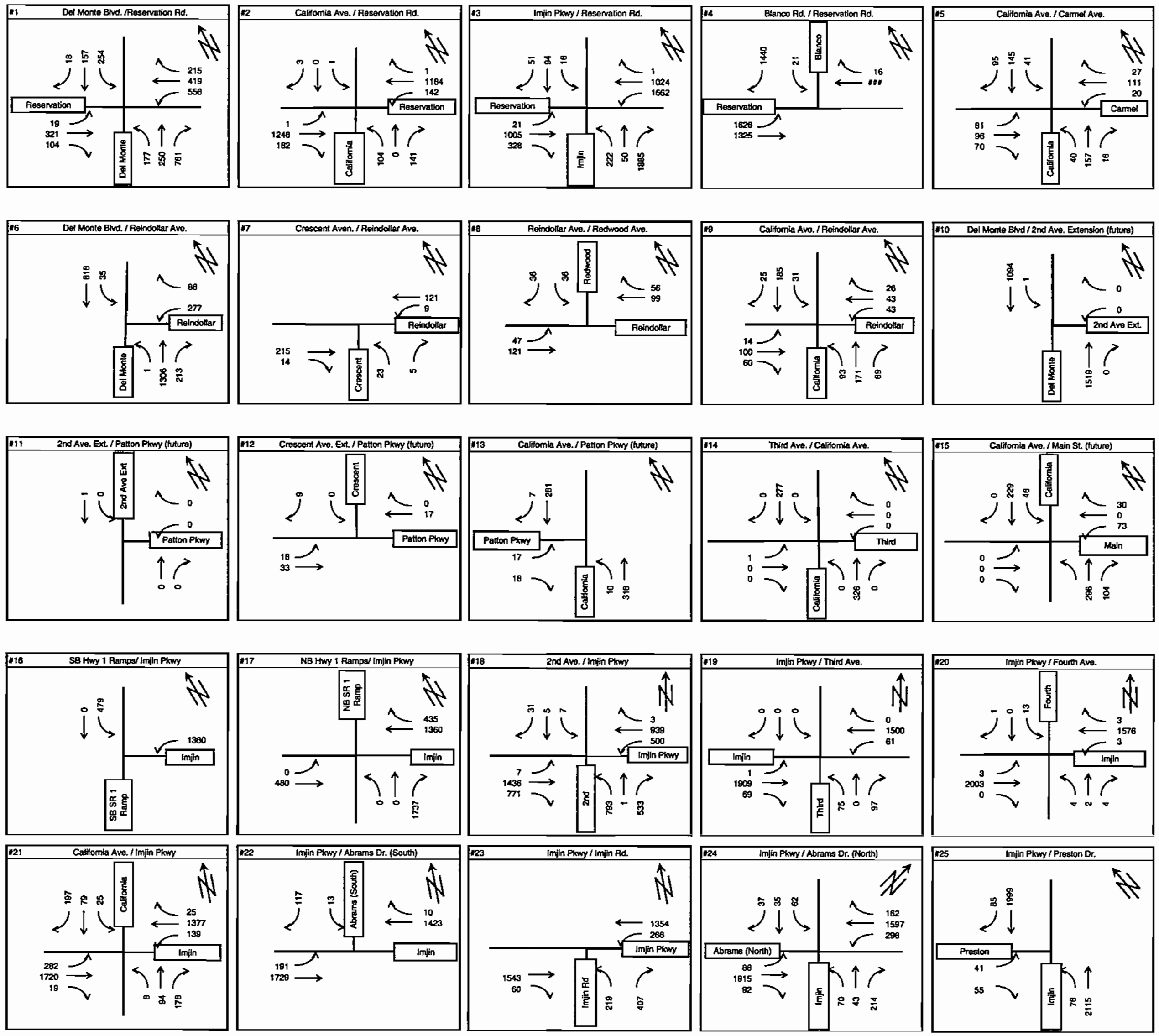
EXHIBIT 13
Trip Generation for Approved Projects



HIGGINS ASSOCIATES

4-094 Background AM.xls - Background AM

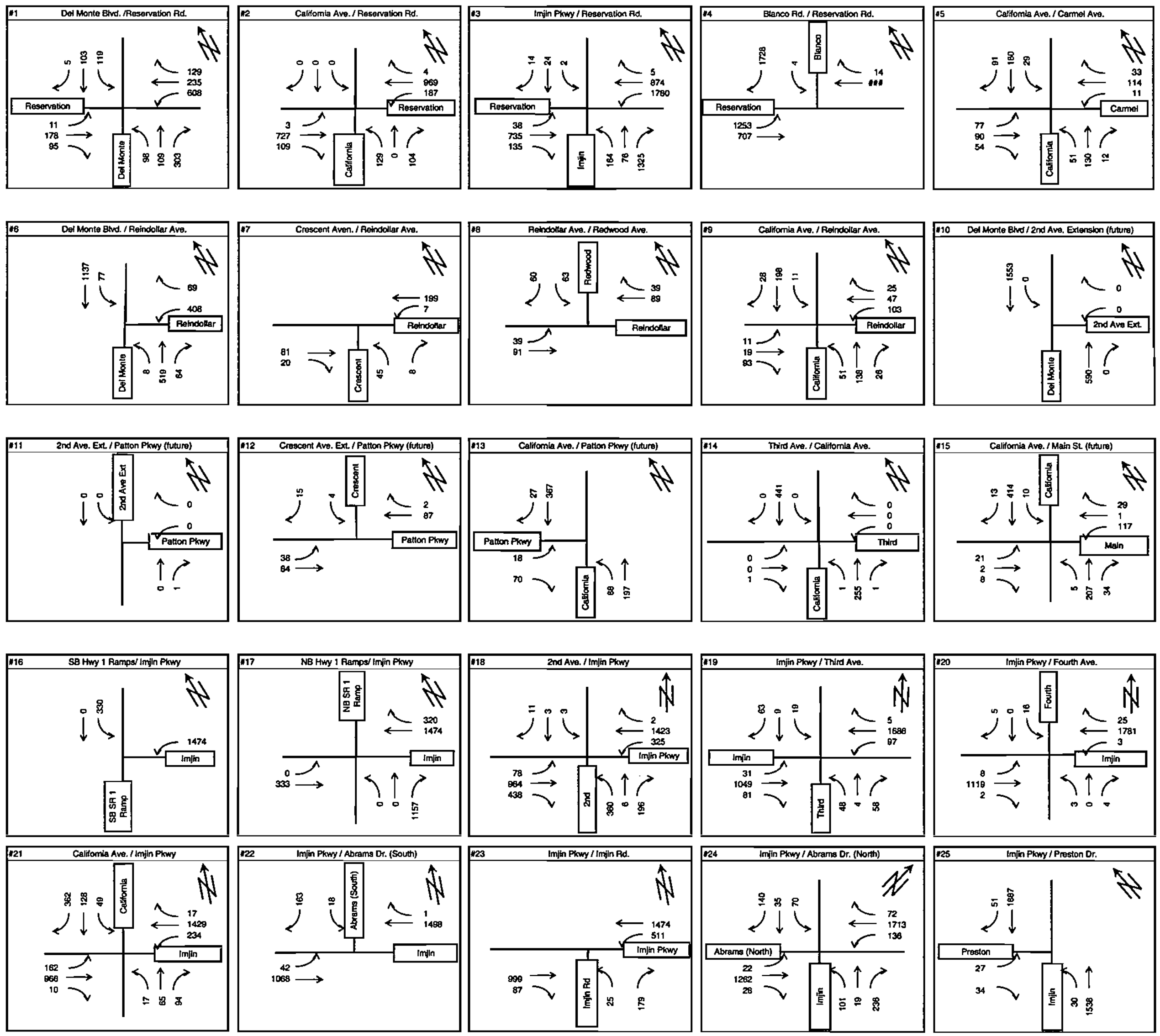
EXHIBIT 14A
Background Conditions
AM Peak Hour Volumes



HIGGINS ASSOCIATES

4-094 Background PM.xls - Background PM

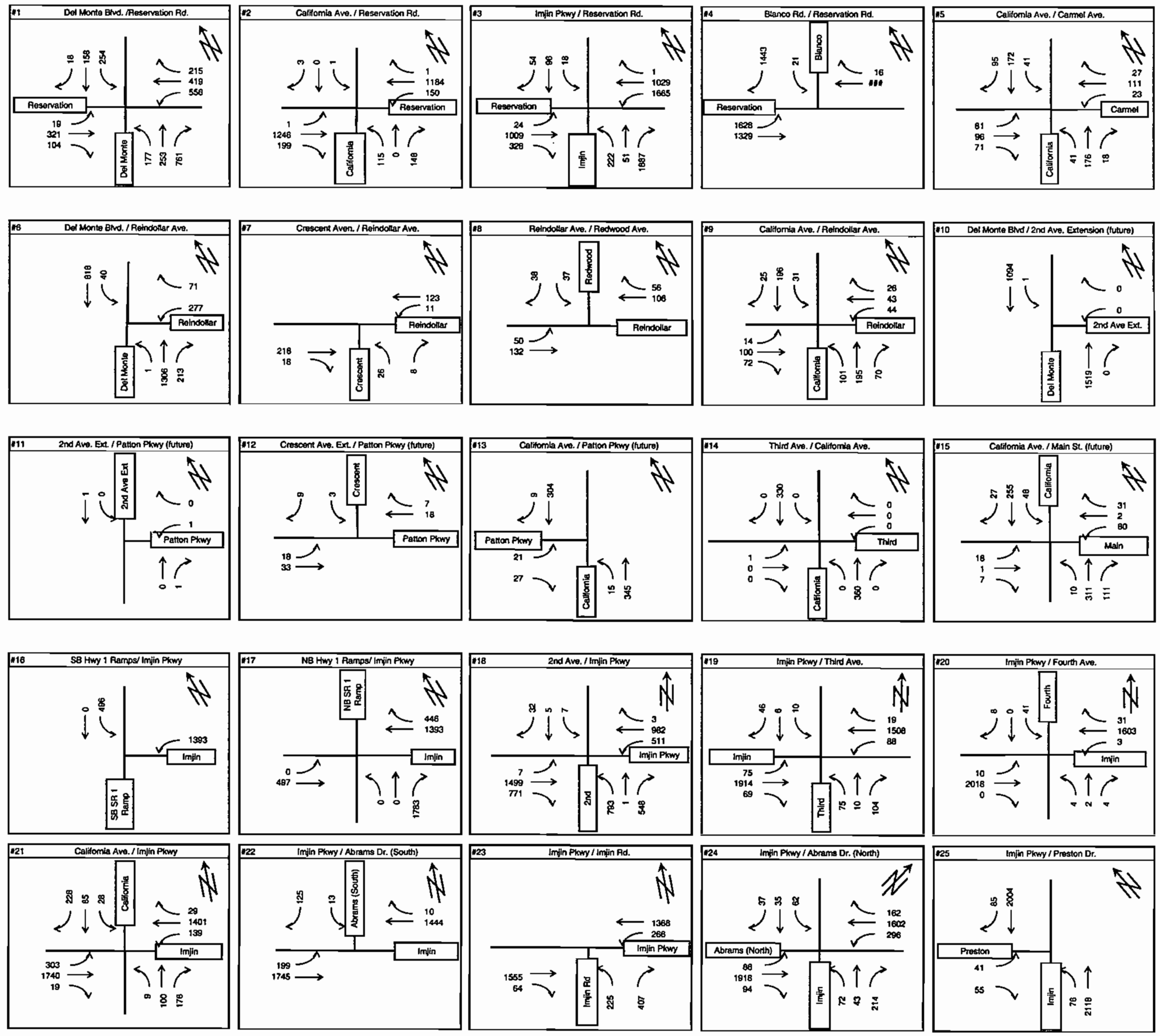
EXHIBIT 14B
Background Conditions
PM Peak Hour Volumes



HIGGINS ASSOCIATES

4-094 Background Plus Project AM.xls - Back + Project AM

EXHIBIT 15A
Background With Project
AM Peak Hour Volumes



HIGGINS ASSOCIATES

4-094 Background Plus Project PM.xls - Back + Project PM

EXHIBIT 15B
Background With Project
PM Peak Hour Volumes

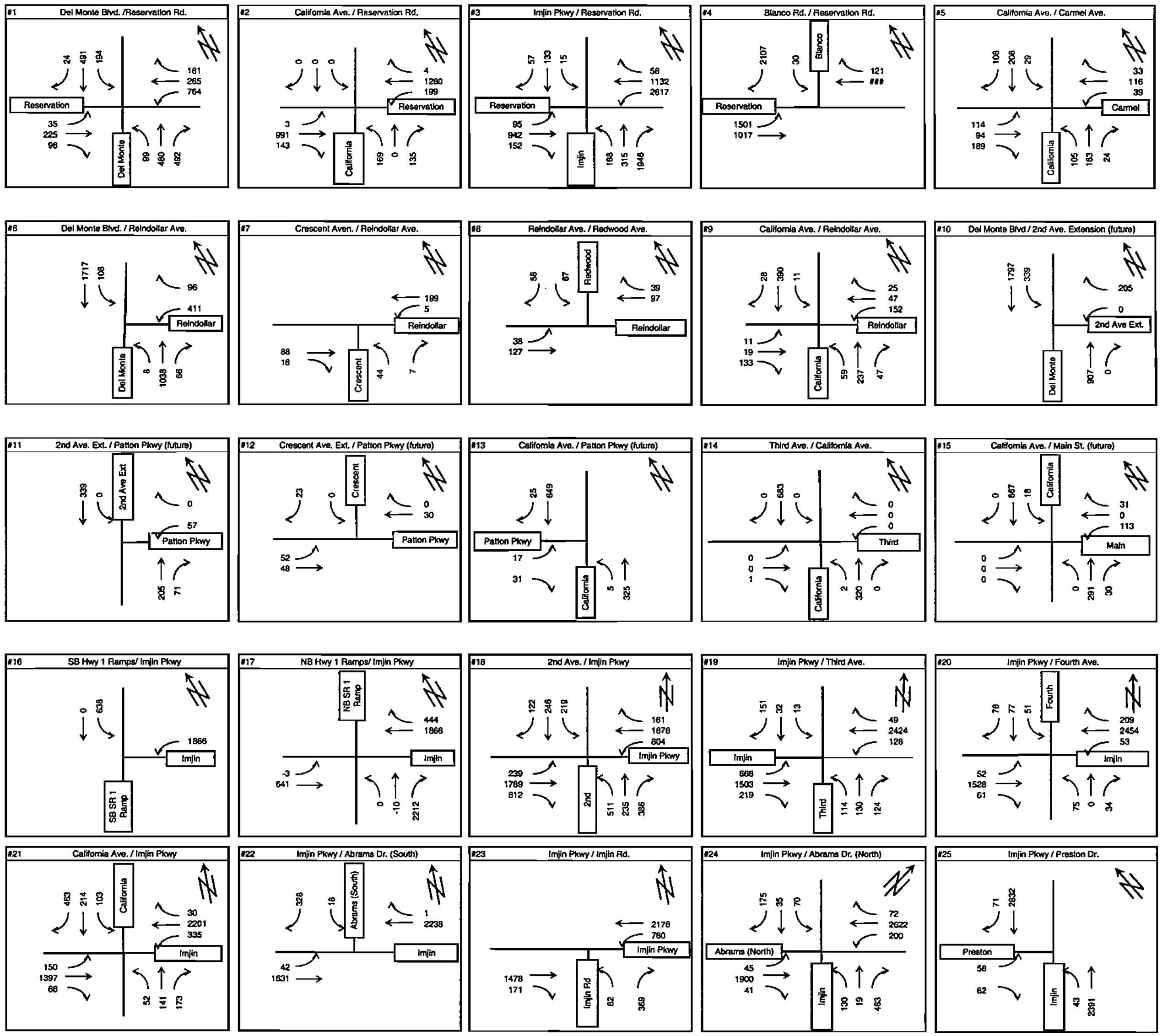
TRIP GENERATION FOR CUMULATIVE PROJECTS

PROJECT	SIZE		DAILY TRIP RATE	DAILY TRIPS	AM PEAK HOUR: PEAK HOUR VOL.	AM PEAK HOUR: (% OF DAILY)	AM PEAK HOUR: IN	AM PEAK HOUR: OUT	PM PEAK HOUR: PEAK HOUR VOL.	PM PEAK HOUR: (% OF DAILY)	PM PEAK HOUR: IN	PM PEAK HOUR: OUT
City of Marina:												
1. Marina Station	-	-	-	25,837	2,276	(9%)	1,201	1,075	2,605	(10%)	1,179	1,426
2. MBEST[2]	-	-	-	16,894	1,155	(7%)	902	253	1,813	(11%)	603	1,210
3. CSUMB Students (2010-2025)[3]	6,389	Students	-	10,476	924	(9%)	739	185	924	(9%)	277	647
4. Marina University Villages[4]												
Phases 2, 3, and Opportunity Phases	-	-	-	66,345	4,328	(7%)	2,918	1,410	6,578	(10%)	2,858	3,720
5. FORA Business Park[5]	43,381	S.F.	-	326	46	(14%)	40	6	45	(14%)	7	38
6. MPC Satellite Campus	8,380	Students	1.20	10,056	1,006	(10%)	825	181	1,006	(10%)	644	362
City of Seaside:												
7. Ord Military Housing												
Seaside Development Area	-	-	-	9,185	258	(3%)	133	125	839	(9%)	416	423
RCI Development Area	-	-	-	7,200	536	(7%)	172	364	691	(10%)	408	283
8. Fremont/Broadway Commercial												
Sit-Down Restaurants[6]	24,674	S.F.	108.55	2,678	25	(1%)	13	12	227	(8%)	145	82
Bank	4,000	S.F.	246.49	986	49	(5%)	27	22	183	(19%)	92	91
Commercial/Retail Space	15,326	S.F.	226.02	3,464	51	(1%)	31	20	182	(5%)	87	95
9. Main Gate Shopping Center	600,000	S.F.	-	25,897	538	(2%)	328	210	2,437	(9%)	1,170	1,267
10. East of Gen. Jim Moore Bl. Housing	1,800	Units[7]	9.57	17,226	1,350	(8%)	338	1,012	1,818	(11%)	1,182	636
11. MPC Satellite Campus	400	Students	1.20	480	48	(10%)	39	9	48	(10%)	31	17
City of Del Rey Oaks												
12. Del Rey Oaks Resort[7]	-	-	-	11,607	879	(8%)	694	185	1,001	(9%)	308	693
Unincorporated Monterey County:												
13. East Garrison[8]	-	-	-	12,392	865	(7%)	112	753	1,130	(9%)	717	413
14. Monterey Airport Expansion (Project 2)[7]	355,000	S.F.	-	1,082	154	(14%)	115	39	185	(17%)	62	123
15. Monterey Horse Park[9]	-	-	-	1,507	151	(10%)	132	19	204	(14%)	20	184
16. MRWMD Master Plan Update	-	-	-	1,932	180	(9%)	114	66	210	(11%)	60	150
17. Corral De Tierra Shopping Center[11]	Mixed Use		-	5,100	95	(2%)	63	32	235	(5%)	108	127
18. Wang Subdivision[12]												
Single-Family Homes	23	Units	9.57	220	17	(8%)	4	13	23	(10%)	14	9
Inclusionary Housing	6	Units	5.86	35	3	(9%)	1	2	3	(9%)	2	1
19. Ferrini Ranch	212	Units	9.57	2,029	159	(8%)	40	119	214	(11%)	139	75
TOTAL CUMULATIVE PROJECTS				232,954	15,093	(6%)	8,981	6,112	22,601	(10%)	10,529	12,072

Notes:

1. Traffic volumes are based on trip generation rates quoted by the Institute of Transportation Engineers' *Trip Generation*, 6th Edition, 1997, and 7th Edition, 2003, unless otherwise noted.
2. Unversity of California Monterey Bay Education, Science and Technology Center (UCMBEST Center) Traffic Analysis Report, Higgins Associates, October 31, 2003. Assumes 25% of project is built out by year 2010, with remaining 75% built out over the following 15-20 years.
3. Trip generation from *California State University at Monterey Bay (CSUMB) 2004 Master Plan Update Traffic Impact Study Report*, Higgins Associates, July 26, 2004.
4. Trip generation from *Marina University Villages Mixed Use Development Traffic Impact Study Report*, Higgins Associates, December 17, 2004.
5. Trip generation takes into account office tennants that would relocate to this new office space from existing office space off of Second Avenue north of Imjin Parkway that would be removed as part of the second phase of the Marina University Villages development.
6. Trip generation assumes restaurant square footage to be split evenly between High Turnover (Sit-Down) and Quality Restaurant land uses.
7. Number of units is maximum number of units that can be constructed at this location, based upon the City of Seaside's land use policies of 8 units/acre.
7. Trip generation from *Airport Road Extension & Monterey Peninsula Airport North-side Development Project Traffic Impact Study Report*, Higgins Associates, January 28, 2005.
8. Full buildout of East Garrison development will not occur until 2030. Fifty percent of the development is assumed to be constructed by the year 2015. Trip generation represents trips external to the development itself.
9. Letter to D. Munn, *Monterey Horse Park, Monterey County, California - Estimated Trip Generation of Proposed New Facility*, Higgins Associates, January 14, 2004.
10. Number of units for this project are unknown; number used here is estimate based upon City of Seaside's maximum housing density for this land use (8 units/acre).
11. AM and PM peak hour trip generation from *Corral De Tierra Mixed Use Devlopment Final Traffic Report*, Hexagon Transportation Consultants, April 8, 2005. Daily trip generation estimated, based upon trip generation assumptions utilized in peak hour trip generation derivation in said report.
12. Trip generation from *Wang Subdivision Traffic Impact Analysis*, Higgins Associates, December 21, 2005.

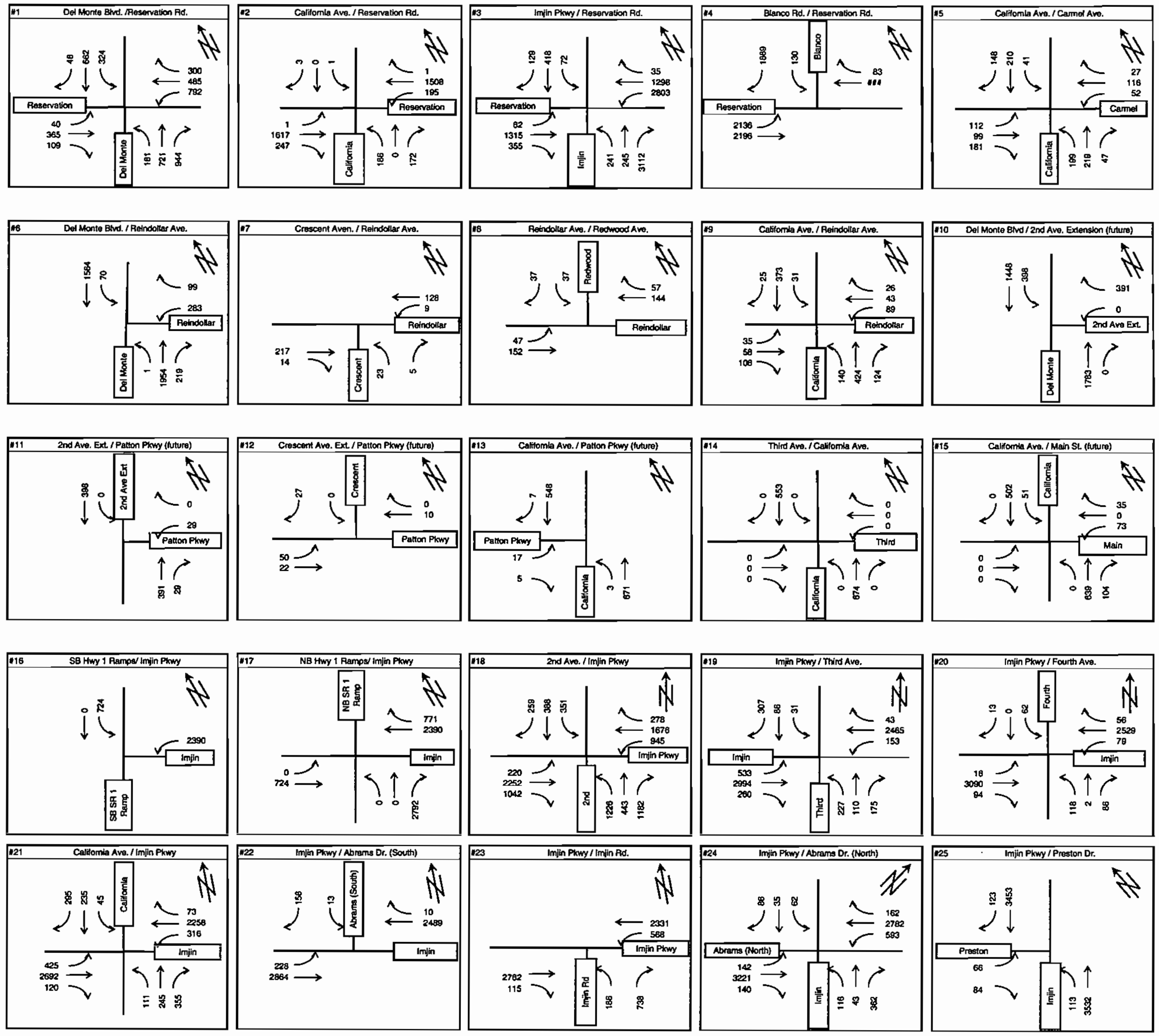
EXHIBIT 16
Trip Generation for Cumulative Projects



HIGGINS ASSOCIATES

4-094 Cumulative WO Project AM.xls - C W-O Project AM

EXHIBIT 17A
Cumulative Without Project
AM Peak Hour Volumes



HIGGINS ASSOCIATES

4-094 Cumulative WO Project PM.xls - C W-O Project PM

EXHIBIT 17B
Cumulative Without Project
PM Peak Hour Volumes

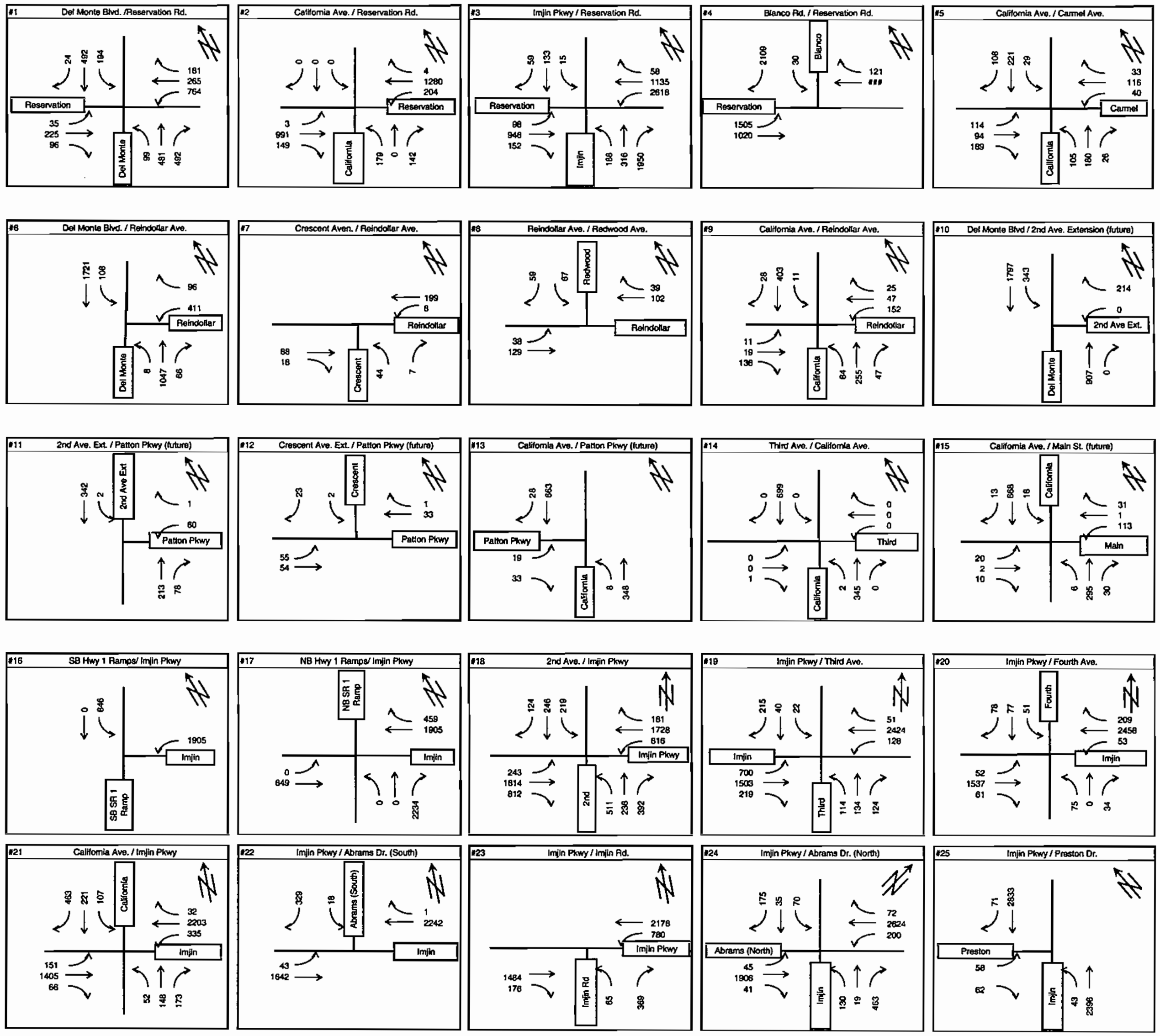
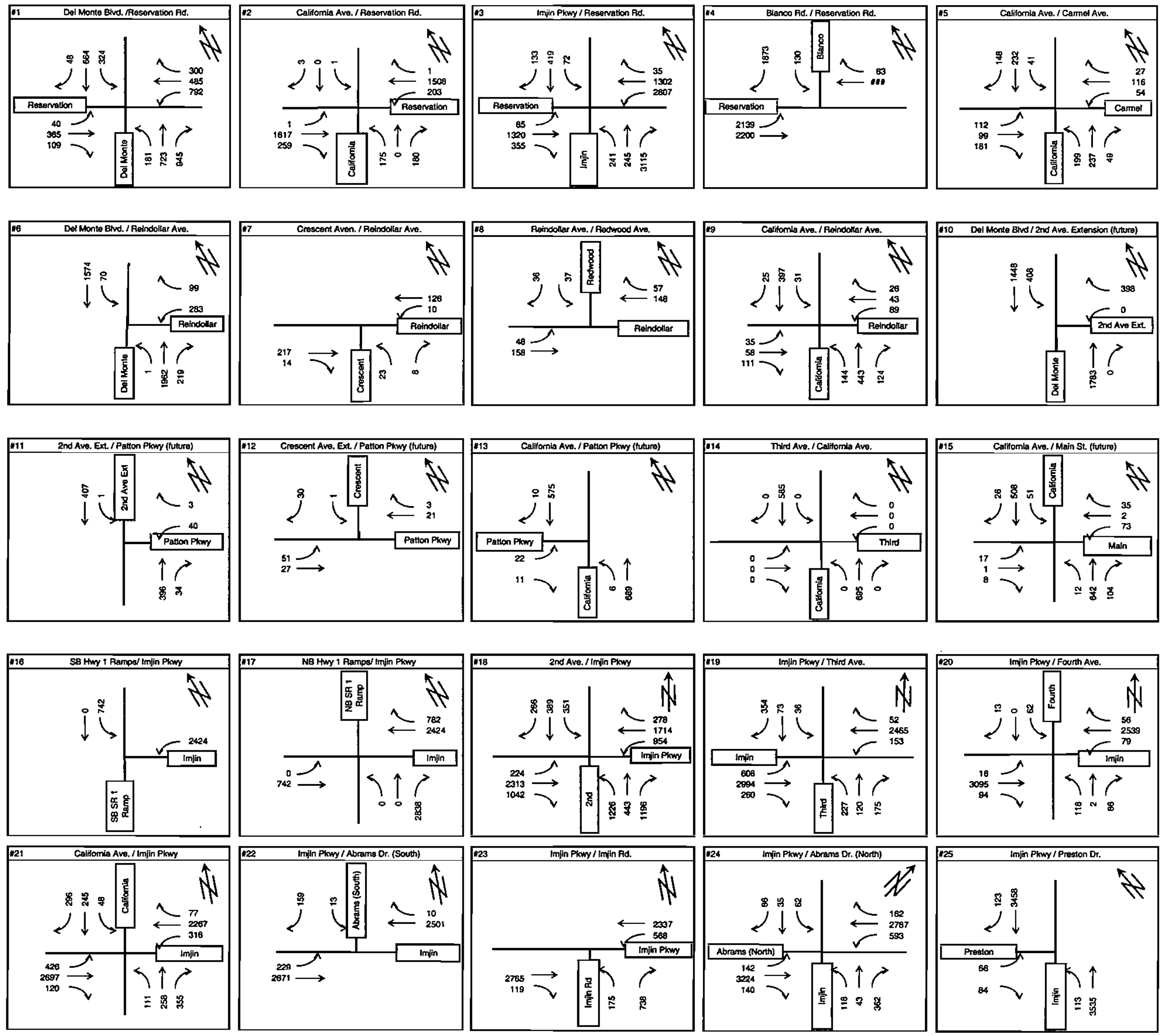


EXHIBIT 18A
Cumulative With Project
AM Peak Hour Volumes

HIGGINS ASSOCIATES



HIGGINS ASSOCIATES

4-094 Cumulative With Project PM.xls - C W Project PM

EXHIBIT 18B
Cumulative With Project
PM Peak Hour Volumes

Appendix F
Fire Flow Test
Engineering Development Associates

Background

Water is supplied to the project area from an adjacent high-pressure zone in the (former) Fort Ord water system. The high pressure is reduced to the local system operating pressure by two pressure reducing stations. Water is distributed throughout the project area by 6" and 8" diameter water mains.

Fire Department flow tests indicate the system will provide between 1100 gpm and 1400 gpm. Tests also indicate that the static pressure in the local system is too high – as high as 120 psi.

System information from the army suggests fire flow should be much higher, on the order of 2500 gpm. The same information also indicates that static pressure should be about 70 psi.

The PRVs are old and rusty. Parts are no longer available for one of the PRVs.

Because the fire flow tests show the low capacity and high static pressure the function of the PRVs is in doubt. A test was conducted to see if the PRVs were working. Coincidentally, the test also provided a good indication of the strength of the high-pressure supply side of the water system.

Description of Test

The purpose of the test was to determine how/if each of the two PRVs are functioning. To do this, two fire hydrants were selected for testing. Each hydrant was near one of the PRVs. First, the static pressure was measured near each fire hydrant and on the high and low-pressure side of each of the PRVs. Then, one hydrant was opened and the residual pressures measured at each point described above. In concept, this should draw a majority of the flow through the nearby PRV. The residual pressures would allow determination of how much flow was going through the respective PRV. Then, with the first hydrant still open, the second hydrant was opened and the pressures measured. This phase of the test was meant to "tax the system" and provide a good indication of the maximum amount of water the system could deliver and provide an additional data point for "calibration" of each of the PRVs. Then, the first hydrant was closed, the second hydrant remained open and the pressures measured. This should shift the load to the second PRV.

Test Data

Data from the new flow test is contained in the table below.

Description				Static	Test 1	Test 2	Test 3	Static
PRV at Hayes & 3rd								
high side	(FH 117)	Pressure	Psi	94	92	88	85	94
low side		Pressure	Psi	107	62	51	82	106
PRV at Hayes near Walker								
high side		Pressure	Psi	94	85	85	87	94
low side		Pressure	Psi	93	43	28	46	94
Test Hydrant	FH 58	Pressure	Psi	115	70	62.5	90	115
Test Hydrant	FH 38	Pressure	Psi	96	50	32	50	96
Flow Hydrant	FH 56	Pitot Pressure	Psi	0	40	35	0	0
		flow rate	Gpm	0	1062	993	0	0
Flow Hydrant	FH 37	Pitot Pressure	Psi	0	0	20	40	0
		flow rate	Gpm	0	0	751	1062	0
		Total Flow	Gpm	0	1062	1745	1062	0

Analysis

Analysis of the test data was completed using the computer program Water Cad. There were three goals to completing the model. They are:

- Create a model to estimate fire flows throughout the project
- Create a model to determine the function of the two PRVs
- Create a model to demonstrate the capacity of the high-pressure side of the system.

Building the model took several steps. First, the "quality" of the onsite model was tested by comparing system residual pressures with test values when the pressure at the two points of connection is set to the PRV low side test pressure. General correlation was good and no adjustments were necessary. The comparison is shown in the table below.

Comparison of model and tests												
	PRV #1			PRV #2			FH #58			FH #38		
	Pressure psi			Pressure psi			Pressure psi			Pressure psi		
	test	Model	Δ	test	model	Δ	test	model	Δ	test	model	Δ
Static	107	106.8	0.2	93	92.5	0.5	115	114.6	0.4	96	95.6	0.4
Test 1	62	61.8	0.2	43	45.4	-2.4	70	68.9	1.1	50	48.4	1.6
Test 2	51	51	0	28	28.5	-0.5	62.5	56.8	5.7	32	30.7	1.3
Test 3	82	81.7	0.3	46	55.4	-9.4	90	88.2	1.8	50	57	-7

Second, relying on the supplemental flow test information, with the model's discharge pressure of each prv set at the measured test pressure, the portion of the flow "originating" at each prv is determined from the model for each of the three test conditions.

Third, again relying on the supplemental flow test information, the "supply curve" to each of the prvs is determined. This gives an indication of the ability of the high-pressure system to supply water to this area and is used to create the "final version" of the model that includes both high-pressure and low-pressure consideration. Estimates of the supply curves and the equivalent "pumps" are shown in the following tables. It is important to note that PRV #2 demonstrated very little capacity during the test. For this reason, I don't believe the system will deliver only 540 gpm. In my opinion, the low flow rate through the PRV during the test did not provide an acceptable data point . Extrapolation from the test point to higher flow rates is unreliable. In my opinion, PRV #2, when replaced, will deliver much higher flow rates.

	PRV #1			PRV #2				
	Flow	press	flow at	flow	press	flow at		
	Gpm	psi	20 psi	gpm	psi	20 psi		
Static	0	94		0	94			
Test 1	1063	92	7471	0	85	0		
Test 2	1570	88	6097	173	85	540		
Test 3	1063	84	3133	0	87	0		
		Average	5567	gpm@20 psi		540	gpm@20 psi	
			2265	gpm@80 psi		220	gpm@80 psi	

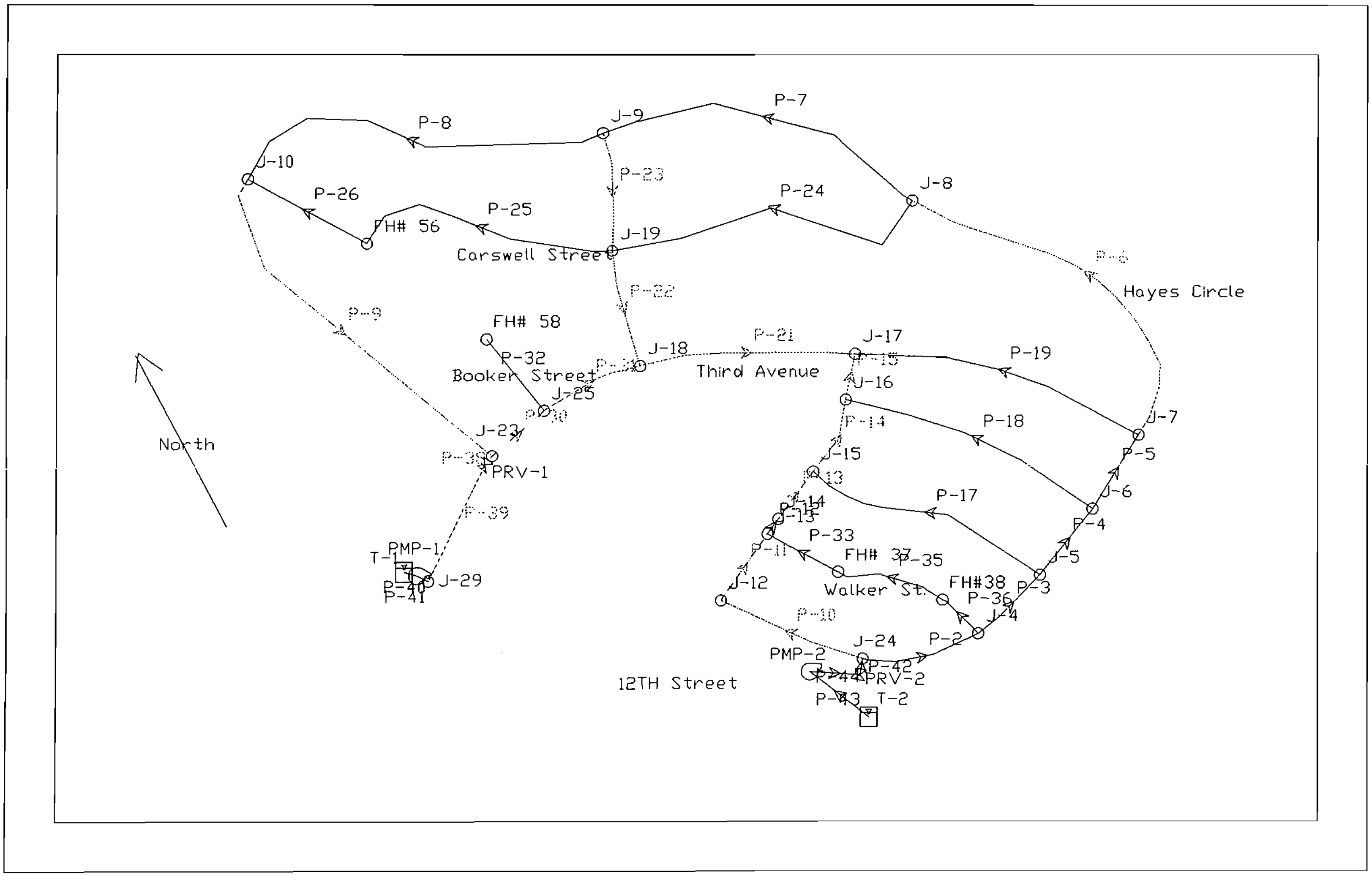
Equivalent Supply "pump"					
PRV #1				PRV#2	
Head	Flow			Head	Flow
Ft	gpm			ft	gpm
217	0			217	0
185	2265			185	220
46	5567			46	540

Results

The model demonstrates that there are problems with the system in the existing condition. Virtually all the problems are associated with the two PRVs connecting this system to the high-pressure system. First, the PRVs are not reducing the pressure during static conditions. This indicates at least one of the PRVs is stuck in an open position or grossly misadjusted. Second, the PRVs are not maintaining a constant downstream pressure even though there is adequate upstream pressure available. This indicates the PRVs are not making their automatic adjustments as flow conditions change. Test results indicate that virtually all the flow is going through the PRV at 3^{RD} and Hayes and little, if any, flow is going through the PRV at Hayes near Walker. In summary, it appears that one of the PRVs is not functioning at all and the second PRV is stuck in a partially open position.

The model of the system with the PRVs functioning properly indicates that the system will deliver about 2500 gpm throughout the project area. This is adequate to meet fire flow demand for the development being studied. The model also shows that the pressure will be between 60 psi and 80 psi throughout the project.

The following figures and tables and demonstrate the final calculations. Sample calculations are presented for a demand of 2500 gpm from junction J9. Presented are the model system map, summary of conditions at each junction, summary of conditions for each pipe and summary of conditions at each PRV.


North
P-8
P-7
J-9
J-10
P-23
J-8
P-26
P-25
P-24
FH# 56
J-19
Carswell Street
P-6
P-22
Hayes Circle
P-9
FH# 58
P-21
J-17
P-32
J-18
P-19
Booker Street
Third Avenue
J-16
J-25
P-18
J-23
P-14
J-7
PRV-1
J-15
P-5
P-39
P-17
J-6
P-33
P-4
PMP-1
FH# 37
P-35
J-5
T-1
J-29
J-12
Walker St.
FH#38
P-3
P-40
P-41
P-36
J-4
P-10
P-2
J-24
PMP-2
P-42
PRV-2
12TH Street
P-43
T-2

Node Summary
2500 gpm from Node 9

Node	Elev ft	Demand gpm	HGL ft	Press psi
J-4	109	0	226.12	50.64
J-5	120	0	225.13	45.46
J-6	95	0	223.72	55.66
J-7	86	0	220.65	58.23
J-8	114	0	212.62	42.65
J-9	123	2,500.00	190.49	29.18
J-10	60	0	225.97	71.77
J-12	100	0	226.6	54.75
J-13	87	0	226.12	60.16
J-14	82	0	225.67	62.13
J-15	73	0	225.32	65.87
J-16	66	0	224.96	68.74
J-17	65	1	224.89	69.14
J-18	65	0	225.04	69.21
J-19	97	0	211.9	49.69
FH# 56	63	0	221.28	68.45
J-23	84	0	246.78	70.39
J-24	117	0	227.51	47.79
J-25	68	0	238.29	73.64
FH# 58	66	0	238.29	74.5
FH# 37	95	0	226.12	56.7
FH#38	110	0	226.12	50.21
J-29	120	0	308.51	81.52

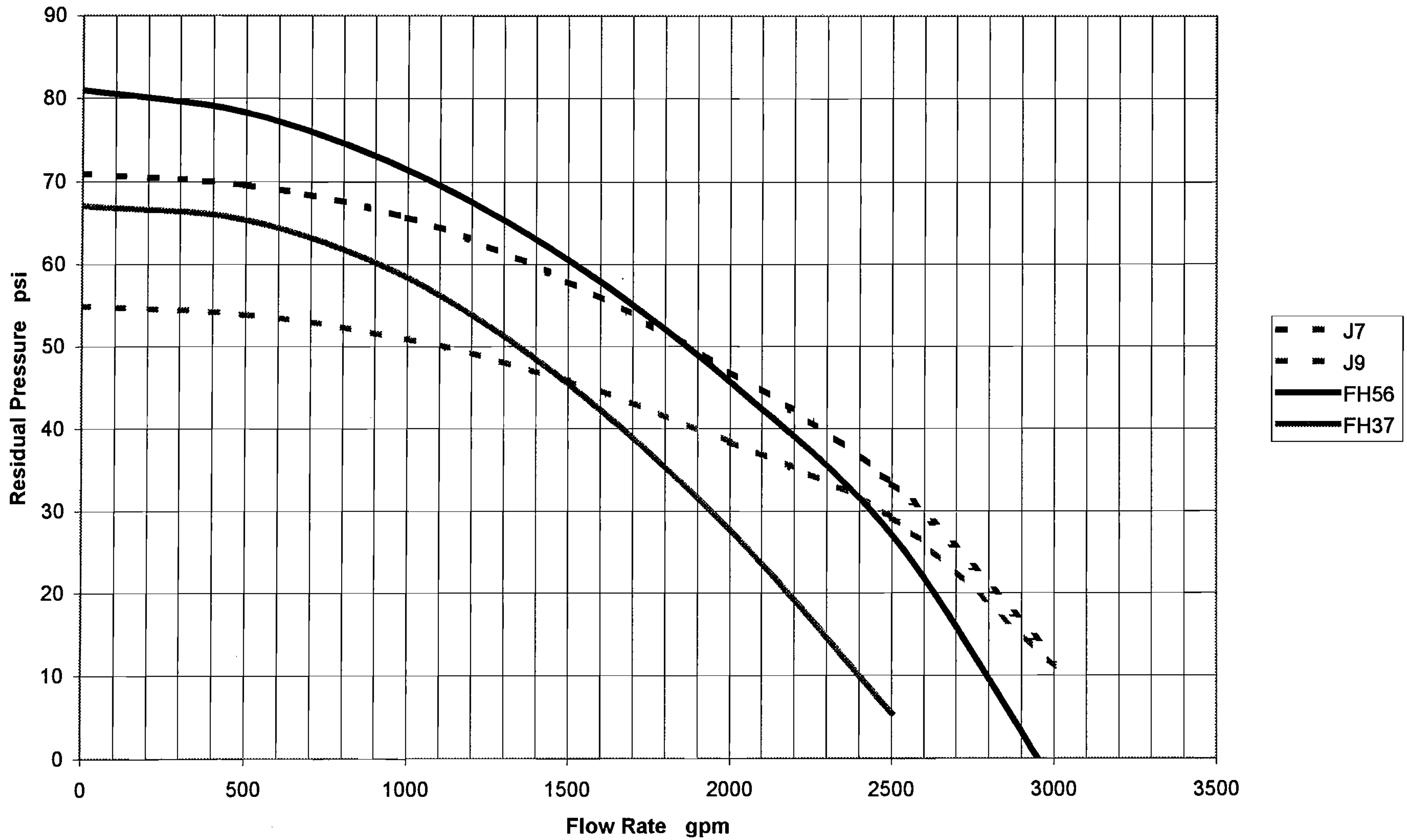
PRV
Summary
2500 gpm flowing from node J9

Label	D in	Cv	DS HGL Setting ft	Status	Q gpm	Start Hgl ft	End HGL ft	H_L ft
PRV-1	8	2	250	Throttling	2,086.04	268.76	250.14	18.61
PRV-2	8	2	250	Inactive	414.96	228.74	228.52	0.22

Pipe
Summary
2500 gpm from node
J9

Pipe	L ft	D in	Matl	C	Status	Q gpm	Start HGL ft	End HGL ft	HL ft	Sf ft/1000ft
P-3	362	6	AC	130	Open	166.61	226.12	225.13	0.98	2.71
P-4	360	6	AC	130	Open	203.52	225.13	223.72	1.41	3.92
P-5	372	6	AC	130	Open	304.01	223.72	220.65	3.07	8.24
P-6	1635	8	AC	130	Open	490.14	220.65	212.62	8.03	4.91
P-7	1457	6	AC	130	Open	423	212.62	190.49	22.13	15.19
P-24	1432	6	AC	130	Open	67.14	212.62	211.9	0.72	0.50
P-8	1667	6	AC	130	Open	-507.65	190.49	225.97	35.48	21.29
P-9	1673	8	AC	130	Open	-809.59	225.97	246.78	20.80	12.44
P-11	347	8	AC	130	Open	247.98	226.6	226.12	0.48	1.39
P-12	79	6	AC	130	Open	248.35	226.12	225.67	0.45	5.67
P-33	343	6	AC	130	Open	-0.37	226.12	226.12	0.00	0.00
P-13	252	8	AC	130	Open	248.35	225.67	225.32	0.35	1.40
P-14	347	8	AC	130	Open	211.44	225.32	224.96	0.36	1.04
P-17	1085	6	AC	130	Open	36.91	225.32	225.13	0.18	0.17
P-15	199	8	AC	130	Open	110.95	224.96	224.89	0.06	0.31
P-18	1160	6	AC	130	Open	100.49	224.96	223.72	1.23	1.06
P-19	1274	6	AC	130	Open	186.13	224.89	220.65	4.24	3.33
P-21	923	8	AC	130	Open	76.18	225.04	224.89	0.14	0.16
P-22	510	8	AC	130	Open	1,200.26	225.04	211.9	13.14	25.76
P-23	506	8	AC	130	Open	1,569.35	211.9	190.49	21.41	42.31
P-25	1153	6	AC	130	Open	-301.94	211.9	221.28	9.39	8.14
P-26	576	6	AC	130	Open	-301.94	221.28	225.97	4.69	8.14
P-30	294	8	AC	130	Open	1,276.45	246.78	238.29	8.49	28.87
P-38	47	8	AC	130	Open	-2,086.04	246.78	250.14	3.37	71.63
P-2	513	6	AC	130	Open	166.98	227.51	226.12	1.40	2.72
P-10	655	8	AC	130	Open	247.98	227.51	226.6	0.91	1.39
P-43	10	16	AC	130	Open	414.96	117	117	0.00	0.12
P-31	459	8	AC	130	Open	1,276.45	238.29	225.04	13.25	28.87
P-32	390	6	AC	130	Open	0	238.29	238.29	0.00	0.00
P-35	474	6	AC	130	Open	-0.37	226.12	226.12	0.00	0.00
P-36	209	6	AC	130	Open	-0.37	226.12	226.12	0.00	0.00
P-39	555	8	AC	130	Open	2,086.04	308.51	268.76	39.76	71.63
P-40	10	16	AC	130	Open	2,086.04	120	119.98	0.02	2.45
P-41	10	16	AC	130	Open	2,086.04	308.54	308.51	0.02	2.45
P-44	10	16	AC	130	Open	414.96	228.74	228.74	0.00	0.12
P-42	69	6	AC	130	Open	414.96	228.52	227.51	1.01	14.66

Fire Rating Curves



Appendix G
Biological Report

Denise Duffy & Associates, Inc.
PLANNING AND ENVIRONMENTAL CONSULTING

June 20, 2006

Pamela D. Steele
Principal
Hogle-Ireland Inc.
4280 Latham Street, Suite C
Riverside, Ca 92501

RE: Sand Gilia Surveys for the Cypress Knolls Project

Dear Ms. Steele:

Per your request, Denise Duffy & Associates, Inc. (DD&A) conducted protocol-level botanical surveys for sand gilia (*Gilia tenuiflora* ssp. *arenaria*), a federal and state listed plant species, within the Cypress Knolls project site. This letter report describes the methods and results of the survey, and measures to avoid and reduce potential impacts to this species as a result of the proposed project.

Methods

DD&A conducted protocol-level botanical surveys at the project site, per the California Native Plant Society (CNPS) and U.S. Fish and Wildlife Service (USFWS) Guidelines, for sand gilia on May 5, 7, and May 10, 2006. The survey was conducted during the peak blooming period based on examining known occurrences of sand gilia populations in the project vicinity.

DD&A surveyed the maritime chaparral habitat within the project site (see Figure 1, attached). In addition, the proposed drainage basin adjacent to the project site was surveyed (Figure 1). Individual sand gilia plants were mapped as GPS points; where sand gilia populations exceeded 5 individuals, the extent of the population was mapped as a GPS polygon (Figure 1). The number of sand gilia individuals were counted within each polygon and entered into a GIS database. Based on the mapped locations of sand gilia individuals and populations, polygons of occupied sand gilia habitat were created to support the impact analysis in the Environmental Impact Report (EIR) (see Figure 2, attached).

Results

DD&A identified approximately 680 sand gilia individuals within the 44 acres of maritime chaparral habitat on the project site (Figure 1). Sand gilia was not identified within the proposed drainage basin. The total acreage of occupied sand gilia habitat identified during the 2006 survey is approximately 4.25 acres (Figure 2).[1]

Avoidance and Minimization Measures

The U.S. Army's decision to close and dispose of the Fort Ord military base was considered a major federal action that could affect listed species under the federal Endangered Species Act (FESA).

[1] Previous surveys conducted by Vern Yadon identified an additional 0.11 acres of sand gilia within the project site.

Therefore, the Army was required to undergo Section 7 consultation with the USFWS. The consultation culminated in the issuance of a Biological Opinion on the disposal and reuse of former Fort Ord, and required that a Habitat Management Plan (HMP) be developed and implemented to reduce the incidental take of listed species and loss of habitat that supports these species. This plan was prepared to assess impacts on vegetation and wildlife resources and provide mitigation for their loss associated with the disposal and reuse of former Fort Ord. Development consistent with the HMP ensures that impacts to species covered in the HMP will be less-than-significant. The project site is designated as a "development" parcel, and, therefore, the project proposal is consistent with the HMP. The HMP by itself, however, does not provide specific authorization for incidental take of federal or state listed species to other parties. In compliance with the California Endangered Species Act (CESA), the Fort Ord Reuse Authority (FORA) is currently in the process of obtaining a Section 2081 Incidental Take Permit from the California Department of Fish and Game (CDFG), which will provide base-wide coverage for take of listed plant species to all non-federal entities receiving land on the former Fort Ord. Until this base-wide permit is issued by CDFG, actual take of any state listed species must be addressed on a project-by-project basis. As described below, avoidance of the "take" of sand gilia within the project site until the base-wide Section 2081 permit is issued would comply with CESA.

The proposed project has the potential to impact sand gilia, which is considered "take" under the CESA. The project applicant may implement one or a combination of (e.g., avoid some populations in perpetuity and avoid the rest of the populations until issuance of the base-wide Section 2081 permit) the four options below to minimize impacts to and avoid "take" of sand gilia in compliance with CESA:

1. Avoid all populations of sand gilia through project design and provide protection in perpetuity.[2] If the applicant selects this option, the following measures are recommended:

    a. Create a "preserve" area for each of the sand gilia populations by installing protective fencing around each population to prohibit foot and vehicular traffic. The fencing should be placed 20 feet from the edge of the population boundary. Construction activities, structures, or trails/pathways should be prohibited within the fenced area. Signage prohibiting public access should be placed along the fenceline.
    b. All drainage associated with the project should be directed away from the sand gilia preserve areas. No runoff associated with project landscaping should enter the preserve areas.
    c. Weed abatement should occur within the preserve area in consultation with a qualified biologist. The weed abatement should be focused on the removal of annual grasses and iceplant.
    d. Only native, locally-grown, maritime chaparral species should be planted adjacent to the preserve areas.

2. Construction activities that may directly impact the sand gilia populations within the project site are not anticipated prior to FORA obtaining the base-wide Section 2081 permit, which is

[2] The project applicant has indicated that it presently is evaluating whether it can be designed to avoid, in perpetuity, two populations of sand gilia within the project site (Figure 2). These populations were identified in previous surveys by Vern Yadon and highlighted on Figure 1.

expected to occur mid- to late summer 2007. If construction activities that could impact sand gilia are planned to commence prior to issuance of the permit (i.e., grading, vegetation removal, excavation, etc.), the following measures should be implemented prior to the commencement of any ground-disturbing activities within the project site in order to avoid potential impacts to sand gilia until the base-wide Section 2081 permit is issued:

a. Protective fencing should be placed in consultation with a qualified biologist so as to keep construction vehicles and personnel from impacting the sand gilia populations;
b. Grading, excavating, and other activities that involve substantial soil disturbance should be planned and carried out in consultation with a qualified hydrologist, engineer, or erosion control specialist, and should utilize standard erosion control techniques to minimize erosion and sedimentation in the areas containing the sand gilia populations.
c. No construction equipment should be serviced or fueled outside of designated staging areas.
d. Irrigation systems should be designed to minimize runoff or irrigation water into the areas of the sand gilia populations.

3. Obtain an individual (project-specific) Section 2081 permit from CDFG if take cannot be avoided prior to issuance of the base-wide Section 2081 permit. The applicant would be required to comply with the permit requirements, which may include conservation of existing populations and/or creation/enhancement of suitable sand gilia habitat.

4. Wait to initiate construction activities that may result in impacts to sand gilia until the issuance of the base-wide Section 2081 permit, which would allow for take of the sand gilia populations within the project site.

Conclusion

The surveys conducted by DD&A identified approximately 4.25 acres of occupied sand gilia habitat (approximately 680 individuals) within the project site. Compliance with the measures recommended in this report would comply with CESA and would result in less-than-significant impacts to sand gilia.

Please contact me if you have any questions regarding the survey or report.

Best regards,

Erin Harwayne
Project Manager
DENISE DUFFY & ASSOCIATES, INC.

Attachments: Figure 1
Figure 2

VERNAL L. YADON
1119 Buena Vista Avenue
Pacific Grove, California 93950

A Biological Report for the Proposed Cypress Knolls Retirement Community, Marina, California

By

Vernal L. Yadon
June 20, 2000

(Field work: March 17, April, 7, 18, 24,
June 8, 18, 2000)

Signed____________________ Date__________

This is a Biological Report for the conversion of former U.S. Army housing at Fort Ord, known as Lower Patton Park, to civilian use as a retirement community to be known as Cypress Knolls. The area is the northwest portion of Ft. Ord, southeast of Highway 1 and adjacent to the developed City of Marina.

The former habitat of this area was in its entirety Maritime Chaparral. The habitat currently existing is Maritime Chaparral which has been planted over in part with Monterey Pine and Monterey Cypress trees. Much of the original Maritime Chaparral was excavated and removed to provide army housing. Where the housing now resides is an excavated landscape, with introduced weedy grasses, planted exotic shrubbery and a few trees. The few native species that can now be found within the immediate housing area are corners of property and areas which were inconvenient to build.

The plan is to leave much of the existing Maritime Chaparral intact, use existing roadways, rehabilitate existing housing, and add some amenities to make the area useful as a retirement community. The environmental issues thereby are using some fragments of Maritime Chaparral still existing in the vicinity of houses while leaving peripheral native areas as assets.

Maritime Chaparral is a rare plant community. Growing within it is the federally threatened Monterey Spineflower, Chorizanthe pungens var. pungens. Also present are the California Native Plant Society 1B endangered Toro and Dune Manzanitas, Arctostaphylos montereyensis and Arctostaphylos pumila. California Native Plant Society List 4 species present are: Small-leaved Lomatium, Lomatium parvifolium and Monterey Ceanothus, Ceanothus cuneatus var. rigidus. Lists of plants, mammals, birds, amphibians and reptiles are provided.

Prepared for
Ray Parks and Associates
P.O. Box 221922
Carmel, California 93922

I INTRODUCTION

This report was prepared at the request of Mr. Ray Parks, Architect of Ray Parks Associates to supply data for the Marina Planning Commission as part of the permit process to redevelop former army housing, known as Lower Patton Park to a new retirement community known as Cypress Knolls.

The report lists plants discovered on the property. The plants are divided into those occurring in Maritime Chaparral and those occurring in and around the housing units. Lists of mammals and birds are provided. The mammal list includes those which have left tracks or other evidence of their occurrence along with those known to be in the area. The bird list includes those seen and those which would likely occur were an extended study undertaken. Reptiles and amphibians are those likely to be present on the property.

II REGIONAL SETTING

The regional setting is central coastal Monterey County within that portion of former Fort Ord now part of the City of Marina, California. This portion of central coastal Monterey County is characterized by stabilized sand dunes covered with the rare habitat called Maritime Chaparral. To the west are sand dunes bordering Monterey Bay.

The acreage involved, is 189.5 acres.

III DESCRIPTION OF LOCAL VEGETATION

Methods used were to walk over the property while noting the species of plants and observing wildlife and evidence of it. Field notes were taken of observations and species encountered.

The property is the northwest portion of the former Fort Ord, east of Highway 1 and adjacent to the developed portion of the City of Marina. The habitat was formerly Maritime Chaparral in its entirety. This chaparral is composed of low growing, wind-tolerant shrub and forb species which present a colorful blooming period in the spring.

When housing was built the demolition and construction methods used were to destroy the wind-tolerant shrubs and to excavate the stabilized dunes by as much as eight to ten feet to create road areas and spaces for houses. The native chaparral was left intact on the boundaries and difficult to build areas. Its was also left intact in the areas between roads and behind housing units. The landscaping attempts within the housing areas were to use exotic species with origins in Africa, Australia and New Zealand. Wind was an obvious and immediate problem as evidenced by attempts at creating wind breaks with the planting of Monterey Pines and Cypresses along the boundary with Marina and portions of the westward boundary. Elsewhere several species of eucalyptus trees, <u>Eucalyptus spp.</u> were used.

The excavated areas are now a thatch of introduced weedy grasses and ice plant, Kikiyu Grass and introduced exotics. Most of the exotic plantings around the houses are wind-burned and sheared. Some are in the process of dying. Few native species can now be found within these areas.

IV. Rare and Endangered Species

No Rare and Endangered Species were found on this property.

V. Threatened Species

The Federally threatened species Monterey Spineflower, Chorizanthe pungens var. pungens was found within the Maritime Chaparral. This plant is also listed as 1B endangered by The California Natives Plant Society. It has no listing by the State of California. Monterey Spineflower plants discovered between shrubs within the Maritime Chaparral were very small (1/4 inch high and 1/2 inch wide). The diminutive size may have been due to the dry spring. This species is common in the sand dunes bordering Monterey Bay where much larger examples of the species may be encountered.

Special Plants and Habitats

The California Department of Fish and Game periodically issues publications which are administrative advisory notifications regarding plants and animals and habitats. The animals, plants, and habitats thus listed have no statutory protection but are required to be considered by planning authorities as described in Section 15380 of the CEQA guidelines. It is pointed out that the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, 5th edition, considers a much larger number of plants to be rare and endangered. This publication is the source of many of the CEQA listings. The Native Plant society also has a List 4 designation, which is a request for information for certain taxa. It may be inappropriate to consider List 4 species in any other light other than that of information. List 4 species are included here because they are included in the California Department of Fish and Game's Special Plants publication. The Society has, as yet, come to no conclusions on rarity of plant species in Lists 4.

Monterey Pine, Pinus radiata, is present and is reseeding itself. Monterey Cypress, Cupressus macrocarpa is present. All plants of these species were planted on this property. Planted Monterey Pines and Monterey Cypresses are not considered to be environmentally sensitive, but may require permits for removal depending on city ordinances. Some of these trees are scheduled for removal at Center Campus and in the location designated for apartments.

Toro Manzanita, Arctostapylos montereyensis is present on the property. Only one was found. The species is listed by the California Native Plant Society as 1B endangered. Federally, it is listed as a species of concern. It has no State of California listing. The plant occurs near the save and protect a portion of this rare plant community. As the City of Marina is developed, little of this natural assemblage of plants will be left intact because of size of individual properties, beautification issues and uses planned.

Listed Species Searched for but Not Found

Certain species are expected to occur within Maritime Chaparral. When they are not found, there is usually a reason for it. The following listed species were searched for but not found on the Cypress Knolls property:

Arctostaphylos hookeri ssp. hookeri Hooker's Manzanita. The species is found to the south on Fort Ord lands, but was not found in the study area.
Chorizanthe robusta var. robusta. The species has been reported variously in north coastal Monterey County. It was not found in this study.
Chordylanthus rigidus ssp. littoralis. The species is found on Ft. Ord lands near the City of Del Rey Oaks. It was not found in this study.
Eriogonum parviflorum ssp. parviflorum is the host species of the endangered Smith's Blue Butterfly. The plant occurs commonly along the coastal dune frontages and in other parts of Ft. Ord. It was not found in this study.
Erysimum ammophilum occurs in portions of Fort Ord and was once common on the dunes and vacant lots of the City of Marina. This colorful plant was likely extirpated by wildflower pickers and insects which parasitize its seeds. It would be an easy matter to return the species to the area where it would thrive with modest protection.
Gilia tenuiflora ssp. arenaria This species occurs along the hind dunes of Ft. Ord and the City of Marina. In years with dry springs it may not germinate, or be so small that it cannot be found. It is likely to be found in the Maritime Chaparral in years with more bountiful spring rains.
Piperia yadonii Yadon's Piperia was previously reported from Ft. Ord. It is known to occur at the Monterey Peninsula Airport and within Maritime Chaparral within Manzanita Park in north Monterey County. Only Piperia michaelii was seen on this property.
Annella pulchra nigra Black Legless Lizard, this species is usually discovered accidentally when gardening or when excavation is taking place. There is little question that this lizard is present within the Maritime Chaparral and perhaps near some of the houses.

VI. Impact Assessment and Mitigation Measures

The construction of the proposed gate entry at 3rd and amenities to be made at connections between existing roadways and those of the City of Marina will cause some loss of Maritime Chaparral. This habitat loss is inevitable and would occur with any development.

The construction of walkways within the Maritime Chaparral will cause a measurable loss to Maritime Chaparral. These walkways will need to be ADA accessible and hence be wider than mere paths. Defining walkways within the protected chaparral is much preferred to use with no pathways as was the case with the original Ft Ord housing.

edge of the designated park on 3rd Street near Neighborhood Center 2. The plant should be avoided in any construction or demolition work.

Sand Mat Manzanita, Arctostaphylos pumila is common on the property within the Maritime Chaparral. This species is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing. Individual plants of this species occur near some of the housing that is scheduled for rehabilitation. The plant also occurs where neighborhood centers are to be constructed (labeled NC 4, and NC 1 on the plans). Such plants, if removed, could be replaced within the Maritime Chaparral especially edge areas where manzanitas removed originally. The steep slopes of Booker Street at Carswell would be good locations for replacement.

Monterey Ceanothus, Ceanothus cuneatus var. rigidus is common on the property within the Maritime Chaparral. This species is on List 4 of the California Native Plant Society. It is a Federal species of concern. It has no State of California listing. Plants of this species could be replanted along Booker Street at Carswell Street

Eastwood's Golden fleece Ericameria fasciculata is common on the property within the Maritime Chaparral. This species is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing.

Coast Honey-dew, Horkelia cuneata ssp. sericea, plants near to this species are found within the Horkelia cuneata ssp. cuneata complex of plants. Horkelia cuneata ssp. sericea is not well defined. They are gray-green in color with copious long hairs along the stems. Some of the plants on this property are gray-green in color, but the stem hairs are medium-sized and not as long as typical H. c. ssp. sericea. This intermediate taxon is found frequently on the property within Maritime Chaparral. The subspecies is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing. Plants as described occur along the easterly side of the designated park at 3rd Street.

Small-leaved Lomatium, Lomatium parvifolium, is common on the property within the Maritime Chaparral. This species is listed by the California Native Plant Society as a List 4 species. It has no Federal or State of California listing.

Michael's Piperia, Piperia michaelii, is an orchid, found on that portion of the property nearest the City of Marina boundary. It is carried by the California Native Plant Society on List 4. The plant has no Federal or State of California listing.

Maritime Chaparral is a rare plant community so designated by Robert F. Holland in Preliminary Descriptions of the Terrestrial Natural Communities of California State of California, The Resources Agency, Department of Fish and Game, 1986. This community is at risk wherever it occurs. Development has been the problem. In the present proposed development, the plan is to set aside most of the Maritime Chaparral areas as natural landscaping to be used and enjoyed with walkways installed. This may be an unusual opportunity for the City of Marina to

Unless stringent restrictions are placed within the use permit, along with well thought out CC & R's, the Maritime Chaparral will eventually fall victim to beautification committee members individual idiosyncrasies for tree planting, beautification, and other uses. This would allow the introduction of many more exotic species and serve to degrade and eventually degrade and eliminate the Maritime Chaparral. Beautification and various plantings in the vicinity of existing houses would not be an environmental issue since these areas have only weeds and indiscriminate exotic plantings.

Use of the area by a retirement community will be far less severe than that which occurred under military housing. The rarity of Maritime Chaparral and its beauty may well appeal to eclectic minds within the senior citizen community, who will appreciate and enjoy its presentations.

Black Legless lizards will likely be discovered during some part of the rehabilitation of the housing units and construction of support facilities.

Some native Coast Live Oak Trees are scheduled to be removed at the area designated as Center Campus and Apartments.

Some planted Monterey Pines and Monterey Cypress trees are scheduled to be removed at the areas designated Center Campus and Apartments.

Mitigation Measures

1. Follow City of Marina ordinances for replacing trees removed during the demolition and construction phase of the Cypress Knolls project.

2. Remove all ice plant from the general area, including seedlings which will appear after removal of the mature plants.

3. Remove young pampas grass plants which are starting on portions of the property.

4. Remove the few plants of Genista, Genista monspessulana that occur on the property and vicinity.

5. Make protection of the Maritime Chaparral along with its planned passive use part of the use permit.

6. Try to avoid areas harboring with Black Legless Lizards. When they are unavoidably unearthed, return them unharmed to a nearby area of loose sandy soil.

7. Make use of drought tolerant landscaping and drip irrigation part of the use permit. Moisture-loving plants in sandy soil will otherwise require a huge amount of water.

8. Remove Black Acacia Trees, Acacia melanoxylon wherever they occur. This species is considered noxious.

9. Consider moving Neighborhood Center 1 (NC 1) from its designated location between housing units 8500 and 8600 to the site of the burned out housing unit on Hayes Circle near 4th Street. The Maritime Chaparral between housing units 8500 and 8600 has a rich assemblage of Maritime Chaparral species present including Michael Orchid and Checker Lily. This would be a good location to begin the designated Recreation Trail and have some interpretive information of the plants and animals that use Maritime Chaparral.

VII Species Encountered On-Sight

PLANT LIST MARITIME CHAPARRAL

Trees

Acacia longifolia* Golden Wattle	3
Cupressus macrocarpa** Monterey Cypress	3
Pinus radiata** Monterey Pine	3
Quercus agrifolia var. agrifolia Coast Live Oak	3

Shrubs

Adenostoma fasciculatum Chamise	4
Arctostaphylos pumila*** Sandmat Manzanita	4
Arctostaphylos montereyensis*** Toro Manzanita	1
Arctostaphylos tomentosa ssp. tomentosa Shaggy-barked Manzanita	4
Artemesia californica California Sagebrush	3
Baccharis pilularis Dwarf Chaparral Broom	3
Ceanothus cuneatus var. rigidus*** Monterey Ceanothus	3
Ceanothus dentatus Dwarf Ceanothus	3
Ericameria ericoides False Heather	3
Ericameria fasciculata*** Eastwood's Golden fleece	2
Eriophyllum confertiflorum var. confertiflorum Golden Yarrow	2
Galium porrigens var. porrigens Climbing Bedstraw	2
Garrya elliptica Coast Silk-tassel	4
Genista monspessulana* French Broom	3
Helianthemum scoparium Rush-rose	3
Leptospermum laevigatum* Australian Tea	2
Lessingia filaginifolia var. filaginifolia	3
Lotus scoparius var. scoparius Deer Weed	3

Lupinus chamissonis Beach Bush Lupine	3
Mimulus aurantiacus Northern Sticky Monkey-flower	4
Rhamnus californica ssp. californica Coffeeberry	3
Salvia mellifera Black Sage	3
Solanum umbelliferum Blue Witch	2
Symphoricarpos mollis Creeping Snowberry	2
Toxicodendron diversilobum Poison-Oak	4

Forbs

Achillea millefolium White Yarrow	2
Anagallis arvensis* Pimpernel	4
Apiastrum angustifolium Mock Celery	2
Avena barbata* Slinder Oat	2
Bromus carinatus	2
Bromus rubens* Red Brome	3
Bromus diandrus* Great Brome	4
Calystegia malacophylla ssp. pedicellata Wooly Morning-glory	2
Camissonia cheiranthifolia ssp. cheiranthifolia Beach Primrose	4
Cardionema ramosissimum Sand Mat	4
Carex subbracteata	2
Carpobrotus edulis* Ice Plant	4
Carpobrotus edulis* X C. chilensis*	4
Castilleja exerta ssp. exerta Owls Clover	2
Chorizanthe pungens var. pungens*** Monterey Spine-flower	2
Cortaderia jubata* Pampas Grass	3
Crassula tillaea*	3
Crassula connata Sand Pygmy	2
Croton californicus Croton	2
Cryptantha leiocarpa Coast Cryptantha	2
Daucus pusillus Rattlesnake Weed	2
Delosperma cooperi* Ice Plant	2
Dichelostemma capitatum Blue Dicks	2
Erodium circutarium* Red-stemmed Filaree	4
Erodium botrys* Long-beaked Filaree	4
Eschscholzia californica	3
Filago gallica* Narrow-leaved Filago	3
Fritillaria affinis var. affinis Checker Lily	1
Galium californicum ssp.californicum California Bedstraw	2
Gnaphalium californicum California Everlasting	2
Gnaphalium ramosissimum Pearly Everlasting	2
Gnaphalium purpureum Purple Cudweed	2
Gnaphalium canescens ssp. beneolens Fragrant Everlasting	3
Heterotheca grandiflora Telegraph Weed	4

Horkelia cuneata ssp. sericea*** Coast Honey-dew	3
Horkelia cuneata ssp. cuneata Wedge-leaf Horkelia	2
Hypochaeris glabra* Smooth Cat's Ear	4
Koeleria macrantha	2
Linaria canadensis Toad-flax	3
Lomatium parvifolium var. parvifolium*** Small-leaved Lomatium	3
Lotus humistratus Short-podded Lotus	4
Lotus strigosus Bishop Lotus	2
Lupinus truncatus Wood Lupine	2
Lupinus nanus Sky Lupine	2
Lupinus bicolor	2
Madia exigua Little Tarweed	2
Marah fabaceus Common Manroot	2
Medicago polymorpha* Calif. Bur-clover	3
Melica imperfecta	2
Nassella cernua Needle Grass	2
Navarretia hamata ssp. parviloba	2
Orobanche bulbosa Chaparral Broomrape	1
Piperia michaelii*** Michael's Piperia	2
Plantago coronopus* Cut-leaved Plantain	4
Plantago erecta	4
Polygonum paronychia Beach Knotweed	2
Potentilla glandulosa ssp. glandulosa Sticky Cinquefoil	1
Rumex acetosella* Sheep Sorrel	3
Sanicula crassicaulis Gambleweed	3
Senecio vulgaris* Common Groundsel	3
Silene gallica* Common Catchfly	3
Spergula arvensis ssp. arvensis* Corn Spurrey	4
Triteleia ixioides ssp. ixioides Golden Brodiaea	2
Vulpia myuros.var.myuros*	4
Zigadenus fremontii Star-lily	4

PLANT LIST STREET AND HOUSING AREAS

Trees

Acacia dealbata* Silver Wattle	2
Acacia longifolia* Golden Wattle	3
Acacia melanoxylon* Blackwood Acacia	3
Albizia lophantha* Plume Acacia	1
Cupressus macrocarpa** Monterey Cypress	4
Eucalyptus globulus* Blue Gum	3
Eucalyptus spp.*	3
Eucalyptus spp.*	3

Livistona spp.* Palm (genus uncertain)	1
Pinus radiata** Monterey Pine	4
Pinus spp.* Exotic Pine	1
Quercus tomentella* Island Oak	2
Quercus agrifolia var. agrifolia Coast Live Oak	3
Tamarix spp.* Tamarisk	1

Shrubs

Abelia grandiflora* Glossy Abelia	2
Baccharis pilularis Dwarf Chaparral Broom	2
Callistemon citrinus* Lemon Bottlebrush	3
Cistus creticus* Rock-rose	3
Cotoneaster pannosa* Cotoneaster	3
Cotoneaster lacteus*	3
Escallonia rubra*	2
Euryops pectinatus* Euryops	2
Genista monspessulana* French Broom	3
Ilex aquifolium* Holly	2
Juniper spp.* Juniper	1
Juniperus horizontalis* Juniper	2
Hebe speciosa* Showy Hebe	2
Leptospermum laevigatum* Australian Tea	3
Leptospermum scoparium* New Zealand Tea Tree (horicultural selection)	3
Ligustrum japonicum* Japanese Privet	4
Lupinus chamissonis Beach Bush Lupine	2
Melaleuca ericifolia* Heath Melaleuca	1
Myrtus communis* True Myrtle	2
Pelargonium domesticum* Lady Washington Pelargonium	2
Pittosporum tobira* Japanese Pittosporum	2
Platycladus orientalis* Oriental Arborvitae	2
Pyracantha angustifolia* Pyracantha	2
Pyrus kawakamii* Evergreen Pear	1
Rhamnus californica ssp. californica Coffeeberry	2
Rhaphiolepsis indica* India Hawthorn	3
Xylosma congestum* Xylosma	3

Forbs

Anagallis arvensis* Pimpernel	4
Avena barbata* Slinder Oat	3
Avena fatua* Wild Oat	3
Bromus diandrus* Great Brome	4
Bromus rubens* Red Brome	3

Camissonia cheiranthifolia ssp. cheiranthifolia Beach Primrose	4
Cardionema ramosissimum Sand Mat	4
Carpobrotus edulis* Ice Plant	4
Carpobrotus edulis* X C. chilensis*	4
Chasmanthe floribunda*	1
Crassula tillaea*	3
Erodium circutarium* Red-stemmed Filaree	4
Erodium botrys* Long-beaked Filaree	4
Eschscholzia californica	2
Filago gallica* Narrow-leaved Filago	3
Gazania spp.* (16 species recognized)	2
Gnaphalium canescens.ssp.beneolens Fragrant Everlasting	3
Gnaphalium purpureum Purple Cudweed	3
Heterotheca grandiflora Telegraph Weed	4
Hirschfeldia incana* Summer Mustard	3
Hypochaeris glabra* Smooth Cat's Ear	4
Hypochaeris radicata* Hairy Cat's Ear	4
Lessingia filaginifolia var. filaginifolia	3
Linaria canadensis Toad-flax	3
Lobularia maritima* Sweet Alyssum	3
Lotus humistratus Short-podded Lotus	3
Lupinus nanus Sky Lupine	2
Lupinus bicolor	2
Medicago polymorpha* Calif. Bur-clover	3
Oxalis pes-caprae* Bermuda Buttercup	2
Pennisetum clandestinum* Kikuyu Grass	4
Plantago coronopus* Cut-leaved Plantain	4
Plantago lanceolata* Ribwort	3
Rumex acetosella* Sheep Sorrel	4
Sanguisorba minor ssp. muricata* Burnet	2
Senecio vulgaris* Common Groundsel	4
Silene gallica* Common Catchfly	4
Sonchus asper* Prickly Sow-thistle	3
Spergula arvensis ssp. arvensis* Corn Spurrey	3
Vulpia myuros.var.myuros*	4
Watsonia marginata* Watsonia	1

* Introduced Exotic

** Introduced California Native

*** Listed Species

Mammal List

Bat Species
Didelphis marsupialis* Virginia Opossum,
Lepus californicus Black-tailed Jackrabbit

Microtus californicus California Meadow Vole
Odocoileus hemionus Black-tailed Deer
Peromyscus maniculatus Deer mouse
Peromyscus californicus California Mouse
Procyon lotor Raccoon
Scapanus latimanus Broad-handed Mole
Spirmophilus beecheyi Beechy Ground Squirrel
Sylvilagus auduboni Cottontail Rabbit
Sylvilagus bachmani Brush Rabbit
Thomomys bottae Botta Pocket Gopher
Vulpes fulva* Red fox

* Introduced species

No bat roosting sites were observed.

Bird List

Aphelocoma coerulescens Scrub Jay
Callipepla californica California Quail
Calypte anna Anna's Hummingbird
Carpodacus mexicanus House Finch
Columba fasciata Band-Tailed Pigeon
Corvus brachyrhynchos American Crow
Junco hyemalis Dark-eyed Junco
Melospiza melodia Song Sparrow
Mimus polyglottos Northern Mockingbird
Passer domesticus House Sparrow
Pipilo crissalis California Towhee
Sturnus vulgarus European Starling
Turdus migratorius American Robin
Vermivora celata Orange-crowned Warbler
Zenaida macroura Mourning Dove
Zonotrichia leucophrys White-crowned Sparrow

* Additional birds would be found in the area with a period of study

Reptiles and Amphibians

No reptiles or amphibians were seen. It is suspected that any snakes venturing to this area would probably have a difficult time. Gopher snakes and garter snakes were once common in this area. Alligator lizard, the fence lizard along with horned toad lizards are to be expected. Black Legless Lizards are common in adjacent gardens within the City of Marina. they are to be expected within the redevelopment area.

Amphibians are unlikely to be found within the stabilized dunes without the presence of permanent surface water. Slender salamanders may show up under flower pots and within gardens once the area is reoccupied. No amphibians were seen.

VERN YADON

May 9, 2001

Mr. Ray Parks and Associates
P.O. Box 221922
Carmel CA 93922

Dear Mr. Parks:

You recently contacted me with the request that I review the Cypress Knolls Planned Development Site so that any necessary updates might be made. This review was done on May 4, 2001.

As you know, the area had a considerable increase in fall, winter and spring rains contrasting with the previous year which was quite dry. Even though the spring was cold, annual plants in particular found the extra moisture to their liking. Chorizanthe pungens, Monterey Spine Flower, a threatened species, is considerably more common this year with some fairly large patches encountered. Also encountered was Gilia tenuiflora ssp. arenaria Sand Gilia, a Federally listed Endangered Species. This latter species was not found in 2000 when the original survey was done. However a note was included in the report suggesting the possibility. The note occurs under "Listed Species Searched for but Not Found". It reads as follows:

"Gilia tenuiflora ssp. arenaria. This species occurs along the hind dunes of Ft. Ord and the City of Marina. In years with dry springs it may not germinate, or be so small that it cannot be found. It is likely to be found in the Maritime Chaparral in years with more bountiful spring rains".

Gilia tenuiflora ssp. arenaria occurs with Chorizanthe pungens. Both do well with some disturbance, but neither will tolerate the dense populations of introduced grasses and exotics that occur where demolition and construction of the Cypress Knolls Project will take place. Both are present together in the areas designated for nature trails.

In my opinion, finding the Federally protected plant places a constraint on the project only to the degree that more care should be taken in the construction of the nature trails. Your plan as stated was essentially to avoid the native chaparral community while performing demolition and construction where houses presently exist. The above species were not found in these sites and therefore should not cause any major changes in the project.

1119 Buena Vista, Pacific Grove, California 93950 vly@mbay.net

The finding of the endangered Gilia will require a slight alteration in the report and perhaps a discussion regarding the plant. This probably should be done at the time you are ready to submit documents to the City of Marina.

By the end of June, I should also be able to identify the Piperia species that was found behind building 8500. As you know, this group of orchids must be identified by flowers. I collected one of the plants in the hope that I could induce it to bloom. Herbivores had already removed most of its leaf structure. Presently it is producing a flower stalk.

Sincerely yours,

Vern Yadon

Vern Yadon
Consultant

VERN YADON

June 28, 2002

Mr. Ray Parks and Associates
P.O. Box 221922
Carmel CA 93922

Dear Mr. Parks:

You contacted me approximately one month ago to perform a visit and provide an overview of the Cypress Knolls Planned Development Site similar to the one completed last year on May 9, 2001. The purpose was to inform you of any biological changes that might influence your project. This review was done on June 5, 2002.

My methods were to visit and walk through areas where native maritime chaparral has been left intact. These sites are open space parcels that run more or less at mid point between streets such as between Third and Carswell and boundary areas where your Master Plan Map dated September 3,1998 shows a recreation trail. As I reported in my initial survey these are the only places in the project area where sufficient native vegetation exists to be worth considering. I also visited some of the areas near the derelict houses. These latter properties were scraped bare when development occurred and a potpourri of exotics planted for landscaping. Almost no native vegetation has returned to these areas.

In the year 2000 the area experienced a dry winter with reduced rainfall, hence native annual plants, including those considered threatened or endangered by the Federal and State Governments, had little chance to grow and/or be found. The year 2001 presented more generous rainfall so that expected listed plants such as Monterey Spine Flower and Sand Gilia were found in appropriate areas within the native sites. The same was true for the spring of 2002. The rains of last winter and spring provided appropriate moisture for the above two plants. While they were small, they were found in greater numbers than in 2001.

In general the native vegetation and native growing sites have not changed since my original report. Physical changes are, however, occurring. A new road project is underway between Cypress Knolls and Marina Heights proposed developments. During the time of my initial survey and last year as well, an alley sized dirt roadway separated the two projects. This primitive roadway went through excellent maritime chaparral. The site on your September 1998 map is shown as "California Road Extension." Your initial assessment of the area also provides for a recreation trail in the same area. In lay terms, this site has been trashed. For example no native shrubbery now exists behind building 8610, just a large berm with bare soil and a new blacktopped road. Other buildings along this part of Hayes Circle also have this road in close proximity.

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Another change is apparent with of the new road, a 30 inch culvert has been placed under the road and is pointed directly at building 8605 at Hayes Circle and 3rd Street. A relatively small retention basin has been provided ostensibly to catch water flowing through it. It was also noted that the Patton Park Transitional Housing has a few houses refurbished and occupied along the southwesterly end of Hayes Circle near 3rd Avenue.

In our original discussions, your stated vision was that replacement housing would be built in areas that presently are occupied with original military housing. The undisturbed native areas were to be left intact and nature trails provided so the new residents could enjoy a natural environment. This, in my opinion, remains a logical planning consideration. I would urge, however that prior to letting a demolition contract, some very stern limitations be placed on the contractor and subcontractors. He/she should thoroughly understand that the remaining maritime chaparral is an asset to the project. Wholesale destruction has been prevented in some desert locations by providing an administrative position for an environmental inspector with stop work authority. Stop work and an assessment meeting to document damages would be levied each time the contract was violated and where guidelines are not followed. In those cases a monetary penalty was applied for each violation. Extraneous and unnecessary damage stopped happening almost immediately.

I have now had an opportunity to closely check the Piperia spp. found growing in the buffer area between Hayes Circle and the chain-link fence which was the original boundary with the City of Marina. The Piparias that I found were Piperia michaelii a relatively common plants with abundant populations at Ft. Ord.

Sincerely yours,

Vern Yadon

Vern Yadon
consultant

VERNAL L. YADON
1119 Buena Vista Avenue
Pacific Grove, California 93950

A Review of the Property where the Proposed Cypress Knolls Retirement Community is to be Located, Marina, California

By

Vernal L. Yadon
July 10, 2003

(Field work: July 9, 2003

Signed Vern Yadon Date 11 July 03

This is a review of the property identified for planning purposes as the proposed Cypress Knolls Retirement Community. Since my original Biological Report of June 10, 2000, certain changes have taken place. The decision to consider development of habitat formerly planned as a green belt area between Hayes Circle and the current City of Marina Boundary fence to Third Street is a major change. The other major change is the construction and completion of a new road known as California Avenue.

The condition of areas previously described in the earlier Biological Report remain the same.

The plan was/is to leave much of the existing Maritime Chaparral intact, use existing roadways, rehabilitate existing housing sites, and add some amenities to make the area useful as a retirement community. The environmental issues of the above changes are that they will eliminate the Maritime Chaparral in those locations.

Maritime Chaparral is a rare plant community. Growing within it is the federally threatened Monterey Spineflower, Chorizanthe pungens var. pungens and Federally endangered Sand Gilia, Gilia tenuiflora ssp. arenaria. Also present are the California Native Plant Society 1B endangered Toro and Dune Manzanitas, Arctostaphylos montereyensis and Arctostaphylos pumila. California Native Plant Society List 4 species present are: Small-leaved Lomatium, Lomatium parvifolium and Monterey Ceanothus, Ceanothus cuneatus var. rigidus.

Lists of plants, mammals, birds, amphibians and reptiles are provided.

Prepared for
Ray Parks and Associates
P.O. Box 221922
Carmel, California 93922

I. Introduction

I was asked by Architect Ray Parks to review conditions at the Cypress Knolls Proposed Retirement Community with the new information that the City of Marina will construct a new road to intersect California Avenue at 3rd Street. With the new road, plans may be changed to have housing in the boundary area between the existing houses of Hayes Circle and the present City of Marina Boundary fence. At present there is a relatively undisturbed area of Maritime Chaparral which was originally planned to be kept in open space. This report discusses what this change will mean for this area.

This report also discusses changes brought about by the construction of California Avenue and the affects on the original concepts of Cypress Knolls Community.

This report lists habitats, plants, birds and mammals that are to be found in the above area.

II Regional Setting

Reference is made to the original Biological Report dated June 20, 2000. For a discussion on the habitat in general, one should refer to that document.

III Description of Local Vegetation

Methods used were to walk over the property while noting the species of plants and observing wildlife and evidence of it. Field notes were taken of observations and species encountered.

The property here described is that portion of the proposed Cypress Knolls Retirement Community that lies at the north west corner of the former Fort Ord between the district school fence to the west and the fenced boundary of the City of Marina to the north. Third Street makes up the easterly boundary and the housing of Hayes Circle the south. The habitat of this parcel is Maritime Chaparral in its entirety. A number of shrubby Coast Live Oaks are in this habitat and are slowly developing into trees. Plantings of Monterey Cypress and Monterey Pines intrude into this natural community along the Marina boundary fence. A hiking and horse trail also lies along the boundary fence. The chaparral is composed of low growing, wind-tolerant shrub and forb species which present a colorful blooming period in the spring.

IV. Rare and Endangered Species

No rare or endangered species were found on this parcel. Gilia tenuiflora, Federal Endangered, State Threatened, California Native Plant Society 1B Endangered has potential for being on this parcel. It is to be found on other open-space designated portions of the Cypress Knolls property. The taxon tends to show up after soil disturbance and is a component of bare soil sites between shrubs. Under good conditions it can be several inches high and 5-6 inches across with decumbent branches. In a year when conditions are not favorable, it can produce a single flower on a single 1/2 inch stem, which is quite difficult to find.

V. Threatened Species

The Federally threatened Monterey Spineflower, Chorizanthe pungens var. pungens was found within the Maritime Chaparral. This plant is also listed as 1B endangered by The California Natives Plant Society. It has no listing by the State of California. Monterey Spineflower plants were scattered in bare soil areas between shrubs particularly where the competing shrubs were low. This species is common in the sand dunes bordering Monterey Bay where much larger examples of the species may be encountered. It tends to reserve a seed bank under larger shrubs. It commonly appears after the soil is disturbed.

Special Plants and Habitats

The California Department of Fish and Game periodically issues publications which are administrative advisory notifications regarding plants and animals and habitats. The animals, plants, and habitats thus listed have no statutory protection but are required to be considered by planning authorities as described in Section 15380 of the CEQA guidelines. It is pointed out that the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, 5th edition, considers a much larger number of plants to be rare and endangered. This publication is the source of many of the CEQA listings. The Native Plant society also has a List 4 designation, which is a request for information for certain taxa. It may be inappropriate to consider List 4 species in any other light other than that of information. List 4 species are included here because they are included in the California Department of Fish and Game's Special Plants publication. The Society has, as yet, come to no conclusions on rarity of plant species in List 4.

Monterey Pine, Pinus radiata, is present and is reseeding itself. Monterey Cypress, Cupressus macrocarpa is present. All plants of these species were planted on this property. Planted Monterey Pines and Monterey Cypresses are not considered to be environmentally sensitive, but may require permits for removal depending on city ordinances. Some of these trees will likely be in the way of buildings depending on the density planned for this parcel.

Sandmat Manzanita, Arctostaphylos pumila is abundant on the parcel. This species is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing.

Monterey Ceanothus, Ceanothus cuneatus var. rigidus is common on the parcel. This species is on List 4 of the California Native Plant Society. It is a Federal species of concern. It has no State of California listing.

Eastwood's Golden fleece Ericameria fasciculata is common on the property. This species is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing.

Coast Honey-dew, Horkelia cuneata ssp. sericea, plants near to this species are found within the Horkelia cuneata ssp. cuneata complex of plants. Horkelia cuneata ssp. sericea is not well defined. They are gray-green in color with copious long hairs along the stems. Some of the plants on this property are gray-green in color, but the stem hairs are medium-sized and not as long as typical H. c. ssp. sericea. This intermediate taxon is found frequently on the property within Maritime Chaparral. The subspecies is listed by the California Native Plant Society as 1B endangered. It is a Federal species of concern. It has no State of California listing.

Small-leaved Lomatium, Lomatium parvifolium, is common on the property within the Maritime Chaparral. This species is listed by the California Native Plant Society as a List 4 species. It has no Federal or State of California listing.

Michael's Piperia, Piperia michaelii, is an orchid, commonly found in various parts of the Maritime Chaparral. It is carried by the California Native Plant Society on List 4. The plant has no Federal or State of California listing.

Maritime Chaparral is a rare plant community so designated by Robert F. Holland in Preliminary Descriptions of the Terrestrial Natural Communities of California State of California, The Resources Agency, Department of Fish and Game, 1986. This community is at risk wherever it occurs. As the City of Marina is developed, little of this natural assemblage of plants will be left intact because of size of individual properties, beautification issues and uses planned.

VI. Impact Assessment and Mitigation Measures

Changing planned use on this parcel to make it a construction site will cause loss of the Maritime Chaparral Community. This habitat loss is inevitable wherever development occurs. One need only look over the north boundary fence into the present city where the loss of the chaparral community is total. Even along the newly constructed Third Street connection to California Avenue, none of the tree plantings include a species native to the site. The construction of California Avenue itself replaced acres of Maritime Chaparral. The new roadway will likely require rethinking of recreational walkways planned for that area.

Black Legless lizards will likely be discovered during construction of housing units and construction of support facilities.

Because of their positioning, already established planted Monterey Pine and Monterey Cypress Trees including native Coast Live Oak Trees will have to be removed.

Mitigation Measures

Mitigation measures will be dependant on density and the positioning of the houses to be constructed. The mitigation measures offered in the original report are still valid.

V. Plant Lis Maritime Chaparral Parcel

Trees

Cupressus macrocarpa** Monterey Cypress	3
Pinus radiata** Monterey Pine	3
Quercus agrifolia var. agrifolia Coast Live Oak	3

Shrubs

Adenostoma fasciculatum Chamise	4
Arctostaphylos pumila*** Sandmat Manzanita	4
Arctostaphylos tomentosa ssp. tomentosa Shaggy-barked Manzanita	4
Artemesia californica California Sagebrush	3
Baccharis pilularis Dwarf Chaparral Broom	3
Ceanothus cuneatus var. rigidus*** Monterey Ceanothus	3
Ceanothus dentatus Dwarf Ceanothus	3
Corethrogyne filaginifolia var. filaginifolia	3
Helianthemum scoparium Rush-rose	3
Ericameria ericoides False Heather	3
Ericameria fasciculata*** Eastwood's Golden fleece	2
Eriophyllum confertiflorum var. confertiflorum Golden Yarrow	2
Galium porrigens var. porrigens Climbing Bedstraw	2
Garrya elliptica Coast Silk-tassel	4
Genista monspessulana* French Broom	3
Lotus scoparius var. scoparius Deer Weed	3
Lupinus chamissonis Beach Bush Lupine	3
Mimulus aurantiacus Northern Sticky Monkey-flower	4
Rhamnus californica ssp. californica Coffeeberry	3
Salvia mellifera Black Sage	3
Solanum umbelliferum Blue Witch	2
Symphoricarpos mollis Creeping Snowberry	2
Toxicodendron diversilobum Poison-Oak	4

Forbs

Achillea millefolium White Yarrow	2
Anagallis arvensis* Pimpernel	4
Apiastrum angustifolium Mock Celery	2
Avena barbata* Slinder Oat	2
Briza maxima* Rattlesnake Grass	3
Bromus carinatus	2

Bromus rubens* Red Brome	3
Bromus diandrus* Great Brome	4
Calystegia malacophylla ssp. pedicellata Wooly Morning-glory	2
Camissonia cheiranthifolia ssp. cheiranthifolia Beach Primrose	4
Cardionema ramosissimum Sand Mat	4
Carex brevicaulis	2
Carpobrotus edulis* Ice Plant	4
Carpobrotus edulis* X C. chilensis*	4
Castilleja exerta ssp. exerta Owls Clover	2
Chorizanthe pungens var. pungens*** Monterey Spine-flower	2
Cortaderia jubata* Pampas Grass	3
Crassula tillaea*	3
Crassula connata Sand Pygmy	2
Croton californicus Croton	2
Cryptantha leiocarpa Coast Cryptantha	2
Daucus pusillus Rattlesnake Weed	2
Dichelostemma capitatum Blue Dicks	2
Erodium circutarium* Red-stemmed Filaree	4
Erodium botrys* Long-beaked Filaree	4
Eschscholzia californica	3
Filago gallica* Narrow-leaved Filago	3
Fritillaria affinis var. affinis Checker Lily	1
Galium porrigens var. porrigens California Bedstraw	2
Gnaphalium californicum California Everlasting	2
Gnaphalium ramosissimum Pearly Everlasting	2
Gnaphalium purpureum Purple Cudweed	2
Gnaphalium canescens ssp. beneolens Fragrant Everlasting	3
Heterotheca grandiflora Telegraph Weed	4
Horkelia cuneata ssp. cuneata Wedge-leaf Horkelia2	
Horkelia cuneata ssp. sericea*** Coast Honey-dew	3
Hypochaeris glabra* Smooth Cat's Ear	4
Hypochaeris radicata* Hairy Cat's Ear	2
Koeleria macrantha	2
Linaria canadensis Toad-flax	3
Lomatium parvifolium var. parvifolium*** Small-leaved Lomatium	3
Lotus humistratus Short-podded Lotus	4
Lotus strigosus Bishop Lotus	2
Lupinus truncatus Wood Lupine	2
Lupinus nanus Sky Lupine	2
Lupinus bicolor	2
Madia exigua Little Tarweed	2
Marah fabaceus Common Manroot	2
Medicago polymorpha* Calif. Bur-clover	3
Melica imperfecta	2

Nassella cernua Needle Grass	2
Navarretia hamata ssp. parviloba	2
Orobanche bulbosa Chaparral Broomrape	1
Piperia michaelii*** Michael's Piperia	2
Plantago coronopus* Cut-leaved Plantain	4
Plantago erecta	4
Plantago lanceolata* Goose Grass	3
Raphanus sativus* Wild Radish	2
Rumex acetosella* Sheep Sorrel	3
Sanicula crassicaulis Gambleweed	3
Senecio vulgaris* Common Groundsel	3
Silene gallica* Common Catchfly	3
Spergula arvensis ssp. arvensis* Corn Spurrey	4
Triteleia ixioides ssp. ixioides Golden Brodiaea	2
Vulpia myuros.var.myuros*	4
Zigadenus fremontii Star-lily	4

* Introduced Exotic	1. Few	2. Very Few
** Introduced California Native	3. Common	4. Abundant
*** Listed Species		

Mammal List

Bat Species
Didelphis marsupialis* Virginia Opossum,
Lepus californicus Black-tailed Jackrabbit
Microtus californicus California Meadow Vole
Odocoileus hemionus Black-tailed Deer
Peromyscus maniculatus Deer mouse
Peromyscus californicus California Mouse
Procyon lotor Raccoon
Scapanus latimanus Broad-handed Mole
Spirmophilus beecheyi Beechy Ground Squirrel
Sylvilagus auduboni Cottontail Rabbit
Sylvilagus bachmani Brush Rabbit
Thomomys bottae Botta Pocket Gopher

* Introduced species

No bat roosting sites were observed.

Bird List

Aphelocoma coerulescens Scrub Jay
Callipepla californica California Quail

Calypte anna Anna's Hummingbird
Carpodacus mexicanus House Finch
Corvus brachyrhynchos American Crow
Junco hyemalis Dark-eyed Junco
Melospiza melodia Song Sparrow
Passer domesticus House Sparrow
Pipilo crissalis California Towhee
Pipilo erythrophthalmus Rufous-sided Towhee
Sturnus vulgarus European Starling
Taxostoma redivivum California Thrasher
Thryomanes bewickii Bewick's Wren
Vermivora celata Orange-crowned Warbler
Zenaida macroura Mourning Dove
Zonotrichia leucophrys White-crowned Sparrow

* Additional birds would be found in the area with a period of study

Reptiles and Amphibians

Only the Western Fence Lizard was seen and no amphibians were seen. It is suspected that any snakes venturing to this area would probably have a difficult time. Gopher snakes and garter snakes were once common in this area. Alligator lizard, the fence lizard along with horned toad lizards are an expected component of Maritime Chaparral. Black Legless Lizards are common in adjacent gardens within the City of Marina. They are to be expected within the redevelopment area.

Amphibians are unlikely to be found within the stabilized dunes without the presence of permanent surface water. Slender salamanders may show up under flower pots and within gardens once the area is reoccupied. No amphibians were seen.

VERNAL L. YADON
1119 Buena Vista Avenue
Pacific Grove, California 93950

A Review of the The Proposed Cypress Knolls Retirement Community , Marina, California

By

Vernal L. Yadon

May 21, 2004

(Field work: April 28, 2004

Signed Vernal Yadon Date May 21, 2004

Prepared for
Ray Parks and Associates
P.O. Box 5473
Carmel, California 93921

Introduction

This is a review of the property identified for planning purposes as the proposed Cypress Knolls Retirement Community. Architect Ray Parks asked that I revisit and report on the property. Since my report dated July 10, 2003, a number of changes have taken place. California Avenue of the City of Marina has been further defined. Its right of way was extended into areas previously considered for open space in my original report of 2000 and as shown in the original concept drawings. The space behind buildings bordering Hayes Circle at 3rd now have much less open space at their rear setbacks. Rocked access roads to catch basins have further impacted that space as have exotic tree plantings used for landscaping. Vandalism of buildings continues. Protective plywood sheets have been torn from many of the buildings and all buildings have likely been entered. The streets, particularly Hayes Circle, are lettered with discarded hot water heaters, refrigerators, television sets with screens broken, mattresses and other debris.

The condition of the maritime chaparral that was reported as circling the area and existing between streets and buildings largely remains the same. Some litter is dumped, but those areas not type converted by the army remain as Maritime Chaparral and Coast Live Oak Woodland.

The original plan was/is to leave much of the existing Maritime Chaparral intact, use existing roadways, rehabilitate or raze existing housing sites, and add some amenities to make the area useful as a retirement community. The environmental issues are that the completion of California Avenue and improvements related to it have removed the Maritime Chaparral in those locations.

Maritlime Chaparral and Listed Species

Maritime Chaparral is variously defined as an assemblage of shrub-sized plants usually containing manzanitas and associated plants that are influenced by coastal summer fog cover that enables the plant association to exist in certain soils types. These areas have been greatly impacted in recent years by development to a point where the plant association is considered rare. A good deal of Fort Ord was developed over this habitat as were many of the housing projects of the fort, including Hayes Circle. The coastal portions of Fort Ord are covered with windborne sand which is stabilized by vegetation. In this case, Maritime Chaparral is the stabilizing plant association. The area further harbors certain plants that are protected by either the Federal Endangered Species Act or the California Department of Fish and Game. Plants in the Cypress Knolls area include Federally Threatened Chorizanthe pungens var. pungens and Federally Endangered, State Threatened Sand Gilia, Gilia tenuiflora ssp. arenaria. The California Native Plant Society in its publication Inventory of Rare and Endangered Plants of California 6th edition includes the above named plants as List 1B endangered and adds to the 1B list Toro Manzanita, Arctostaphylos montereyensis, Sandmat Manzanita, Arctostaphylos pumila, and Kellogg's Horkelia, Horkelia cuneata ssp. sericea. California Native Plant Society List 4 species present are: Small-leaved Lomatium, Lomatium parvifolium and Monterey Ceanothus, Ceanothus cuneatus var. rigidus. These latter plants are addressed as required by the California Environmental Quality Act, C.E.Q.A. The above plants also a ppear on the California Department of Fish and Game's List of Special Plants.

Work Perform in this Report

A new map with delineated open space areas and colored locations for Maritime Chaparral and other protected species was provided. In walking over the area, the affects of a very dry spring were noted. Some annual native plants were lacking in size and numbers. Others were not in evidence because they received no rain at the critical time. The soil seed bank of these species is still intact and future rains will allow them to again populate their habitat sites. It appeared useful to refine the location of Maritime Chaparral on the new map. The quantity remains approximately the same but adjustments were made for locations that now are covered only by ice plant and areas missed were added. The bordering open space corner northeast of Rendova Street is rapidly changing from Maritime Chaparral to Coast Live Oak Woodland. No Sand Gilia was found this season.

Report of Certified Arborist

Bryan E. Bradford
Certified Arborist No. WC-5896
International Society of Arboriculture,
Professional Member

88 Paseo Hermoso ~ Salinas, CA ~ 93908
831-402-3542 or 831-484-1029

April 27, 2006

Michael Shaw, Agent for Front Porch
335 Quebrada del Mar Rd.
Marina, CA 93933

Dear Mr. Shaw,

Having completed the tree tagging and inventory for the Cypress Knolls project on Fort Ord, I wanted to offer my opinion regarding the future of these tees.

As you can see from the list of species, virtually all of these trees are commercially available, and only the oaks, cypress and pine are native. Because of the long period of time during which no tree maintenance was done, most of the exotic and many of the native trees within the yard space of the residential structures in this subdivision are in very poor condition and should probably be removed. It is not that the trees could not be saved, but rather that the pruning and conservation would cost more than removal and replacement. (It should also be noted that many of the exotics planted on this site were poor choices not well suited to this environment, and that prior to the existing housing tract, very few tree specimens grew beyond scrub form on this site.) This statement is, of course, a generalization to which there are exceptions.

The trees worth saving are the few stand-alone specimens of native cypress, oak and pine located near the residential structures. These could be properly pruned and conserved and kept as very beautiful landscape features in the new development. Additionally, some of the row plantings of pine and cypress around the perimeter of the project could be kept as visual and sound screens, although because of the density of these rows, some specimens could be culled.

I have enjoyed working with you and hope that this worthy project can now move quickly toward completion.

Sincerely,

Bryan Bradford

52
DEAD

#	Genus	Form	DBH inches	Condition	Notes
1	Eucalyptus	1 dominant	17	Good	2 stems
2	Eucalyptus	6 stem	8,9,10,7,6,8	Good	
3	Pinus	1 dominant	11	Fair	Wind burned
4	Cupressus	2 stem	6,7	Good	Wind burned
5	Eucalyptus	6 stem	22,10,11,17,9,16	Good	Wind blown, main stems grounded
6	Eucalyptus	3 stem	10,10,14	Good	
7	Pinus	1 dominant	13	Good	Some canker
8	Quercus	3 stem	12,8,9	Good	Wind blown
9	Cupressus	4 stem	8,11,8,9	Good	
10	Cupressus	5 stem	7,11,10,11,7	Good	
11	Cupressus	1 dominant	9	Good	
12	Cupressus	3 dominant	9,14,12	Good	
13	Cupressus	4 stem	8,7,8,9	Good	
14	Cupressus	1 dominant	9	Good	
15	Cupressus	1 dominant	11	Good	
16	Cupressus	1 dominant	6	Good	
17	Cupressus	1 dominant	14	Good	
18	Eucalyptus	2 stem	12,11	Good	
19	Eucalyptus	1 dominant	18	Good	
20	Pinus	2 stem	6,7,	Good	

21	Cupressus	2 dominant	6,6	Good	
22	Cupressus	1 dominant	6	Good	
23	Cupressus	1 dominant	7	Good	2 stems
24	Cupressus	1 dominant	6	Good	
25	Cupressus	2 stem	6,7	Good	
26	Cupressus	1 dominant	8	Good	
27	Cupressus	1 dominant	7	Good	
28	Cupressus	1 dominant	12	Good	
29	Cupressus	1 dominant	6	Good	
30	Cupressus	1 dominant	6	Good	
31	Cupressus	3 stem	8,6,6	Good	
32	Cupressus	4 stem	8,6,6,9	Good	
33	Cupressus	2 dominant	6,7	Good	
34	Eucalyptus	2 stem	17,13	Good	Broken crown
35	Eucalyptus	3 dominant	11,12,9	Good	
36	Eucalyptus	3 dominant	6,6,6	Good	
37	Eucalyptus	4 dominant	14,12,8,10	Good	
38	Eucalyptus	1 dominant	11	Good	
39	Cupressus	2 dominant	6,6	Good	
40	Cupressus	4 stem	7,7,7,11	Good	
41	Cupressus	1 dominant	8	Good	

42	Cupressus	1 dominant	7	Good	
43	Eucalyptus	2 stem	12,10	Fair	
44	Eucalyptus	3 stem	8,9,11	Fair	
45	Eucalyptus	2 stem	9,12	Fair	Very poor structure
46	Cupressus	1 dominant	7	Good	
47	Cupressus	1 dominant	7	Good	
48	Cupressus	5 stem	10 inch aggregate	Good	
49	Cupressus	1 dominant	8	Good	
50	Cupressus	2 dominant	8,8	Good	
51	Cupressus	1 dominant	6	Good	
52	Cupressus	4 dominant	13,7,9,9	Good	
53	Cupressus	Multi-stemmed	10 inch aggregate	Good	
54	Pinus	1 dominant	8	Good	
55	Pinus	1 dominant	8	Dead	
56	Pinus	1 dominant	7	Good	
57	Pinus	1 dominant	7	Poor	
58	Pinus	1 dominant	9	Good	
59	Cupressus	1 dominant	10	Good	
60	Cupressus	1 dominant	8	Good	
61	Cupressus	2 stem	6,7	Good	
62	Cupressus	1 dominant	9	Good	

63	Cupressus	1 dominant	10	Good	
64	Cupressus	1 dominant	9	Good	
65	Cupressus	4 stem	7,6,8,7	Good	
66	Cupressus	1 dominant	13	Good	
67	Cupressus	3 stem	10 inch aggregate	Good	
68	Cupressus	1 dominant	9	Good	
69	Cupressus	3 stem	9,10,8	Good	
70	Cupressus	1 dominant	9	Good	
71	Cupressus	1 dominant	8	Good	
72	Cupressus	3 stem	10 inch aggregate	Good	
73	Cupressus	1 dominant	6	Good	
74	Eucalyptus	3 stem	10,10,13	Fair	
75	Eucalyptus	3 stem	8,9,9	Fair	
76	Eucalyptus	3 stem	15,15,8	Good	
77	Cupressus	5 stem	10 inch aggregate	Good	
78	Cupressus	1 dominant	9	Good	
79	Cupressus	1 dominant	11	Good	
80	Cupressus	1 dominant	7	Good	
81	Cupressus	1 dominant	14	Good	
82	Cupressus	1 dominant	12	Good	
83	Cupressus	1 dominant	11	Good	

84	Cupressus	1 dominant	10	Good	
85	Cupressus	1 dominant	9	Good	
86	Cupressus	3 stem	5,7,5	Good	
87	Cupressus	1 dominant	14	Good	
88	Cupressus	2 dominant	10,10	Good	
89	Cupressus	3 stem	11,9,7	Good	
90	Cupressus	1 dominant	12	Good	
91	Cupressus	1 dominant	13	Good	
92	Cupressus	1 dominant	11	Good	
93	Cupressus	1 dominant	6	Good	
94	Cupressus	1 dominant	12	Good	
95	Cupressus	2 dominant	10,12	Good	
96	Cupressus	2 dominant	9,9	Good	
97	Cupressus	2 dominant	10,7	Good	
98	Cupressus	1 dominant	10	Good	
99	Cupressus	2 dominant	10,7	Good	
100	Cupressus	3 stem	10 inch aggregate	Good	
101	Cupressus	1 dominant	14	Good	
102	Cupressus	1 dominant	9	Good	
103	Cupressus	1 dominant	12	Good	
104	Cupressus	1 dominant	13	Good	

105	Cupressus	1 dominant	12	Good	
106	Cupressus	2 dominant	8,7	Good	
107	Cupressus	1 dominant	7	Good	
108	Cupressus	1 dominant	20	Good	
109	Cupressus	1 dominant	12	Good	
110	Cupressus	1 dominant	7	Good	
111	Cupressus	1 dominant	8	Good	
112	Cupressus	2 stem	15,5	Good	
113	Cupressus	1 dominant	16	Good	
114	Cupressus	4 stem	9,8,7,6	Good	
115	Cupressus	3 stem	12,8,9	Good	
116	Cupressus	2 dominant	10 inch aggregate	Good	
117	Cupressus	1 dominant	13	Good	
118	Cupressus	1 dominant	19	Good	
119	Cupressus	3 stem	10 inch aggregate	Good	
120	Cupressus	2 stem	14	Good	Twined 2 stem crown
121	Cupressus	2 stem	8,5	Good	
122	Cupressus	2 stem	6,14	Good	
123	Cupressus	1 dominant	16	Good	
124	Cupressus	3 stem	6,6,3	Good	
125	Cupressus	1 dominant	7	Good	

126	Cupressus	1 dominant	8	Good	
127	Cupressus	1 dominant	8	Good	
128	Cupressus	1 dominant	9	Poor	
129	Cupressus	1 dominant	9	Good	
130	Cupressus	4 dominant	7,7,11,8	Good	
131	Cupressus	1 dominant	9	Good	
132	Cupressus	1 dominant	9	Good	
133	Cupressus	2 dominant	7,7	Good	
134	Cupressus	1 dominant	15	Good	
135	Cupressus	1 dominant	14	Good	
136	Cupressus	1 dominant	7	Good	
137	Cupressus	7 stem	10 inch aggregate	Good	
138	Cupressus	1 dominant	13	Good	Forked dominant stem
139	Cupressus	3 dominant	6,6,5	Good	
140	Cupressus	1 dominant	14	Good	
141	Cupressus	1 dominant	9	Good	
142	Cupressus	1 dominant	6	Good	
143	Cupressus	1 dominant	10	Good	
144	Cupressus	5 stem	10 inch aggregate	Good	
145	Cupressus	1 dominant	8	Good	
146	Cupressus	2 dominant	6,5	Good	

147	Cupressus	2 dominant	10,7	Good	
148	Cupressus	2 dominant	14,10	Good	
149	Cupressus	4 stem	7,3,3,3	Good	
150	Cupressus	2 dominant	8,6	Good	
151	Cupressus	2 dominant	11,7	Good	
152	Cupressus	1 dominant	14	Good	
153	Cupressus	2 dominant	9,10	Good	
154	Cupressus	3 dominant	11,11,11	Good	
155	Cupressus	3 dominant	6,9,10	Good	
156	Cupressus	4 dominant	8,8,7,7	Good	
157	Cupressus	3 dominant	11,10,8	Good	
158	Cupressus	1 dominant	10	Good	
159	Cupressus	3 dominant	8,11,15	Good	
160	Cupressus	1 dominant	8	Good	
161	Cupressus	3 dominant	12,10,9	Good	
162	Cupressus	1 dominant	53	Good	4 stem forked crown
163	Cupressus	2 dominant	14,16	Poor	
164	Cupressus	2 dominant	9,10	Good	Poor structure
165	Cupressus	1 dominant	19	Good	
166	Cupressus	2 dominant	11,12	Good	
167	Cupressus	2 dominant	9,10	Good	

168	Cupressus	3 dominant	19,19,12	Good	
169	Cupressus	3 dominant	9,5,5	Good	Poor Structure
170	Cupressus	3 dominant	6,10,8	Good	
171	Cupressus	3 dominant	12,8,6	Good	
172	Cupressus	2 dominant	8,14	Good	
173	Cupressus	2 dominant	11,11	Good	
174	Cupressus	2 dominant	12,14	Good	
175	Cupressus	2 dominant	16,14	Good	
176	Cupressus	1 dominant	11	Good	
177	Cupressus	1 dominant	14	Good	
178	Cupressus	2 dominant	10,10	Good	
179	Cupressus	3 dominant	8,8,8	Good	
180	Cupressus	2 dominant	12,12	Good	
181	Cupressus	1 dominant	8	Good	
182	Cupressus	3 dominant	16,8,6	Good	
183	Cupressus	1 dominant	14	Good	Forked crown structure
184	Cupressus	3 dominant	10,10,11	Good	
185	Cupressus	7 stem	5,7,5,6,6,7,5	Good	
186	Cupressus	5 stem	10,10,10,10,8	Good	Topped
187	Cupressus	3 stem	9,10,7	Good	
188	Cupressus	1 dominant	18	Good	Forked crown structure

189	Cupressus	1 dominant	17	Good	
190	Cupressus	3 stem	9,8,7	Good	
191	Cupressus	1 dominant	10	Good	
192	Cupressus	1 dominant	11	Fair	
193	Cupressus	4 dominant	13,13,10,9	Good	
194	Cupressus	2 dominant	16,11	Good	
195	Cupressus	3 dominant	10,10,10	Good	
196	Cupressus	3 dominant	10,11,7	Good	
197	Cupressus	1 dominant	6	Good	
198	Cupressus	1 dominant	14	Good	
199	Cupressus	1 dominant	8	Good	
200	Cupressus	2 dominant	10,7	Good	
201	Cupressus	1 dominant	14	Good	
202	Cupressus	1 dominant	12	Good	
203	Cupressus	1 dominant	12	Good	
204	Cupressus	1 dominant	12	Good	
205	Cupressus	1 dominant	9	Good	
206	Cupressus	1 dominant	11	Good	
207	Cupressus	3 dominant	9,12,8	Good	
208	Cupressus	2 dominant	10,12	Good	
209	Cupressus	2 dominant	11,6	Good	

210	Cupressus	1 dominant	10	Good	
211	Cupressus	2 dominant	8,7	Good	
212	Cupressus	1 dominant	22	Good	
213	Cupressus	1 dominant	10	Good	
214	Cupressus	4 dominant	9,9,9,11	Good	
215	Cupressus	1 dominant	10	Good	
216	Cupressus	1 dominant	6	Good	
217	Cupressus	3 dominant	10,6,6	Good	
218	Cupressus	1 dominant	10	Good	
219	Cupressus	1 dominant	13	Good	
220	Cupressus	1 dominant	8	Good	
221	Cupressus	2 dominant	9,9	Good	
222	Cupressus	2 dominant	8,8	Good	
223	Cupressus	1 dominant	9	Poor	Crown dead
224	Cupressus	1 dominant	12	Good	
225	Cupressus	1 dominant	24	Good	
226	Myoporum	1 dominant	8	Good	
227	Quercus	2 dominant	8,6	Good	
228	Cupressus	4 stem	12,6,5,5	Good	
229	Cupressus	1 dominant	11	Good	
230	Cupressus	1 dominant	10	Good	

231	Cupressus	1 dominant	9	Good	
232	Cupressus	2 dominant	7,7	Good	
233	Cupressus	2 dominant	8,8	Good	
234	Cupressus	1 dominant	11	Good	
235	Cupressus	1 dominant	12	Good	
236	Cupressus	1 dominant	10	Good	
237	Cupressus	2 dominant	6,6	Good	
238	Cupressus	1 dominant	15	Good	
239	Cupressus	2 dominant	9,8	Good	
240	Cupressus	5 stem	10 inch aggregate	Good	
241	Cupressus	1 dominant	10	Good	
242	Cupressus	Multi-stem	10 inch aggregate	Poor	
243	Cupressus	1 dominant	9	Good	
244	Cupressus	1 dominant	12	Good	
245	Cupressus	3 dominant	5,6,12	Good	
246	Cupressus	1 dominant	9	Good	Small recessive stems
247	Cupressus	Multi-stem	10 inch aggregate	Good	
248	Cupressus	1 dominant	10	Good	
249	Cupressus	2 dominant	6,11	Good	
250	Cupressus	1 dominant	10	Good	
251	Cupressus	1 dominant	8	Good	Several recessive stems

252	Cupressus	1 dominant	8	Good	
253	Cupressus	2 dominant	6,10	Good	
254	Cupressus	2 dominant	6,6	Good	
255	Cupressus	2 dominant	8,8	Good	
256	Cupressus	Multi-stem	10 inch aggregate	Good	
257	Cupressus	1 dominant	20	Good	
258	Cupressus	1 dominant	13	Good	
259	Cupressus	1 dominant	8	Good	
260	Cupressus	4 dominant	8,8,9,11	Good	
261	Cupressus	1 dominant	11	Good	Several recessive stems
262	Eucalyptus	Multi-stem	10 inch aggregate	Good	
263	Pinus	1 dominant	14	Poor	Crown dieback
264	Eucalyptus	2 dominant	13,14	Fair	
265	Pinus	1 dominant	9	Good	Multi-stem crown
266	Pinus	Multi-stem	10 inch aggregate	Good	
267	Eucalyptus	1 dominant	16	Good	
268	Pinus	2 stem	14, 10	Dead	
269	Cupressus	1 dominant	10	Good	
270	Pinus	1 dominant	16	Poor	
271	Cupressus	1 dominant	11	Good	Several recessive stems
272	Cupressus	1 dominant	11	Good	

273	Cupressus	1 dominant	8	Good	Several recessive stems
274	Cupressus	1 dominant	11	Good	Spreading structure
275	Cupressus	1 dominant	8	Good	
276	Cupressus	5 dominant	7,10,9,10, 5	Good	
277	Cupressus	1 dominant	15	Good	2 stems
278	Cupressus	1 dominant	9	Good	3 stems
279	Cupressus	1 dominant	17	Good	2 stems
280	Cupressus	4 dominant	10,10,10,9	Good	Several recessive stems
281	Cupressus	2 dominant	19,15	Good	
282	Cupressus	2 dominant	10,12	Good	Several recessive stems
283	Cupressus	1 dominant	17	Good	Several recessive stems
284	Cupressus	1 dominant	10	Good	Several recessive stems
285	Pinus	1 dominant	11	Fair	
286	Pinus	1 dominant	10	Good	
287	Cupressus	4 dominant	20,20,15,1 8	Good	Several recessive stems
288	Cupressus	3 dominant	19,20,14	Good	Several recessive stems
289	Cupressus	4 dominant	16,21,34,1 9	Good	Several recessive stems
290	Cupressus	Multi-stem	10 inch aggregate	Good	
291	Cupressus	1 dominant	36	Good	
292	Cupressus	Multi-stem	10 inch aggregate	Good	
293	Eucalyptus	1 dominant	7	Good	Several recessive stems

294	Eucalyptus	1 dominant	15	Fair		
295	Eucalyptus	4 dominant	10,11,12, 13	Fair		
296	Pinus	2 dominant	6,6	Poor		
297	Eucalyptus	3 dominant	7,7,7	Good		
298	Eucalyptus	3 dominant	10,12,14	Good		
299	Acacia	1 dominant	21	Dead		1
300	Myoporum	2 dominant	10,7	Fair		
301	Pinus	1 dominant	11	Dead		2
302	Pinus	1 dominant	7	Dead		3
303	Pinus	1 dominant	17	Fair	Pitch canker	
304	Cupressus	2 dominant	44	Good	Forked crown	
305	Acacia	2 dominant	11,12	Poor	Nearly dead	
306	Acacia	1 dominant	8	Poor	Grounded stems, nearly dead	
307	Pinus	1 dominant	12	Good		
308	Unidentified Fruit Tree	1 dominant	6	Good	No foliage, probably apple	
309	Acacia	4 dominant	15,9,10,10	Dead		4
310	Eucalyptus	1 dominant	9	Good		
311	Myoporum	Multi-stem	10 inch aggregate	Good		
312	Eucalyptus	1 dominant	11	Good		
313	Cupressus	3 dominant	10 inch aggregate	Good		
314	Cupressus	1 dominant	12	Good	Several recessive stems	

315	Cupressus	1 dominant	7	Good	
316	Cupressus	1 dominant	7	Good	
317	Cupressus	1 dominant	6	Good	
318	Cupressus	1 dominant	8	Good	Forked crown
319	Cupressus	3 dominant	7,7,9	Good	Several recessive stems
320	Cupressus	2 dominant	6,6	Good	
321	Eucalyptus	4 dominant	9,9,7,12	Good	
322	Cupressus	1 dominant	16	Poor	Collapsed tree, mostly dead
323	Pinus	1 dominant	10	Poor	70% dead crown
324	Pinus	1 dominant	14	Dead	
325	Eucalyptus	2 dominant	13,8	Good	
326	Acacia	1 dominant	21	Good	
327	Cupressus	2 dominant	10,12	Poor	Nearly dead
328	Cupressus	1 dominant	12	Good	Forked crown
329	Pinus	1 dominant	6	Poor	Dead crown at top
330	Pinus	1 dominant	15	Poor	Forked crown, dead at top
331	Pinus	1 dominant	9	Poor	Forked crown
332	Eucalyptus	Multi-stem	10 inch aggregate	Good	
333	Cupressus	1 dominant	20	Fair	Several recessive stems
334	Pinus	1 dominant	10	Poor	Pitch canker
335	Cupressus	2 dominant	12,17	Good	Several recessive stems

336	Cupressus	1 dominant	55	Good	3 stem crown
337	Myoporum	Multi-stem	10 inch aggregate	Good	
338	Pinus	1 dominant	15	Good	
339	Cupressus	1 dominant	42	Good	Multiple stem crown
340	Cupressus	1 dominant	22	Good	Multiple stem crown
341	Cupressus	5 dominant	15,12,12, 12,8	Good	
342	Palmae	1 dominant	30	Good	
343	Myoporum	Multi-stem	10 inch aggregate	Good	
344	Garrya	1 dominant	13	Good	
345	Eucalyptus	Multi-stem	10 inch aggregate	Good	
346	Cupressus	1 dominant	13	Poor	Mostly dead
347	Cupressus	1 dominant	31	Good	Forked crown
348	Cupressus	5 dominant	26,21,20, 18,16	Good	
349	Cupressus	5 dominant	70	Good	Forked crown above DBH
350	Pinus	1 dominant	15	Good	
351	Yucca	Multi-stem	10 inch aggregate	Poor	
352	Myoporum	Multi-stem	10 inch aggregate	Poor	
353	Garrya	1 dominant	8	Good	
354	Eucalyptus	2 dominant	8,10	Fair	Multiple stems
355	Eucalyptus	2 dominant	10,12	Fair	
356	Pinus	1 dominant	21	Good	Several recessive stems

357	Garrya	1 dominant	13	Good	
358	Quercus	Multi-stem	10 inch aggregate	Good	
359	Eucalyptus	3 dominant	12,12,12	Good	
360	Eucalyptus	4 dominant	6,6,8,12	Good	
361	Eucalyptus	3 dominant	8,9,11	Dead	
362	Cupressus	Multi-stem	10 inch aggregate	Good	Low spreading structure
363	Pinus	1 dominant	8	Good	Forked crown
364	Unidentified Shrub	Multi-stem	10 inch aggregate	Dead	No foliage
365	Eucalyptus	3 dominant	11,11,12	Good	
366	Eucalyptus	2 dominant	14,15	Good	
367	Eucalyptus	4 dominant	6,6,6,4	Good	
368	Eucalyptus	2 dominant	10,11	Good	
369	Pinus	1 dominant	12	Poor	Forked crown
370	Leptospermum	1 dominant	10 inch aggregate	Poor	
371	Eucalyptus	2 dominant	10,15	Good	
372	Quercus	Multi-stem	10 inch aggregate	Good	
373	Garrya	1 dominant	9	Fair	
374	Garrya	2 dominant	15,18	Good	
375	Garrya	3 dominant	9,9,8	Good	
376	Myoporum	1 dominant	6	Good	
377	Cupressus	1 dominant	38	Good	Several recessive stems

378	Myoporum	Multi-stem	10 inch aggregate	Good	
379	Eucalyptus	4 dominant	8,8,7,7	Good	
380	Eucalyptus	2 dominant	11,13	Good	
381	Pinus	2 dominant	13,14	Poor	
382	Cupressus	2 dominant	13,20	Good	Multiple stem crown
383	Cupressus	1 dominant	30	Good	
384	Eucalyptus	2 dominant	10,10	Fair	
385	Quercus	Multi-stem	10 inch aggregate	Good	Low large scrub form
386	Quercus	Multi-stem	10 inch aggregate	Good	Low large scrub form
387	Eucalyptus	Multi-stem	10 inch aggregate	Good	
388	Eucalyptus	3 dominant	9,9,10	Good	
389	Eucalyptus	1 dominant	8	Good	Multiple stem, low spreading form
390	Eucalyptus	Multi-stem	10 inch aggregate	Good	Large diameter on limbs, low spreading form
391	Acacia	1 dominant	8	Good	
392	Acacia	1 dominant	9	Good	
393	Acacia	1 dominant	6	Good	
394	Acacia	1 dominant	8	Good	Multiple stems
395	Eucalyptus	1 dominant	18	Good	
396	Pyracantha	Multi-stem	10 inch aggregate	Fair	
397	Cupressus	4 dominant	31,21,13, 17	Good	
398	Cupressus	1 dominant	33	Good	

399	Eucalyptus	3 dominant	10,14,14	Good	
400	Eucalyptus	1 dominant	15	Good	
401	Eucalyptus	2 dominant	14,14	Good	
402	Eucalyptus	1 dominant	14	Good	Multi-stem low form
403	Cupressus	2 dominant	14,15	Good	Spreading form
404	Eucalyptus	2 dominant	15,13	Good	Multi-stem
405	Pinus	3 dominant	11,11,14	Good	
406	Pinus	1 dominant	13	Good	
407	Pinus	1 dominant	12	Good	
408	Cupressus	1 dominant	51	Good	Multi-stem
409	Eucalyptus	4 dominant	11,11,11, 11	Good	
410	Cupressus	2 dominant	34	Good	Multi-stem
411	Garrya	1 dominant	14	Good	
412	Eucalyptus	1 dominant	12	Good	
413	Pinus	4 dominant	8,12,13, 14	Good	
414	Pinus	1 dominant	7	Good	
415	Eucalyptus	3 stem	10, 10, 9	Good	
416	Eucalyptus	2 stem	10, 12	Good	
417	Eucalyptus	2 stem	9, 9	Good	
418	Cupressus	1 dominant	8	Good	
419	Pinus	1 dominant	7	Good	

420	Pinus	1 dominant	13	Good	
421	Cupressus	1 dominant	12	Good	
422	Pinus	1 dominant	9	Good	
423	Eucalyptus	2 stem	11, 12	Good	
424	Cupresssus	1 dominant	18	Good	
425	Cupressus	2 dominant	8, 10	Good	
426	Cupressus	1 dominant	13	Good	
427	Eucalyptus	1 dominant	11	Good	
428	Eucalyptus	2 stem	11, 13	Good	
429	Cupressus	1 dominant	16	Good	
430	Cupressus	2 dominant	10, 11	Good	
431	Cupressus	1 dominant	12	Good	
432	Cupressus	1 stem	39	Good	Multi stemed above DBH
433	Cupressus	1 dominant	10 inch aggregate	Good	
434	Quercus	4 dominant	5, 7, 4, 11	Good	
435	Pinus	1 dominant	10 inch aggregate	Good	
436	Quercus	3 dominant	14, 11, 12	Good	
437	Quercus	1 dominant	6	Good	
438	Quercus	1 dominant	8	Good	
439	Quercus	Multi stem	10 inch aggregate	Good	
440	Quercus	3 stem	15, 12, 7	Good	Several Stems

441	Quercus	2 stem	8, 6	Good	Several Stems
442	Quercus	4 stem	6, 5, 5, 5	Good	
443	Quercus	3 stem	4, 4, 3	Good	
444	Myoporum	1 dominant	7	Good	
445	Cupressus	1 dominant	9	Good	Double Stem
446					Missing Tag
447	Quercus	3 stem	5, 5, 5	Good	
448	Quercus	4 stem	7, 7, 6, 6	Good	
449	Quercus	1 dominant	9	Good	
450	Quercus	6 stem	12, 9, 9, 10, 11,11	Good	
451	Quercus	3 stem	4, 9, 8	Good	
452	Myoporum	Multiple stem	10 inch aggregate	Good	
453	Quercus	2 stem	6, 2	Good	
454	Quercus	Multiple stem	10 inch aggregate	Good	
455	Pinus	2 stem	7, 7	Good	
456	Quercus	6 stem	11, 7, 8, 7, 7, 7	Good	
457	Pinus	1 dominate	10	Good	
458	Quercus	4 stem	6, 8, 8, 7	Good	
459	Quercus	Multiple stem	10 inch aggregate	Good	
460	Quercus	3 stem	6, 6, 7	Good	
461	Quercus	4 stem	6, 7, 6, 4	Good	

462	Quercus	Multiple stem	10 inch aggregate	Good	
463	Quercus	Multiple stem	10 inch aggregate	Good	
464	Cupressus	Multiple stem	10 inch aggregate	Good	
465	Cupressus	4 dominate	7, 10, 9, 8	Good	
466	Cupressus	5 stem	12, 7, 7, 7, 10	Good	
467	Cupressus	1 dominate	17	Good	
468	Cupressus	1 dominate	27	Good	Multiple Stem Fork
469	Quercus	Multiple stem	10 inch aggregate	Good	
470	Quercus	2 stem	8, 7	Good	
471	Quercus	5 stem	8, 8, 8, 8, 7	Good	
472	Cupressus	1 dominate	11	Good	Multiple Stems
473	Cupressus	1 dominate	15	Good	
474	Cupressus	1 dominate	18	Good	
475	Cupressus	1 dominate		Good	
476	Quercus	Multiple stem	10 inch aggregate	Good	
477	Cupressus	1 dominate	15	Good	Forked Crown
478	Cupressus	1 dominate	10	Good	
479	Cupressus	1 dominate	8	Good	
480	Cupressus	1 dominate	8	Good	
481	Cupressus	1 dominate	11	Good	
482	Cupressus	1 dominate	10	Good	

483	Cupressus	1 dominate	12	Good	
484	Cupressus	1 dominate	8	Good	
485	Cupressus	5 stem	8, 8, 9, 6, 6	Good	
486	Quercus	Multi stem	10 inch aggregate	Good	
487	Quercus	Multi stem	10 inch aggregate	Good	
488	Quercus	Multi stem	10 inch aggregate	Good	
489	Pinus	1 dominate	6	Good	
490	Quercus	4 stem	14, 10, 7, 6	Good	
491	Pinus	2 stem	10, 11	Poor	
492	Cupressus	1 dominate	14	Good	
493	Cupressus	1 dominate	18	Good	
494	Cupressus	Multi stem	10 inch aggregate	Good	
495	Cupressus	2 dominate	13, 13	Good	
496	Cupressus	1 dominate	7	Fair	
497	Cupressus	1 dominate	10	Good	
498	Cupressus	1 dominate	12	Good	
499	Quercus	3 stem	11, 10, 9	Good	
500	Pinus	1 dominate	7	Good	
501	Cupressus	1 dominate	9	Good	
502	Cupressus	1 dominate	12	Good	
503	Cupressus	4 dominate	10, 8, 7, 7	Good	

504	Cupressus	1 dominate	9	Poor		
505	Cupressus	1 dominate	13	Good		
506	Cupressus	1 dominate	6	Good		
507	Cupressus	2 dominate	7	Good		
508	Cupressus	Multi stem	10 inch aggregate	Good		
509	Cupressus	1 dominate	6	Good		
510	Cupressus	1 dominate	9	Good	Multiple forked crown	
511	Cupressus	1 dominate	8	Good		
512	Cupressus	5 stem	17, 8, 8, 12, 14	Good		
513	Cupressus	2 dominate	11, 13	Good	Multiple forked crown	
514	Cupressus	1 dominate	12	Good	Multiple forked crown	
515	Pinus	Multi stem	10 inch aggregate	Dead		5
516	Eucalyptus	3 stem	12, 13, 11	Good		
517	Acacia	8 stem	13,7,6,12, 9,10,11,11	Dead		6
518	Acacia	4 stem	4, 4, 5, 4	Dead		7
519	Acacia	3 stem	12, 8, 7	Dead		8
520	Cupressus	2 stem	10, 9	Good		
521	Cupressus	1 dominate	17	Good		
522	Cupressus	1 dominate	27	Good		
523	Quercus	Multi stem	10 inch aggregate	Good		
524	Quercus	2 dominate	8, 8	Good		

525	Quercus	Multi stem	10 inch aggregate	Good	
526	Quercus	3 stem	10, 10, 12	Good	
527	Cupressus	1 dominate	10 inch aggregate	Good	
528	Cupressus	1 dominate	7	Good	2 stem
529	Cupressus	1 dominate	9	Good	
530	Cupressus	1 dominate	12	Good	
531	Cupressus	1 dominate	9	Good	
532	Cupressus	2 dominate	6, 5	Fair	Dead top
533	Cupressus	Multi stem	10 inch aggregate	Good	
534	Cupressus	1 dominate	13	Good	
535	Cupressus	Multi stem	10 inch aggregate	Good	
536	Cupressus	1 dominate	13	Good	
537	Cupressus	1 dominate	12	Good	
538	Cupressus	1 dominate	12	Good	
539	Cupressus	1 dominate	10 inch aggregate	Good	
540	Cupressus	1 dominant		Good	
541	Quercus	3 dominate	8, 7, 7	Good	
542	Eucalyptus	1 dominate	23	Good	
543	Acacia	1 dominate	10	Dead	
544	Cupressus	1 dominate	8	Good	2 stems
545	Cupressus	7 stem	15,14,12, 9,9,9,9	Good	

546	Cupressus	1 dominant	9	Good	
547	Cupressus	1 dominate	16	Good	Multi stem crown
548	Cupressus	1 dominate	14	Good	
549	Cupressus	3 dominate	16	Good	Multi stem crown above DBH
550	Acacia	4 stem	12, 11, 13, 11	Dead	
551	Cupressus	3 dominate	11, 11, 12	Good	Multiple recessive stems
552	Cupressus	1 dominate	11	Good	
553	Cupressus	1 dominate	13	Good	
554	Cupressus	1 dominate	11	Good	
555	Cupressus	1 dominate	11	Good	Multiple recessives stems
556	Cupressus	1 dominate	8	Good	Multiple recessive stems
557	Cupressus	1 dominate	18	Good	Multiple recessive stems
558	Cupressus	1 dominate	13	Good	Multiple recessive stems
559	Cupressus	1 dominant	12	Good	
560	Cupressus	1 dominate	13	Good	
561	Cupressus	1 dominate	6	Good	
562	Cupressus	1 dominate	16	Good	Multiple recessive stems
563	Cupressus	1 dominate	15	Good	
564	Pinus	1 dominate	6	Good	
565	Eucalyptus	4 stem	9, 7, 11, 8	Good	
566	Eucalyptus	2 dominant	11, 10	Good	Multiple recessive stems

567	Cupressus	1 dominate	7	Good	
568	Cupressus	1 dominate	8	Good	
569	Cupressus	1 dominate	15	Good	Multiple recessive stems
570	Cupressus	1 dominate	14	Good	Multiple recessive stems
571	Cupressus	1 dominate	7	Good	
572	Cupressus	2 dominate	8, 8	Good	Multiple recessive stems
573	Cupressus	1 dominate	17	Good	Multiple recessive stems
574	Cupressus	1 dominate	8	Good	
575	Quercus	1 dominant	6	Good	
576	Quercus	2 stem	10 inch aggregate	Good	
577	Cupressus	1 dominate	7	Good	
578	Cupressus	5 dominate	10, 10, 10, 10, 16	Good	Multiple recessive stems
579	Cupressus	1 dominate	14	Good	
580	Quercus	Multiple stem	10 inch aggregate	Good	
581	Quercus	3 stem	7, 7, 6	Good	Multiple recessive stems
582	Quercus	2 stem	10, 8	Good	
583	Quercus	2 stem	7, 8	Good	Multiple recessive stems
584	Quercus	1 dominate	8	Good	Multiple recessive stems
585	Quercus	1 dominate	10	Good	
586	Quercus	1 dominate	11	Good	Forked crown structure
587	Quercus	Multiple stem	10 inch aggregate	Good	

588	Quercus	Multiple stem	10 inch aggregate	Good	
589	Cupressus	1 dominant	10	Good	Multiple recessive stems
590	Cupressus	2 dominant	15, 18	Good	
591	Cupressus	1 dominant	13	Good	Multiple recessive stems
592	Cupressus	1 dominant	14	Good	Forked crown structure
593	Cupressus	1 dominant	17	Good	Multiple recessive stems
594	Quercus	Multiple stem	10 inch aggregate	Good	
595	Quercus	Multiple stem	10 inch aggregate	Good	
596	Quercus	3 stem	8, 7, 8	Good	
597	Pinus	1 dominant	7	Good	Bark beetles
598	Quercus	Multiple stem	13,14,12, 11,11,9,16	Good	
599	Cupressus	1 dominant	16	Good	Multiple recessive stems and forked crown structure
600	Cupressus	1 dominant	20	Good	Multiple recessive stems
601	Cupressus	2 dominant	6, 8	Good	
602	Cupressus	1 dominant	11	Good	
603	Cupressus	1 dominant	10	Fair	
604	Cupressus	1 dominant	23	Good	Forked crown and multiple recessive stems
605	Quercus	1 dominant	13	Good	
606	Cupressus	1 dominant	20	Good	
607	Cupressus	1 dominant	13	Fair	
608	Quercus	Multiple stem	10 inch aggregate	Good	

609	Quercus	1 dominant	6	Good	
610	Cupressus	1 dominant	19	Good	
611	Quercus	3 stem	8, 6, 6	Good	
612	Quercus	3 stem	6, 8, 7	Good	
613	Quercus	Multiple stem	10 inch aggregate	Good	
614	Quercus	1 dominant	8	Good	
615	Quercus	Multiple stem	10 inch aggregate	Good	
616	Quercus	5 stem	5, 5, 7, 4, 6	Good	
617	Quercus	Multiple stem	10 inch aggregate	Good	
618	Pinus	1 dominant	18	Good	Bark beetles
619	Myoporum	Multiple stem	10 inch aggregate	Good	
620	Quercus	4 stem	12, 11, 9, 6	Good	
621	Cupressus	2 dominant	15, 18	Good	Multiple recessive stems
622	Cupressus	1 dominant	14	Good	Multiple recessive stems
623	Cupressus	1 dominant	13	Good	Multiple recessive stems
624	Quercus	1 dominant	6	Good	
625	Quercus	4 dominant	7, 7, 7, 7	Good	
626	Quercus	Multiple stem	10 inch aggregate	Good	
627	Cupressus	1 dominant	7	Good	Multiple recessive stems
628	Eucalyptus	1 dominant	9	Good	2 recessive stems
629	Cupressus	2 dominant	13, 14	Good	

630	Cupressus	1 dominant	13	Good	Forked crown structure and multiple recessive stems
631	Cupressus	1 dominant	11	Good	Forked crown structure and multiple recessive stems
632	Cupressus	1 dominant	15	Good	Multiple recessive stems
633	Cupressus	1 dominant (dead stem)	7	Poor	2 stems
634	Quercus	Multiple stem	10 inch aggregate	Good	
635	Quercus	2 dominant	10, 10	Good	
636	Cupressus	1 dominant	9	Good	2 stems
637	Cupressus	1 dominant	11	Good	
638	Cupressus	1 dominant	18	Good	
639	Cupressus	1 dominant	13	Good	Multiple recessive stems
640	Cupressus	1 dominant	21	Good	
641	Quercus	3 dominant	9, 6, 5	Good	Multiple recessive stems
642	Cupressus	1 dominant	9	Good	
643	Quercus	5 dominant	6, 7, 8, 6, 6	Good	Multiple recessive stems
644	Cupressus	1 dominant	13	Good	
645	Pinus	2 dominant	14	Good	
646	Eucalyptus	1 dominant	10	Good	
647	Pinus	1 dominant	15	Fair	
648	Eucalyptus	4 stem	8, 6, 6, 5	Fair	
649	Cupressus	1 dominant	24	Good	Multiple recessive stems
650	Quercus	1 dominant	7	Good	Multiple recessive stems

651	Cupressus	1 dominant	13	Good	
652	Cupressus	1 dominant	11	Good	
653	Cupressus	1 dominant	12	Good	
654	Cupressus	1 dominant	9	Good	
655	Cupressus	1 dominant	17	Good	1 recessive stem
656	Cupressus	1 dominant	19	Good	
657	Cupressus	1 dominant	11	Good	
658	Cupressus	1 dominant	9	Good	
659	Eucalyptus	3 stem	9, 9, 8	Good	
660	Cupressus	1 dominant	11	Good	
661	Cupressus	1 dominant	10	Good	
662	Cupressus	1 dominant	14	Good	
663	Cupressus	1 dominant	8	Good	
664	Cupressus	1 dominant	8	Good	
665	Cupressus	1 dominant	7	Good	
666	Cupressus	1 dominant	6	Good	
667	Cupressus	Multiple stem	10 inch aggregate	Good	
668	Cupressus	1 dominant	7	Poor	Dead top
669	Cupressus	1 dominant	7	Poor	Dead top
670	Cupressus	1 dominant	10	Good	
671	Cupressus	1 dominant	12	Good	

672	Cupressus	1 dominant	24	Good	Multiple recessive stems
673	Cupressus	1 dominant	17	Good	Multiple recessive stems
674	Cupressus	1 dominant	8	Good	
675	Cupressus	1 dominant	17	Good	Multiple recessive stems
676	Cupressus	4 dominant	11, 12, 9, 8	Good	
677	Cupressus	7 stem	8, 8, 8, 9,10, 8, 9	Poor	Split trunk
678	Cupressus	1 dominant	9	Good	
679	Cupressus	1 dominant	11	Fair	Dead top
680	Eucalyptus	2 dominant	8, 11	Good	
681	Cupressus	5 dominant	57	Good	Forked crown structure
682	Pinus	2 dominant	17, 14	Fair	
683	Cupressus	1 dominant	12	Good	
684	Cupressus	Multiple stem	10 inch aggregate	Good	
685	Cupressus	Multiple stem	10 inch aggregate	Poor	
686	Cupressus	1 dominant	6	Fair	
687	Cupressus	1 dominant	11	Good	
688	Cupressus	1 dominant	11	Good	
689	Cupressus	1 dominant	10	Good	
690	Cupressus	1 dominant	7	Good	
691	Cupressus	1 dominant	8	Good	
692	Cupressus	1 dominant	9	Good	

693	Cupressus	1 dominant	9	Good	
694	Cupressus	1 dominant	7	Good	
695	Cupressus	1 dominant6	6	Good	
696	Cupressus	1 dominant	7	Good	
697	Cupressus	1 dominant	7	Good	
698	Cupressus	1 dominant	9	Good	
699	Cupressus	1 dominant	9	Good	
700	Cupressus	1 dominant	11	Good	
701	Cupressus	1 dominant	7	Good	
702	Cupressus	1 dominant	6	Good	
703	Cupressus	2 dominant	11, 13	Good	Multiple recessive stems
704	Cupressus	1 dominant	14	Good	
705	Cupressus	1 dominant	10	Fair	Dead top
706	Cupressus	1 dominant	10 inch aggregate	Poor	Dead dominant stem
707	Cupressus	2 dominant	7, 5	Poor	Dead dominant stems
708	Cupressus	1 dominant	7	Good	
709	Cupressus	1 dominant	7	Good	
710	Cupressus	1 dominant	11	Good	Multiple recessive stems
711	Cupressus	1 dominant	7	Good	
712	Pinus	1 dominant	10	Fair	
713	Cupressus	1 dominant	13	Good	

714	Cupressus	1 dominant	8	Good	
715	Cupressus	1 dominant	6	Fair	Dead dominant stem
716	Pinus	1 dominant	14	Dead	
717	Cupressus	1 dominant	7	Good	Multiple recessive stems
718	Cupressus	2 dominant	10, 6	Good	Multiple recessive stems
719	Cupressus	1 dominant	10 inch aggregate	Good	Multiple recessive stems
720	Cupressus	1 dominant	10	Good	
721	Cupressus	1 dominant	6	Good	
722	Cupressus	1 dominant	7	Good	1 recessive stem
723	Cupressus	1 dominant	9	Good	
724	Cupressus	1 dominant	9	Good	
725	Cupressus	1 dominant	12	Good	
726	Cupressus	1 dominant	6	Good	1 recessive stem
727	Cupressus	1 dominant	11	Good	
728	Cupressus	2 dominant	7, 6	Fair	Dead top on 1 stem
729	Pinus	1 dominant	9	Good	
730	Cupressus	2 dominant	9, 9	Good	Multiple recessive stems
731	Pinus	1 dominant	15	Good	
732	Cupressus	1 dominant	13	Good	
733	Cupressus	1 dominant	10	Good	
734	Cupressus	1 dominant	14	Good	

735	Cupressus	3 dominant	7, 8, 7	Good	Multiple recessive stems
736	Cupressus	1 dominant	17	Good	Forked crown structure
737	Cupressus	1 dominant	11	Good	
738	Cupressus	1 dominant	8	Good	1 recessive stem
739	Cupressus	1 dominant	9	Good	
740	Cupressus	1 dominant	10	Good	
741	Cupressus	1dominant	12	Good	
742	Quercus	8 stems	9,9,11,7 12,8,8,9	Good	Multiple recessive stems. 2nd generation. Low spreading form.
743	Quercus	1 stem	13	Good	Multiple recessive stems
744	Cupressus	1 dominant	46	Good	Forked crown above DBH
745	Pinus	1 dominant	8	Good	
746	Eucalyptus	1 dominant	15	Good	Forked crown structure
747	Eucalyptus	2 dominant	14, 13	Good	
748	Eucalyptus	1 dominant	13	Good	
749	Pinus	2 dominant	9, 13	Good	
750	Pinus	2 dominant	11, 10	Good	
751	Cupressus	1 dominant	7	Good	
752	Cupressus	1 dominant	13	Good	
753	Cupressus	1 dominant	16	Good	
754	Cupressus	1 dominant	14	Good	
755	Cupressus	1 dominant	8	Good	Multiple recessive stems

756	Cupressus	1 dominant	7	Good	1 recessive stem
757	Cupressus	2 dominant	9, 8	Good	
758	Quercus	4 stem	10 inch aggregate	Good	
759	Quercus	Multiple stem	10 inch aggregate	Good	
760	Cupressus	2 dominant	11, 13	Good	1 recessive stem
761	Cupressus	1 dominant	9	Good	Multiple recessive stems
762	Cupressus	1 dominant	14	Good	1 recessive stem
763	Cupressus	1 dominant	14	Good	
764	Cupressus	2 dominant	8, 8	Good	1 recessive stem
765	Cupressus	1 dominant	16	Good	
766	Cupressus	1 dominant	10	Good	
767	Pinus	1 dominant	8	Good	
768	Quercus	3 dominant	9, 9, 9	Good	Multiple recessive stems
769	Quercus	Multiple stem	10 inch aggregate	Good	
770	Quercus	Multiple stem	10 inch aggregate	Good	
771	Quercus	7 stem	7,8,7,5,7 8,9	Good	
772	Cupressus	1 dominant	11	Good	1 recessive stem
773	Cupressus	1 dominant	15	Good	
774	Quercus	2 dominant	12, 19	Good	Multiple recessive
775	Quercus	2 stem	9, 8	Good	Overshadowed
776	Quercus	4 dominant	12, 12, 9, 9	Good	Multiple recessive stems

777	Quercus	3 dominant	13, 11, 14	Good	1 recessive stem	
778	Quercus	Multiple stem	10 inch aggregate	Good		
779	Lost tag					
780	Cupressus	1 dominant	8	Poor	Dead top	
781	Cupressus	1 dominant	11	Good	2 recessive stems	
782	Cupressus	1 dominant	13	Good	Spread form	
783	Cupressus	1 dominant	10	Good		
784	Pinus	1 dominant	13	Good		
785	Cupressus	Multiple stem	14,10,12, 20,9,10	Good	Large radiated form. Several recessive stems.	
786	Cupressus	2 dominant	9, 10	Good		
787	Pinus	1 dominant	19	Good		
788	Pinus	1 dominant	17	Dead		11
789	Pinus	1 dominant	12	Dead		12
790	Quercus	Multiple stems	10 inch aggregate	Good	Scrub form	
791	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form	
792	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form	
793	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form	
794	Pinus	2 dominant	7, 8	Good		
795	Pinus	1 dominant	9	Good	1 recessive stem	
796	Cupressus	1 dominant	9	Poor	Dead top	
797	Cupressus	1 dominant	6	Poor	Dead top	

798	Cupressus	1 dominant	11	Fair	Dead too
799	Cupressus	1 dominant	14	Good	
800	Pinus	1 dominant	7	Good	
801	Quercus	Multiple stems	10 inch aggregate	Good	Scrub form
802	Cupressus	2 dominant	10 inch aggregate	Good	Multiple recessive stems
803	Cupressus	1 dominant	10 inch aggregate	Good	
804	Cupressus	1 dominant	8	Good	
805	Pinus	1 dominant	9	Good	
806	Pinus	1 dominant	6	Good	
807	Cupressus	2 dominant	10 inch aggregate	Good	
808	Cupressus	1 dominant	10	Good	
809	Pinus	1 dominant	13	Good	
810	Cupressus	1 dominant	12	Good	Multiple recessive stems
811	Cupressus	2 dominant	6, 6	Good	Multiple recessive stems
812	Cupressus	1 dominant	8	Good	Multiple recessive stems
813	Pinus	1 dominant	9	Fair	Canker
814	Pinus	1 dominant	18	Fair	Canker
815	Pinus	1 dominant	14	Fair	Canker
816	Cupressus	3 stem	18, 16, 18	Good	1 dominant and 2 recessive
817	Cupressus	1 dominant	7	Good	Multiple recessive stems
818	Cupressus	1 dominant	7	Good	

819	Cupressus	1 dominant	10	Good	
820	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
821	Pinus	1 dominant	10	Good	
822	Cupressus	1 dominant	12	Good	
823	Pinus	2 dominant	8, 8	Good	Multiple recessive and forked crown
824	Cupressus	1 dominant	11	Poor	Multiple recessive stems, dead dominant top
825	Pinus	1 dominant	11	Fair	Canker
826	Pinus	1 dominant	7	Good	
827	Cupressus	1 dominant	7	Good	
828	Pinus	1 dominant	8	Good	
829	Pinus	1 dominant	10	Good	
830	Cupressus	1 dominant	10	Good	
831	Cupressus	1 dominant	8	Good	Forked crown
832	Pinus	2 dominant	7, 6	Good	1 recessive stem
833	Cupressus	1 dominant	7	Good	Forked crown
834	Cupressus	1 dominant	6	Good	Forked crown
835	Pinus	1 dominant	6	Fair	Multiple recessive stems and dead top.
836	Cupressus	1 dominant	7	Good	Forked crown
837	Pinus	1 dominant	7	Poor	Dead dominant, 2 recessive stems
838	Cupressus	1 dominant	6	Dead	
839	Pinus	1 dominant	7	Good	

840	Pinus	1 dominant	10	Good	
841	Pinus	1 dominant	10	Good	
842	Quercus	4 dominant	14,14,14, 11	Good	Low form
843	Quercus	Multiple stems	10 inch aggregate	Good	Scrub form
844	Quercus	Multiple stems	10 inch aggregate	Good	Scrub form
845	Pinus	1 dominant	18	Poor	Forked crown, 1 recessive stem, dying
846	Quercus	5 stem	6, 5, 8, 6, 5	Good	Low form, specimen
847	Quercus	Multiple stem	10 inch aggregate	Good	
848	Cupressus	1 dominant	13	Good	
849	Cupressus	1 dominant	11	Good	Multiple recessive stems
850	Quercus	5 stem	9, 10, 8, 7, 3	Good	Low form
851	Quercus	6 stem	6, 13, 14, 11,11, 6	Good	Low form
852	Quercus	Multiple stem	10 inch aggregate	Good	
853	Quercus	2 stem	14, 10	Good	Low form
854	Quercus	1 stem	9	Good	Low form
855	Quercus	1 dominant	14	Good	Multiple recessive stems, low form
856	Quercus	2 dominant	14, 12	Good	Multiple recessive stems, low form
857	Quercus	1 dominant	12	Good	Multiple recessive stems, low form
858	Quercus	1 dominant	13	Good	Multiple recessive stems, low form
859	Quercus	1 dominant	8	Good	Multiple recessive stems, low form
860	Quercus	1 dominant	10	Good	Multiple recessive stems, low form

861	Quercus	1 dominant	6	Good	Multiple recessive stems, low form
862	Quercus	1 dominant	8	Good	Multiple recessive stems, low form
863	Quercus	1 dominant	9	Good	Multiple recessive stems, low form
864	Quercus	4 stem	7, 8, 6, 4	Good	Multiple recessive stems
865	Cupressus	1 dominant	13	Good	Multiple recessive stems
866	Cupressus	1 dominant	20	Good	Multiple recessive stems
867	Cupressus	1 dominant	17	Good	Multiple recessive stems
868	Cupressus	1 dominant	22	Good	Multiple recessive stems
869	Quercus	4 stem	11, 8, 7, 7	Good	
870	Cupressus	2 dominant	21, 23	Good	Multiple recessive stems and forked crown
871	Cupressus	2 dominant	13, 13	Good	
872	Cupressus	1 dominant	18	Good	
873	Cupressus	2 dominant	50, 30	Good	Forked crown and multiple recessive stems
874	Myoporum	Multiple stem	10 inch aggregate	Poor	
875	Cupressus	1 dominant	16	Fair	Multiple forked crown and 1 recessive stem
876	Quercus	3 stem	6, 6, 5	Good	
877	Quercus	2 dominant	7, 9	Good	
878	Cupressus	1 dominant	6	Good	
879	Quercus	Multiple stem	10 inch aggregate	Good	
880	Cupressus	2 dominant	7, 10	Fair	
881	Pinus	1 dominant	17	Good	

882	Quercus	4 stem	7, 9, 6, 6	Good	Low form
883	Pinus	1 dominant	22	Good	
884	Cupressus	1 dominant	12	Good	
885	Pinus	1 dominant	15	Fair	Beetles, dead top
886	Cupressus	1 dominant	12	Good	1 recessive stem and forked crown
887	Pinus	1 dominant	14	Poor	Dead top
888	Cupressus	1 dominant	6	Good	
889	Cupressus	3 dominant	36, 22, 19	Good	
890	Pinus	1 dominant	18	Fair	Canker
891	Cupressus	1 dominant	7	Good	Multiple recessive stems
892	Pinus	1 dominant	15	Good	
893	Quercus	1 dominant	8	Good	Multiple recessive stems, low form
894	Myoporum	Multiple stems	10 inch aggregate	Fair	
895	Myoporum	Multiple stems	10 inch aggregate	Poor	
896	Cupressus	1 dominant	25	Poor	Dead top
897	Cupressus	4 dominant	19, 18, 23, 20	Good	
898	Cupressus	2 dominant	22, 41	Good	
899	Eucalyptus	2 dominant	7, 6	Good	
900	Eucalyptus	2 dominant	12, 12	Good	
901	Eucalyptus	1 dominant	9	Good	Multiple recessive stems
902	Eucalyptus	1 dominant	19	Good	

903	Myoporum	1 dominant	6	Good	Multiple recessive stems	
904	Pinus	1 dominant	22	Good		
905	Garrya	1 dominant	13	Good		
906	Myoporum	Multiple stem	10 inch aggregate	Poor	Dead center	
907	Eucalyptus	Multiple stem	10 inch aggregate	Good		
908	Eucalyptus	2 dominant	16, 14	Good		
909	Eucalyptus	1 dominant	9	Good	Forked crown	
910	Eucalyptus	1 dominant	10	Good	1 recessive stem	
911	Eucalyptus	2 dominant	10, 10	Good		
912	Pinus	1 dominant	13	Good		
913	Eucalyptus	2 dominant	1212	Fair	Broken crown	
914	Eucalyptus	1 dominant	15	Good		
915	Pinus	2 dominant	10, 7	Good		
916	Pinus	1 dominant	13	Dead	Multiple recessive stems	14
917	Pinus	1 dominant	11	Dead	1 recessive stem	15
918	Pinus	1 dominant	11	Poor	Canker	
919	Cupressus	4 dominant	10,11,12, 11	Good	Multiple recessive stems	
920	Eucalyptus	Multiple stem	10 inch aggregate	Good		
921	Eucalyptus	2 dominant	8, 6	Good		
922	Eucalyptus	4 dominant	10, 10, 7, 7	Good		
923	Eucalyptus	2 dominant	13, 10	Good	Forked crown	

924	Eucalyptus	2 dominant	12, 11	Good	1 recessive stem
925	Eucalyptus	2 dominant	10, 10	Good	
926	Cupressus	1 dominant	7	Poor	Dead top
927	Cupressus	1 dominant	46	Good	Forked crown, Multiple recessive stems
928	Quercus	Multiple stem	10 inch aggregate	Good	
929	Quercus	1 dominant	13	Good	1 recessive stem, forked crown
930	Quercus	Multiple stem	10 inch aggregate	Good	
931	Quercus	5 stem	8, 7, 8, 8, 6	Fair	Low form
932	Cupressus	2 dominant	32, 23	Good	3 recessive stems, one broken
933	Cupressus	2 dominant	33, 22	Good	Forked crown
934	Pinus	4 dominant	11,11,11, 10	Poor	Almost dead
935	Cupressus	1 dominant	23	Good	
936	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
937	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
938	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
939	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
940	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
941	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
942	Quercus	4 stem	9, 9, 6, 5	Good	Low form
943	Eucalyptus	1 dominant	13	Good	
944	Myoporum	1 dominant	6	Good	Forked crown

945	Eucalyptus	3 dominant	13, 12 , 12	Good	
946	Eucalyptus	1 dominant	8	Good	
947	Eucalyptus	1 dominant	8	Good	Multiple recessive stems
948	Eucalyptus	7 stem	8,8,7,8,5, 5,8	Good	
949	Eucalyptus	1 dominant	18	Good	Forked crown
950	Eucalyptus	1 dominant	14	Good	Forked crown
951	Acacia	2 dominant	9, 9	Poor	
952	Acacia	1 dominant	21	Fair	
953	Myoporum	Multiple stem	10 inch aggregate	Poor	Nearly dead
954	Acacia	2 dominant	9, 11	Poor	Tree fallen on side
955	Acacia	2 dominant	10, 10	Fair	
956	Acacia	3 dominant	10, 11, 10	Poor	
957	Acacia	2 dominant	7, 9	Poor	
958	Garrya	1 dominant	10	Good	
959	Myoporum	Multiple stem	10 inch aggregate	Poor	Base split, tree collapsed
960	Myoporum	Multiple stem	10 inch aggregate	Poor	Nearly dead
961	Garrya	1 dominant	12	Good	1 recessive stem
962	Eucalyptus	2 dominant	17, 12	Good	
963	Eucalyptus	2 dominant	14, 13	Good	
964	Pinus	1 dominant	21	Fair	
965	Leptospermum	1 dominant	6	Poor	Deteriorated base

966	Garrya	Multiple stem	10 inch aggregate	Good	
967	Eucalyptus	1 dominant	25	Good	
968	Pine	1 dominant	6	Good	
969	Eucalyptus	1 dominant	18	Good	
970	Eucalyptus	3 stem	101310	Good	
971	Eucalyptus	2 dominant	15, 16	Good	
972	Pinus	1 dominant	23	Good	
973	Eucalyptus	1 dominant	14	Good	
974	Eucalyptus	3 dominant	101010	Good	
975	Myoporum	Multiple stem	10 inch aggregate	Good	
976	Eucalyptus	5 stem	10, 9, 8, 8, 6	Good	
977	Pinus	2 dominant	13, 14	Good	
978	Eucalyptus	1 dominant	18	Good	
979	Myoporum	Multiple stem	10 inch aggregate	Poor	
980	Eucalyptus	2 dominant	15, 17	Good	
981	Eucalyptus	3 dominant	16, 16, 18	Poor	Collapsed stem and branches
982	Eucalyptus	3 stem	10, 8, 8	Fair	
983	Pinus	1 dominant	17	Good	
984	Myoporum	Multiple stem	10 inch aggregate	Fair	
985	Myoporum	Multiple stem	10 inch aggregate	Fair	
986	Quercus	1 dominant	18	Good	Multiple recessive stems, probably 3rd regeneration

987	Garrya	2 dominant	13, 10	Good	
988	Pinus	3 dominant	16, 11, 9	Poor	Forked crown, dead tops
989	Pinus	1 dominant	13	Fair	
990	Pinus	1 dominant	10	Fair	1 recessive stem
991	Pinus	2 dominant	10, 6	Poor	Crown dieback
992	Cupressus	1 dominant	15	Dead	
993	Cupressus	1 dominant	48	Good	Large radiated forked crown
994	Pinus	1 dominant	14	Good	
995	Pinus	1 dominant	12	Dead	
996	Pinus	1 dominant	17	Good	Forked crown, 1 recessive stem
997	Pinus	1 dominant	9	Poor	Multiple recessive stems
998	Pinus	1 dominant	16	Poor	
999	Pinus	1 dominant	6, 6	Poor	
1000	Pinus	1 dominant	10	Poor	1 recessive stem
1001	Pinus	1 dominant	9	Good	
1002	Pinus	1 dominant	14, 15	Good	
1003	Pinus	1 dominant	9	Poor	Dead top
1004	Pinus	1 dominant	16	Fair	
1005	Pinus	Multiple stem	10 inch aggregate	Poor	
1006	Pinus	1 dominant	13	Fair	
1007	Pinus	1 dominant	13	Good	

1008	Pinus	1 dominant	8	Good	
1009	Pinus	1 dominant	13	Good	
1010	Cupressus	1 dominant	13	Good	
1011	Pinus	1 dominant	11	Fair	
1012	Cupressus	1 dominant	37	Good	Multiple recessive stems, forked crown
1013	Pinus	1 dominant	9	Good	
1014	Cupressus	1 dominant	35	Good	Multiple recessive stems, forked crown
1015	Pinus	2 dominant	9, 9	Good	Multiple recessive stems
1016	Pinus	1 dominant	16	Good	
1017	Pinus	1 dominant	6	Good	
1018	Cupressus	2 dominant	16, 15	Good	1 recessive stem
1019	Cupressus	1 dominant	32	Good	2 recessive stems
1020	Eucalyptus	Multiple stem	10 inch aggregate	Good	
1021	Eucalyptus	Multiple stem	10 inch aggregate	Good	
1022	Acacia	1 dominant	12	Poor	
1023	Cupressus	2 dominant	22, 33	Good	Multiple recessive stems, forked crown, 1 fallen stem
1024	Pinus	1 dominant	18	Fair	1 recessive stem
1025	Pinus	1 dominant	18	Fair	Canker
1026	Quercus	Multiple stem	10 inch aggregate	Good	
1027	Quercus	1 dominant	7	Good	Multiple recessive stems
1028	Quercus	1 dominant	7	Good	Multiple recessive stems

1029	Quercus	2 dominant	8, 9	Good	Multiple recessive stems	
1030	Garrya	Multiple stem	10 inch aggregate	Good		
1031	Pinus	1 dominant	8	Dead		16
1032	Pinus	1 dominant	8	Good		
1033	Pinus	1 dominant	8	Poor	Dead top	
1034	Cupressus	1 dominant	6	Good		
1035	Pinus	1 dominant	11	Good		
1036	Quercus	Multiple stem	10 inch aggregate	Good	Low form	
1037	Pinus	2 dominant	7, 8	Good		
1038	Eucalyptus	1 dominant	12	Good		
1039	Acacia	1 dominant	17	Dead		
1040	Eucalyptus	2 dominant	7, 11	Good		
1041	Pinus	1 dominant	11	Good		
1042	Pinus	1 dominant	10	Good		
1043	Myoporum	Multiple stem	10 inch aggregate	Dead		17
1044	Acacia	Multiple stem	10 inch aggregate	Dead		15
1045	Eucalyptus	1 dominant	9	Good	Multiple recessive stems	
1046	Eucalyptus	3 dominant	12, 9, 8	Good		
1047	Pinus	2 dominant	11, 11	Good		
1048	Acacia	1 dominant	9	Poor	Dead top	
1049	Acacia	1 dominant	6	Poor	Dead top	

1050	Acacia	2 dominant	7, 9	Dead		19
1051	Acacia	Multiple stem	10 inch aggregate	Dead		20
1052	Acacia	2 dominant	10, 7	Dead		21
1053	Cupressus	1 dominant	11	Good	1 recessive stem	
1054	Acacia	1 dominant	9	Dead		22
1055	Eucalyptus	4 dominant	9, 10, 10, 11	Good		
1056	Pinus	1 dominant	14	Poor	Dead top	
1057	Pinus	1 dominant	13	Good		
1058	Eucalyptus	3 dominant	9, 11, 11	Good		
1059	Quercus	3 dominant	8, 8, 7	Good		
1060	Pinus	1 dominant	13	Dead	Dead, fallen top	23
1061	Eucalyptus	3 dominant	7, 8, 9	Good		
1062	Myoporum	Multiple stem	10 inch aggregate	Good		
1063	Myoporum	Multiple stem	10 inch aggregate	Good		
1064	Eucalyptus	1 dominant	8	Good	Multiple recessive stems	
1065	Myoporum	2 dominant	11, 8	Good		
1066	Myoporum	Multiple stem	10 inch aggregate	Good		
1067	Pinus	2 dominant	19, 18	Good		
1068	Myoporum	1 dominant	17	Fair	Forked crown	
1069	Cupressus	1 dominant	25	Good	Multiple recessive stems	
1070	Garrya	Multiple stem	10 inch aggregate	Good	Scrub form	

1071	Myoporum	Multiple stem	10 inch aggregate	Good	
1072	Myoporum	4 dominant	11, 6, 5, 5	Good	
1073	Cupressus	1 dominant	55	Good	Forked crown
1074	Cupressus	3 dominant	31, 37, 34	Good	Forked crown
1075	Pinus	1 dominant	19	Good	Multiple recessive, forked crown
1076	Acacia	2 dominant	13, 12	Good	
1077	Cupressus	1 dominant	14	Good	
1078	Cupressus	1 dominant	8	Good	Multiple recessive, forked crown
1079	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
1080	Cupressus	Multiple stem	10 inch aggregate	Good	
1081	Cupressus	1 dominant	15	Good	Multiple recessive stems
1082	Cupressus	1 dominant	10	Good	Multiple recessive stems
1083	Garrya	Multiple stem	10 inch aggregate	Good	
1084	Quercus	1 dominant	11	Good	Multiple recessive stems
1085	Quercus	Multiple stem	10 inch aggregate	Good	Low form
1086	Quercus	1 dominant	6	Good	Low form
1087	Cupressus	1 dominant	6	Good	
1088	Quercus	Multiple stem	10 inch aggregate	Good	Low form
1089	Quercus	1 dominant	9	Good	Forked crown
1090	Quercus	1 dominant	6	Good	Low form, multiple recessive stems
1091	Pinus	1 dominant	15	Good	

1092	Pinus	2 dominant	12, 14	Fair	Canker
1093	Pinus	1 dominant	8	Poor	Dead top, Canker
1094	Pinus	1 dominant	13	Good	1 forked leader, co-dominant
1095	Pinus	1 dominant	15	Fair	Dead top, 1 recessive stem
1096	Pinus	1 dominant	14	Good	1 recessive stem
1097	Quercus	Multiple stem	10 inch aggregate	Good	
1098	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
1099	Quercus	1 dominant	13	Fair	Dead top
1100	Quercus	Multiple stem	10 inch aggregate	Good	
1101	Pinus	2 dominant	11, 12	Good	
1102	Quercus	Multiple stem	10 inch aggregate	Good	
1103	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
1104	Pinus	1 dominant	9	Poor	Canker
1105	Pinus	1 dominant	16	Good	
1106	Pinus	1 dominant	11	Dead	1 recessive stem
1107	Cupressus	1 dominant	22	Good	2 fallen recessive stems-dead
1108	Garrya	2 dominant	9, 10	Good	
1109	Quercus	Multiple stem	10 inch aggregate	Good	Scrub form
1110	Myoporum	2 dominant	6, 8	Good	
1111	Acacia	1 dominant	6	Good	Multiple recessive stems
1112	Acacia	1 dominant	7	Poor	Dead top

1113	Acacia	1 dominant	12	Poor	Dead top	
1114	Acacia	1 dominant	8	Poor	Dead top, multiple recessive stems, fallen	
1115	Acacia	1 dominant	7	Dead		25
1116	Acacia	2 dominant	6	Dead		26
1117	Cupressus	2 dominant	21, 13	Good	1 dominant recessive	
1118	Acacia	2 dominant	9, 10	Poor	Dead top	
1119	Acacia	2 dominant	11, 19	Fair	1 dominant recessive, disconnected	
1120	Acacia	2 dominant	8, 6	Good	1 dominant recessive, disconnected	
1121	Acacia	1 dominant	7	Good		
1122	Acacia	1 dominant	8	Good		
1123	Acacia	1 dominant	9	Good		
1124	Acacia	1 dominant	12	Good	Forked crown	
1125	Acacia	2 dominant	14, 10	Fair	Forked crown, 2 recessive stem	
1126	Acacia	1 dominant	7	Good	Forked crown, 1 recessive stem	
1127	Acacia	1 dominant	7	Good	1 recessive stem	
1128	Acacia	1 dominant	14	Good		
1129	Acacia	3 dominant	23, 18, 23	Good	1 recessive stem	
1130	Acacia	1 dominant	19	Fair	Forked crown, 1 recessive stem	
1131	Acacia	3 dominant	8, 6, 7	Good		
1132	Acacia	1 dominant	6	Fair		
1133	Acacia	1 dominant	8	Fair	Multiple recessive stems	

1134	Acacia	1 dominant	7	Fair	Multiple recessive stems
1135	Acacia	1 dominant	6	Good	Multiple recessive stems
1136	Acacia	2 dominant	7, 7	Good	Multiple recessive stems
1137	Myoporum	Multiple stem	10 inch aggregate	Fair	
1138	Myoporum	Multiple stem	10 inch aggregate	Fair	
1139	Pinus	1 dominant	17	Poor	Canker
1140	Cupressus	4 dominant	21, 15, 14, 15	Good	
1141	Cupressus	1 dominant	35	Good	Forked crown
1142	Acacia	2 dominant	11, 8	Dead	1 recessive stem
1143	Myoporum	Multiple stem	10 inch aggregate	Good	
1144	Quercus	Multiple stem	10 inch aggregate	Good	
1145	Quercus	Multiple stem	10 inch aggregate	Good	
1146	Quercus	1 dominant	8	Good	Low form
1147	Quercus	2 dominant	6, 8	Good	Low form
1148	Quercus	Multiple stem	10 inch aggregate	Good	
1149	Quercus	1 dominant	12	Fair	Forked crown
1150	Quercus	1 dominant	18	Good	Forked crown, 1 recessive stem
1151	Quercus	1 dominant	14	Good	1 recessive stem
1152	Quercus	1 dominant	13, 14	Good	1 recessive stem
1153	Quercus	1 dominant	14	Good	Forked crown
1154	Quercus	1 dominant	11	Good	1 recessive stem

1155	Myoporum	Multiple stem	10 inch aggregate	Fair	
1156	Cupressus	1 dominant	23	Good	Forked crown
1157	Eucalyptus	2 dominant	15, 17	Good	1 recessive stem
1158	Cupressus	1 dominant	38	Good	Forked crown
1159	Eucalyptus	2 dominant	7, 6	Poor	1 dead dominant, multiple dead recessives
1160	Cupressus	2 dominant	24, 24	Good	Multiple recessive stems
1161	Cupressus	1 dominant	25	Good	Multiple recessive stems, forked crown
1162	Pinus	2 dominant	12, 15	Good	
1163	Myoporum	Multiple stem	10 inch aggregate	Poor	Dead top
1164	Myoporum	Multiple stem	10 inch aggregate	Good	
1165	Acacia	Multiple stem	10 inch aggregate	Good	
1166	Acacia	1 dominant	6	Good	Multiple recessive stems
1167	Cupressus	1 dominant	17	Good	2 recessive stems
1168	Cupressus	1 dominant	36	Good	Forked crown, 2 recessive stem
1169	Acacia	1 dominant	13	Poor	Dead top, forked crown
1170	Acacia	2 dominant	12, 16	Fair	Crown dieback
1171	Acacia	Multiple stem	10 inch aggregate	Fair	
1172	Acacia	2 dominant	5, 6	Good	Multiple recessive stems
1173	Acacia	1 dominant	40	Dead	Completely split open trunk
1174	Acacia	2 dominant	8, 9	Good	
1175	Acacia	1 dominant	16	Good	Fallen

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1176	Quercus	1 dominant	7	Good	
1177	Quercus	Multiple stem	10 inch aggregate	Good	
1178	Acacia	1 dominant	20	Good	
1179	Acacia	1 dominant	6	Good	
1180	Eucalyptus	3 dominant	7, 9, 8	Poor	Fallen, split base
1181	Myoporum	Multiple stem	10 inch aggregate	Fair	
1182	Eucalyptus	1 dominant	6	Fair	Multiple recessive stems
1183	Cupressus	2 dominant	25, 20	Good	Multiple recessive stems, forked crown
1184	Cupressus	1 dominant	22	Good	Multiple recessive stems
1185	Cupressus	1 dominant	45	Good	Multiple dominant stems, forked crown
1186	Quercus	4 dominant	8, 6, 11, 10	Good	Low form
1187	Cupressus	1 dominant	12	Good	1 recessive stem
1188	Quercus	Multiple stem	10 inch aggregate	Good	
1189	Quercus	Multiple stem	10 inch aggregate	Good	
1190	Quercus	Multiple stem	10 inch aggregate	Good	
1191	Quercus	Multiple stem	10 inch aggregate	Good	
1192	Quercus	4 dominant	7, 7, 6, 6	Good	
1193	Quercus	5 dominant	8, 9, 10, 11, 12, 13	Fair	Low form, multiple recessive stems, 3rd or fourth generation
1194	Eucalyptus	1 dominant	10	Good	Multiple recessive stems
1195	Eucalyptus	1 dominant	17	Good	Forked crown
1196	Pinus	1 dominant	6	Good	

1197	Pinus	1 dominant	6	Good	Dead top
1198	Cupressus	2 dominant	12, 9	Good	Multiple recessive stems
1199	Pinus	1 dominant	8	Good	
1200	Pinus	1 dominant	7	Good	
1201	Quercus	Multiple stem	10 inch aggregate	Good	
1202	Cupressus	4 dominant	7, 9, 10, 9	Good	Low form, Multiple recessive stems
1203	Cupressus	1 dominant	25	Good	Multiple recessive stems
1204	Quercus	1 dominant	8	Good	2 recessive stems
1205	Acacia	1 dominant	18	Good	
1206	Acacia	1 dominant	6	Good	
1207	Quercus	3 dominant	8, 9, 8	Good	
1208	Quercus	1 dominant	16	Fair	2 recessive stems
1209	Quercus	1 dominant	18	Poor	Multiple recessive stems
1210	Quercus	2 dominant	21, 13	Good	
1211	Quercus	2 dominant	16, 13	Good	
1212	Quercus	4 dominant	7, 7, 6, 5	Good	Multiple recessive stems
1213	Quercus	Multiple stem	10 inch aggregate	Good	
1214	Cupressus	1 dominant	30	Good	Multiple recessive stems
1215	Pinus	1 dominant	11	Dead	
1216	Myoporum	1 dominant	6	Good	
1217	Pinus	1 dominant	22	Dead	Collapsed crown

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1218	Cupressus	1 dominant	30	Good	one recessive stem
1219	Quercus	1 dominant	18	Good	Low form, Multiple recessive stems
1220	Quercus	1 dominant	12	Good	Low form, Multiple recessive stems
1221	Eucalyptus	1 dominant	8	Good	2 recessive stems
1222	Cupressus	1 dominant	8	Good	one recessive stem
1223	Eucalyptus	3 dominant	10, 10, 7	Good	
1224	Eucalyptus	Multiple stem	10 inch aggregate	Good	
1225	Eucalyptus	1 dominant	13	Good	Multiple recessive stems
1226	Pinus	2 dominant	15, 16	Good	
1227	Cupressus	1 dominant	10	Good	
1228	Eucalyptus	1 dominant	8	Good	Multiple recessive stems
1229	Pinus	1 dominant	11	Good	
1230	Pinus	1 dominant	10	Good	
1231	Pinus	1 dominant	10	Good	one recessive with dead top
1232	Cupressus	1 dominant	7	Good	Multiple recessive stems
1233	Eucalyptus	2 dominant	10, 8	Good	Multiple recessive stems
1234	Pinus	1 dominant	7	Fair	one recessive, dead tops
1235	Pinus	2 dominant	13, 10	Good	one recessive
1236	Quercus	Multiple stem	10 inch aggregate	Good	
1237	Garrya	3 dominant	8, 8, 9	Good	
1238	Quercus	Multiple stem	10 inch aggregate	Good	

1239	Pinus	1 dominant	15	Good	one recessive
1240	Cupressus	1 dominant	23	Good	2 recessive
1241	Cupressus	1 dominant	19	Good	one recessive
1242	Cupressus	2 dominant	19, 27	Good	Multiple recessive stems
1243	Cupressus	1 dominant	36	Good	Forked crown, one recessive
1244	Eucalyptus	3 dominant	6, 7, 8	Good	
1245	Eucalyptus	3 dominant	9, 9, 8	Good	
1246	Eucalyptus	1 dominant	14	Good	Forked crown
1247	Quercus	4 dominant	7, 7, 6, 5	Good	Low form
1248	Quercus	1 dominant	7	Good	Low form, Multiple recessive stems
1249	Acacia	1 dominant	16	Poor	Crown Dieback
1250	Cupressus	1 dominant	27	Good	Forked crown
1251	Acacia	1 dominant	11	Fair	Crown Dieback
1252	Cupressus	1 dominant	13	Good	
1253	Cupressus	1 dominant	8	Good	
1254	Cupressus	1 dominant	9	Good	one recessive
1255	Pinus	1 dominant	6	Good	three recessive
1256	Pinus	1 dominant	10	Good	
1257	Eucalyptus	Multiple stem	10 inch aggregate	Good	
1258	Cupressus	1 dominant	25	Good	
1259	Acacia	1 dominant	14	Good	Multiple recessive stems

1260	Acacia	Multiple stem	10 inch aggregate	Good	
1261	Cupressus	1 dominant	25	Good	four recessive
1262	Acacia	1 dominant	14	Fair	Dead dominant stem
1263	Acacia	Multiple stem	10 inch aggregate	Good	
1264	Cupressus	1 dominant	42	Good	Forked crown
1265	Acacia	3 dominant	10, 10, 8	Good	
1266	Acacia	Multiple stem	10 inch aggregate	Good	
1267	Pinus	1 dominant	9	Poor	Crown dieback, forked crown
1268	Pinus	2 dominant	10, 9	Poor	Beatles
1269	Pinus	1 dominant	10	Dead	
1270	Acacia	1 dominant	6	Good	
1271	Cupressus	1 dominant	26	Good	one recessive
1272	Eucalyptus	Multiple stem	10 inch aggregate	Good	
1273	Pinus	1 dominant	10	Good	
1274	Pinus	1 dominant	14	Dead	one recessive
1275	Cupressus	1 dominant	30	Good	Multiple recessive stems
1276	Eucalyptus	2 dominant	9, 9	Good	
1277	Eucalyptus	2 dominant	11, 11	Good	one fallen dead recessive
1278	Cupressus	2 dominant	15, 17	Good	Multiple recessive stems
1279	Quercus	4 dominant	10, 9, 6, 8	Good	Low form
1280	Quercus	Multiple stem	10 inch aggregate	Good	Low form

1281	Quercus	Multiple stem	10 inch aggregate	Good		
1282	Quercus	1 dominant	7	Good	Multiple recessive stems	
1283	Cupressus	5 dominant	24, 27, 29, 19, 18	Good		
1284	Acacia	1 dominant	7	Dead	Fallen	30
1285	Acacia	2 dominant	8, 8	Dead		31
1286	Cupressus	2 dominant	23, 38	Good	one fallen recessive	
1287	Myoporum	1 dominant	7	Good		
1288	Pinus	1 dominant	6	Good		
1289	Eucalyptus	1 dominant	16	Good		
1290	Pinus	1 dominant	13	Good		
1291	Eucalyptus	1 dominant	12	Good	Multiple recessive stems	
1292	Pinus	1 dominant	7	Good		
1293	Eucalyptus	1 dominant	42	Good	Forked crown	
1294	Pinus	1 dominant	21	Good		
1295	Cupressus	3 dominant	16, 16, 18	Good	three recessive	
1296	Cupressus	2 dominant	18, 12	Good	one recessive	
1297	Eucalyptus	3 dominant	6, 7, 6	Good	Multiple recessive stems	
1298	Pinus	1 dominant	14	Good		
1299	Acacia	Multiple stem	10 inch aggregate	Good		
1300	Acacia	Multiple stem	10 inch aggregate	Good		
1301	Acacia	1 dominant	15	Good		

1302	Acacia	Multiple stem	10 inch aggregate	Poor	dead top	
1303	Quercus	Multiple stem	10 inch aggregate	Good		
1304	Eucalyptus	1 dominant	8	Good	Multiple recessive stems	
1305	Eucalyptus	2 dominant	14, 12	Good	Multiple recessive stems	
1306	Myoporum	1 dominant	6	Poor	Mostly dead crown	
1307	Acacia	1 dominant	23	Poor	Mostly dead crown	
1308	Cupressus	1 dominant	20	Good	Multiple recessive stems	
1309	Eucalyptus	1 dominant	38	Good	Forked crown	
1310	Acacia	1 dominant	7	Poor	Fallen	
1311	Eucalyptus	2 dominant	17, 15	Good		
1312	Cupressus	1 dominant	13	Good	Multiple recessive stems	
1313	Pinus	1 dominant	7	Good		
1314	Acacia	1 dominant	17	Dead		32
1315	Acacia	2 dominant	11, 10	Dead		33
1316	Pinus	1 dominant	10	Dead		34
1317	Pinus	1 dominant	9	Good	one recessive	
1318	Pinus	1 dominant	6	Good	one recessive	
1319	Pinus	1 dominant	7	Good	one recessive	
1320	Cupressus	1 dominant	18	Good	two recessive	
1321	Myoporum	1 dominant	11	Good		
1322	Myoporum	Multiple stem	10 inch aggregate	Fair		

1323	Pinus	1 dominant	13	Good	one recessive with dead top
1324	Myoporum	Multiple stem	10 inch aggregate	Good	
1325	Myoporum	1 dominant	6	Fair	Dieback
1326	Quercus	1 dominant	6	Good	Scrub form
1327	Pinus	1 dominant	8	Good	one recessive
1328	Acacia	1 dominant	20	Poor	
1329	Quercus	Multiple stem	10 inch aggregate	Good	
1330	Garrya	1 dominant	11	Good	
1331	Pinus	2 dominant	10, 17	Dead	
1332	Quercus	1 dominant	6	Good	Scrub form
1333	Acacia	1 dominant	8	Poor	
1334	Acacia	1 dominant	13	Poor	one recessive
1335	Quercus	1 dominant	8	Good	
1336	Cupressus	1 dominant	24	Good	Forked crown
1337	Quercus	1 dominant	8	Good	
1338	Quercus	1 dominant	9	Good	
1339	Quercus	2 dominant	8, 9	Good	Multiple recessive stems
1340	Cupressus	1 dominant	18	Good	Multiple recessive stems
1341	Quercus	Multiple stems	10 inch aggregate	Good	
1342	Quercus	1 dominant	7	Good	
1343	Quercus	Multiple stems	10 inch aggregate	Good	

1344	Quercus	Multiple stems	10 inch aggregate	Good	
1345	Quercus	1 dominant	8	Good	
1346	Myoporum	Multiple stems	10 inch aggregate	Fair	
1347	Myoporum	Multiple stems	10 inch aggregate	Fair	
1348	Quercus	1 dominant	13	Good	one recessive stem, low form
1349	Quercus	1 dominant	14	Good	Low form, Multiple recessive stems
1350	Quercus	1 dominant	15	Good	one recessive, low form
1351	Quercus	1 dominant	13	Good	
1352	Quercus	1 dominant	10	Good	one recessive
1353	Quercus	1 dominant	13	Good	one recessive, low form
1354	Quercus	1 dominant	8	Good	two recessive, low form
1355	Quercus	1 dominant	10	Good	
1356	Quercus	2 dominant	10, 8	Good	
1357	Quercus	1 dominant	6	Good	one recessive
1358	Quercus	1 dominant	8	Good	two recessive, low form
1359	Quercus	3 dominant	7, 6, 6	Good	three recessive
1360	Quercus	1 dominant	6	Good	two recessive
1361	Quercus	1 dominant	7	Good	Multiple recessive stems
1362	Quercus	Multiple stems	10 inch aggregate	Good	
1363	Quercus	2 dominant	8, 8	Good	
1364	Quercus	3 dominant	8, 10, 7	Good	

1365	Cupressus	3 dominant	20, 22, 16	Good	Multiple recessive stems
1366	Quercus	1 dominant	13	Good	
1367	Quercus	1 dominant	6	Good	
1368	Quercus	1 dominant	11	Good	
1369	Quercus	1 dominant	14	Good	
1370	Quercus	1 dominant	12	Good	
1371	Quercus	1 dominant	15	Good	
1372	Quercus	1 dominant	10	Good	one recessive
1373	Garrya	Multiple stems	10 inch aggregate	Good	
1374	Quercus	1 dominant	16	Good	one recessive, low form
1375	Quercus	1 dominant	16	Good	Low form
1376	Quercus	2 dominant	16, 13	Good	Low form, two recessive
1377	Quercus	1 dominant	8	Good	
1378	Quercus	3 dominant	11, 8, 9	Fair	Multiple recessive stems
1379	Quercus	1 dominant	8	Good	
1380	Quercus	2 dominant	12, 12	Good	Forked crown
1381	Quercus	1 dominant	16	Fair	
1382	Garrya	1 dominant	8	Good	two recessive
1383	Garrya	1 dominant	7	Good	Forked crown
1384	Myoporum	Multiple stems	10 inch aggregate	Poor	Crown dieback
1385	Pinus	1 dominant	16	Good	one recessive

1386	Pinus	1 dominant	14	Dead	one recessive
1387	Quercus	1 dominant	6	Good	
1388	Quercus	2 dominant	7, 5	Good	
1389	Quercus	Multiple stems	10 inch aggregate	Good	
1390	Acacia	2 dominant	16, 13	Good	one fallen recessive
1391	Acacia	1 dominant	9	Good	Multiple recessive stems
1392	Acacia	Multiple stems	10 inch aggregate	Good	
1393	Acacia	Multiple stems	10 inch aggregate	Good	
1394	Acacia	Multiple stems	10 inch aggregate	Good	
1395	Myoporum	1 dominant	7	Fair	Multiple recessive stems
1396	Garrya	Multiple stems	10 inch aggregate	Good	
1397	Oak	1 dominant	6	Good	Multiple recessive stems
1398	Oak	1 dominant	7	Good	Multiple recessive stems
1399	Oak	Multiple stems	10 inch aggregate	Good	
1400	Oak	Multiple stems	10 inch aggregate	Good	
1401	Quercus	Multiple stems	10 inch aggregate	Good	
1402	Cupresses	1 dominant	28	Good	Multiple recessive stems
1403	Cupresses	1 dominant	42	Good	Multiple recessive stems, one split recessive
1404	Pinus	2 dominant	7, 11	Good	One dominant has dead top
1405	Acacia	2 dominant	14, 13	Good	
1406	Acacia	Multiple stems	10 inch aggregate	Good	

1407	Acacia	Multiple stems	10 inch aggregate	Good	
1408	Acacia	2 dominant	8, 9	Good	Multiple recessive stems
1409	Acacia	1 dominant	6	Good	
1410	Acacia	Multiple stems	10 inch aggregate	Good	
1411	Pinus	1 dominant	15	Good	one recessive
1412	Palm Tree	1 dominant	18	Good	
1413	Pinus	1 dominant	11	Good	
1414	Pinus	1 dominant	13	Good	two recessive
1415	Cupresses	1 dominant	23	Good	Topped crown
1416	Cupresses	1 dominant	25	Good	Multiple recessive stems
1417	Cupresses	1 dominant	41	Good	Multiple recessive stems, forked crown
1418	Cupresses	1 dominant	32	Good	two recessive
1419	Cupresses	2 dominant	7, 9	Good	Multiple recessive stems
1420	Pinus	1 dominant	12	Good	
1421	Pinus	1 dominant	14	Poor	Mostly dead
1422	Myoporum	Multiple stems	10 inch aggregate	Poor	Mostly dead
1423	Cupresses	1 dominant	26	Good	two recessive
1424	Cupresses	1 dominant	38	Good	Multiple recessive stems, one fallen recessive
1425	Cupresses	1 dominant	6	Good	Multiple recessive stems, forked crown
1426	Quercus	1 dominant	6	Good	one recessive
1427	Cupresses	1 dominant	12	Good	Multiple recessive stems, forked crown

1428	Quercus	Multiple stems	10 inch aggregate	Good	
1429	Quercus	Multiple stems	10 inch aggregate	Good	
1430	Quercus	3 dominant	8, 7, 6	Good	
1431	Quercus	1 dominant	6	Good	
1432	Quercus	2 dominant	6, 6	Good	
1433	Quercus	1 dominant	7	Good	one recessive
1434	Quercus	Multiple stems	10 inch aggregate	Good	
1435	Quercus	Multiple stems	10 inch aggregate	Good	
1436	Quercus	1 dominant	8	Good	
1437	Quercus	1 dominant	7	Good	Multiple recessive stems
1438	Pinus	1 dominant	19	Good	
1439	Quercus	2 dominant	8, 7	Good	Multiple recessive stems
1440	Pinus	1 dominant	11	Dead	one recessive
1441	Cupresses	2 dominant	10, 6	Good	one recessive
1442	Cupresses	2 dominant	7, 7	Good	one recessive
1443	Cupresses	Multiple stems	10 inch aggregate	Good	
1444	Quercus	Multiple stems	10 inch aggregate	Good	
1445	Quercus	Multiple stems	10 inch aggregate	Good	
1446	Cupresses	1 dominant	12	Good	
1447	Pinus	Multiple stems	10 inch aggregate	Good	
1448	Cupresses	1 dominant	12	Good	

1449	Cupresses	1 dominant	9	Good		
1450	Cupresses	1 dominant	10	Good	one recessive	
1451	Quercus	Multiple stems	10 inch aggregate	Good		
1452	Quercus	1 dominant	11	Good	One recessive	
1453	Garrya	2 dominant	7, 8	Good	Two recessive	
1454	Cupresses	1 dominant	31	Good	Two recessive	
1455	Acacia	Multiple stems	10 inch aggregate	Good		
1456	Acacia	Multiple stems	10 inch aggregate	Good		
1457	Acacia	Multiple stems	10 inch aggregate	Good		
1458	Acacia	Multiple stems	10 inch aggregate	Good		
1459	Acacia	2 dominant	7, 6	Good	Multiple recessive stems	
1460	Acacia	1 dominant	6	Good		
1461	Acacia	1 dominant	8	Good		
1462	Acacia	1 dominant	16	Good	Forked crown	
1463	Acacia	Multiple stems	10 inch aggregate	Fair		
1464	Acacia	1 dominant	20	Dead		31
1465	Acacia	Multiple stems	10 inch aggregate	Dead		38
1466	Cupresses	1 dominant	16	Good	Two recessive	
1467	Quercus	Multiple stems	10 inch aggregate	Good		
1468	Quercus	1 dominant	7	Good		
1469	Quercus	Multiple stems	10 inch aggregate	Good		

1470	Quercus	Multiple stems	10 inch aggregate	Good	
1471	Quercus	Multiple stems	10 inch aggregate	Good	
1472	Quercus	1 dominant	6	Good	
1473	Quercus	Multiple stems	10 inch aggregate	Good	
1474	Cupresses	1 dominant	13	Good	
1475	Pinus	1 dominant	13	Good	Two recessive
1476	Quercus	1 dominant	6	Good	One recessive
1477	Quercus	Multiple stems	10 inch aggregate	Good	
1478	Pinus	1 dominant	14	Fair	Dead top, one recessive
1479	Cupresses	1 dominant	13	Good	
1480	Cupresses	1 dominant	36	Good	
1481	Cupresses	1 dominant	33	Good	
1482	Quercus	2 dominant	6, 5	Good	
1483	Pinus	1 dominant	8	Dead	two fallen recessives
1484	Pinus	1 dominant	14	Good	one recessive
1485	Cupresses	1 dominant	13	Good	Multiple recessive stems
1486	Acacia	1 dominant	6	Fair	Multiple recessive stems
1487	Quercus	Multiple stems	10 inch aggregate	Good	
1488	Quercus	2 dominant	8, 8	Good	
1489	Cupresses	1 dominant	13	Good	Multiple recessive stems, one fallen
1490	Cupresses	1 dominant	9	Good	Multiple recessive stems

1491	Cupresses	1 dominant	22	Good	
1492	Quercus	2 dominant	7, 8	Good	Multiple recessive stems
1493	Cupresses	1 dominant	14	Good	Multiple recessive stems
1494	Cupresses	1 dominant	13	Good	Multiple recessive stems
1495	Acacia	1 dominant	28	Poor	One fallen recessive
1496	Acacia	Multiple stems	10 inch aggregate	Good	
1497	Acacia	Multiple stems	10 inch aggregate	Good	
1498	Acacia	Multiple stems	10 inch aggregate	Good	
1499	Acacia	Multiple stems	10 inch aggregate	Good	
1500	Acacia	Multiple stems	10 inch aggregate	Good	
1501	Acacia	1 dominant	7	Poor	Dead top
1502	Acacia	Multiple stems	10 inch aggregate	Good	
1503	Pinus	1 dominant	11	Fair	Canker
1504	Quercus	1 dominant	7	Good	Multiple recessive , low form
1505	Quercus	2 dominant	7, 8	Good	Multiple recessive stems
1506	Pinus	1 dominant	13	Dead	One fallen recessive
1507	Quercus	1 dominant	6	Good	Multiple recessive stems
1508	Quercus	Multiple stems	10 inch aggregate	Good	
1509	Cupresses	1 dominant	22	Good	Multiple recessive stems
1510	Quercus	Multiple stems	10 inch aggregate	Good	
1511	Cupresses	1 dominant	9	Good	

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1512	Cupresses	1 dominant	8	Good	One recessive
1513	Cupresses	1 dominant	11	Good	
1514	Cupresses	1 dominant	13	Good	One recessive
1515	Pinus	2 dominant	13, 8	Good	One recessive
1516	Cupresses	1 dominant	13	Good	Multiple recessive stems
1517	Cupresses	Multiple stems	10 inch aggregate	Good	
1518	Cupresses	2 dominant	22, 10	Good	Multiple recessive stems
1519	Pinus	1 dominant	17	Good	Forked crown
1520	Quercus	2 dominant	6, 6	Good	Multiple recessive stems
1521	Quercus	1 dominant	6	Good	Multiple recessive stems
1522	Quercus	Multiple stems	10 inch aggregate	Good	
1523	Acacia	Multiple stems	10 inch aggregate	Good	
1524	Myoporum	1 dominant	6	Good	
1525	Pinus	2 dominant	10, 10	Good	Multiple recessive stems
1526	Cupresses	1 dominant	11	Good	One recessive
1527	Pinus	1 dominant	18	Good	
1528	Cupresses	1 dominant	12	Good	
1529	Cupresses	1 dominant	19	Good	One recessive, forked crown
1530	Pinus	1 dominant	12	Good	Forked crown
1531	Cupresses	1 dominant	18	Good	Multiple recessive stems
1532	Quercus	1 dominant	6	Good	

1533	Cupresses	1 dominant	7	Good	Multiple recessive stems
1534	Cupresses	1 dominant	9	Good	
1535	Quercus	1 dominant	7	Good	Multiple recessive stems
1536	Cupresses	1 dominant	9	Good	Multiple recessive stems
1537	Quercus	3 dominant	10, 7, 7	Good	Multiple recessive stems, low form,3rd generation
1538	Cupresses	1 dominant	13	Good	One recessive
1539	Pinus	1 dominant	24	Good	
1540	Pinus	1 dominant	13	Good	
1541	Pinus	1 dominant	16	Good	
1542	Pinus	1 dominant	22	Good	
1543	Pinus	1 dominant	22	Good	
1544	Quercus	1 dominant	13	Good	One recessive
1545	Quercus	1 dominant	6	Good	Multiple recessive stems
1546	Quercus	3 dominant	6, 7, 10	Good	Multiple recessive stems, low form, 3rd generation
1547	Cupresses	2 dominant	11, 11	Good	Multiple recessive stems
1548	Quercus	Multiple stems	10 inch aggregate	Good	
1549	Cupresses	Multiple stems	10 inch aggregate	Good	
1550	Quercus	Multiple stems	10 inch aggregate	Good	
1551	Pinus	1 dominant	11	Fair	Canker
1552	Pinus	2 dominant	14, 16	Good	
1553	Cupresses	2 dominant	7, 5	Good	Multiple recessive stems

1554	Cupresses	1 dominant	11	Good	Multiple recessive stems
1555	Cupresses	2 dominant	8, 6	Good	Multiple recessive stems
1556	Pinus	1 dominant	14	Good	
1557	Cupresses	1 dominant	15	Good	Multiple recessive stems
1558	Pinus	2 dominant	13, 8	Good	Dead top
1559	Cupresses	1 dominant	9	Good	Multiple recessive stems
1560	Cupresses	1 dominant	6	Good	Multiple recessive stems
1561	Cupresses	1 dominant	9	Good	Multiple recessive stems
1562	Cupresses	Multiple stems	10 inch aggregate	Good	
1563	Cupresses	1 dominant	10	Good	Multiple recessive stems
1564	Cupresses	1 dominant	11	Good	Multiple recessive stems
1565	Cupresses	1 dominant	9	Good	3 recessive
1566	Cupresses	2 dominant	7, 7	Good	Multiple recessive stems
1567	Cupresses	2 dominant	7, 7	Good	Multiple recessive stems
1568	Cupresses	1 dominant	9	Good	One recessive
1569	Cupresses	2 dominant	9, 10	Good	Multiple recessive stems
1570	Cupresses	1 dominant	12	Good	Multiple recessive stems
1571	Cupresses	1 dominant	9	Good	Multiple recessive stems
1572	Quercus	2 dominant	11, 13	Good	
1573	Quercus	1 dominant	13	Good	
1574	Quercus	3 dominant	13, 14, 10	Good	

1575	Quercus	2 dominant	7, 7	Good	
1576	Quercus	1 dominant	10	Good	
1577	Quercus	1 dominant	10	Good	
1578	Quercus	1 dominant	9	Good	
1579	Quercus	4 dominant	8, 6, 7, 9	Good	
1580	Quercus	1 dominant	8	Good	One recessive
1581	Quercus	1 dominant	10	Good	
1582	Quercus	1 dominant	7	Good	
1583	Quercus	1 dominant	10	Good	
1584	Quercus	3 dominant	14, 13, 9	Good	
1585	Quercus	4 dominant	10, 10, 11, 8	Good	
1586	Quercus	Multiple stems	10 inch aggregate	Good	
1587	Quercus	3 dominant	9, 8, 7	Good	
1588	Quercus	2 dominant	8, 8	Good	
1589	Quercus	1 dominant	7	Good	One recessive
1590	Cupresses	1 dominant	7	Good	Multiple recessive stems
1591	Eucalyptus	3 dominant	24, 25, 27	Good	Multiple recessive stems
1592	Eucalyptus	1 dominant	10	Good	
1593	Eucalyptus	1 dominant	8	Good	One recessive
1594	Pinus	1 dominant	8	Good	
1595	Cupresses	1 dominant	9	Good	Forked crown

1596	Cupresses	Multiple stems	10 inch aggregate	Good	
1597	Cupresses	1 dominant	12	Good	Forked crown
1598	Cupresses	1 dominant	9	Good	Multiple recessive stems
1599	Pinus	1 dominant	6	Good	
1600	Pinus	1 dominant	14	Good	One recessive
1601	Quercus	3 dominant	12, 8, 9	Good	Multiple recessive stems
1602	Quercus	1 dominant	6	Good	Multiple recessive stems
1603	Eucalyptus	1 dominant	9	Good	Multiple recessive stems
1604	Pinus	1 dominant	13	Good	
1605	Acacia	Multiple stems	10 inch aggregate	Fair	
1606	Quercus	Multiple stems	10 inch aggregate	Good	
1607	Quercus	Multiple stems	10 inch aggregate	Good	
1608	Quercus	1 dominant	7	Good	
1609	Eucalyptus	2 dominant	14, 15	Good	2 fallen recessives
1610	Cupresses	1 dominant	13	Good	Multiple recessive stems
1611	Eucalyptus	1 dominant	44	Good	Multiple forked crown
1612	Quercus	Multiple stems	10 inch aggregate	Good	
1613	Quercus	Multiple stems	10 inch aggregate	Good	
1614	Quercus	2 dominant	9, 9	Good	
1615	Quercus	2 dominant	12, 9	Good	One recessive
1616	Quercus	2 dominant	10, 10	Good	One recessive

1617	Quercus	1 dominant	8	Good	One recessive
1618	Quercus	1 dominant	17	Good	One recessive
1619	Quercus	2 dominant	11, 11	Good	2 recessive
1620	Quercus	1 dominant	13	Good	3 recessive
1621	Quercus	1 dominant	6	Good	
1622	Pinus	1 dominant	12	Dead	
1623	Quercus	1 dominant	6	Good	One recessive
1624	Quercus	1 dominant	6	Good	Multiple recessive stems
1625	Pinus	4 dominant	7, 7, 8, 8	Good	One recessive
1626	Pinus	2 dominant	7, 7	Good	One recessive
1627	Pinus	1 dominant	6	Good	One recessive
1628	Pinus	1 dominant	12	Good	One recessive
1629	Pinus	1 dominant	12	Good	One recessive
1630	Pinus	1 dominant	6	Good	
1631	Cupresses	1 dominant	22	Good	Forked crown
1632	Pinus	1 dominant	11	Good	
1633	Pinus	2 dominant	6, 6	Good	
1634	Pinus	3 dominant	16, 12, 9	Good	One recessive
1635	Pinus	1 dominant	11	Good	Dead top
1636	Pinus	1 dominant	12	Poor	Bottom dieback
1637	Eucalyptus	2 dominant	10, 6	Good	Multiple recessive stems

1638	Cupresses	1 dominant	20	Good	Forked crown
1639	Pinus	1 dominant	13	Poor	Dead top, 2 recessive
1640	Eucalyptus	1 dominant	10	Good	2 recessive
1641	Eucalyptus	2 dominant	10, 8	Good	One recessive
1642	Acacia	2 dominant	8, 8	Fair	Dead top
1643	Acacia	1 dominant	6	Fair	Dead top
1644	Acacia	1 dominant	6	Fair	Dead top
1645	Acacia	1 dominant	18	Dead	
1646	Myoporum	Multiple stems	10 inch aggregate	Good	
1647	Quercus	3 dominant	8, 7, 8	Good	Multiple recessive stems
1648	Cupresses	1 dominant	32	Good	Forked crown
1649	Cupresses	1 dominant	30	Good	Forked crown
1650	Cupresses	1 dominant	27	Good	3 recessive, one fallen branch
1651	Cupresses	1 dominant	26	Good	2 recessive
1652	Cupresses	1 dominant	41	Good	Forked crown
1653	Eucalyptus	1 dominant	11	Good	3 recessive
1654	Pinus	Multiple stems	10 inch aggregate	Good	
1655	Myoporum	Multiple stems	10 inch aggregate	Fair	
1656	Myoporum	1 dominant	8	Good	
1657	Box Elder	Multiple stems	10 inch aggregate	Good	
1658	Pinus	1 dominant	18	Good	

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1659	Pinus	1 dominant	14	Good		
1660	Quercus	Multiple stems	10 inch aggregate	Good		
1661	Quercus	3 dominant	8, 10, 12	Good	Multiple recessive stems	
1662	Pinus	1 dominant	11	Fair		
1663	Pinus	1 dominant	14	Fair		
1664	Pinus	1 dominant	14	Good	2 recessive	
1665	Pinus	1 dominant	14	Good		
1666	Pinus	1 dominant	19	Good	One recessive	
1667	Pinus	1 dominant	10	Fair	Dead top	
1668	Pinus	1 dominant	9	Good	2 recessive	
1669	Pinus	1 dominant	12	Good	2 recessive	
1670	Pinus	1 dominant	11	Dead	One recessive	
1671	Pinus	1 dominant	9	Good	Dead top	
1672	Pinus	1 dominant	15	Good		
1673	Pinus	1 dominant	8	Dead		42
1674	Pinus	1 dominant	8	Dead		43
1675	Pinus	1 dominant	13	Fair	One recessive dead top	
1676	Pinus	2 dominant	8, 8	Good	Dead tops	
1677	Eucalyptus	1 dominant	17	Good		
1678	Pinus	1 dominant	8	Good	One recessive	
1679	Pinus	1 dominant	9	Good		

1680	Pinus	1 dominant	9	Good		
1681	Pinus	1 dominant	19	Good		
1682	Pinus	1 dominant	8	Dead	One recessive	44
1683	Pinus	1 dominant	11	Good	One recessive	
1684	Pinus	1 dominant	6	Good		
1685	Pinus	1 dominant	15	Good	One recessive	
1686	Pinus	1 dominant	13	Good	Multiple recessive stems	
1687	Pinus	1 dominant	6	Fair	Dead top	
1688	Pinus	1 dominant	16	Good		
1689	Pinus	1 dominant	11	Good		
1690	Pinus	1 dominant	9	Dead		45
1691	Pinus	1 dominant	11	Good	One recessive	
1692	Pinus	1 dominant	12	Good		
1693	Pinus	1 dominant	13	Good		
1694	Pinus	1 dominant	10	Good		
1695	Pinus	2 dominant	8, 9	Poor	Dead top	
1696	Pinus	1 dominant	12	Good	Dead top	
1697	Pinus	1 dominant	14	Poor	Canker	
1698	Pinus	2 dominant	13, 7	Good		
1699	Cupresses	1 dominant	17	Good		
1700	Cupresses	2 dominant	9, 9	Good		

1701	Pinus	1 dominant	14	Good	
1702	Pinus	1 dominant	12	Good	
1703	Cupresses	1 dominant	32	Good	Multiple recessive stems
1704	Cupresses	1 dominant	14	Good	Multiple recessive stems
1705	Cupresses	1 dominant	24	Good	Multiple recessive stems
1706	Cupresses	1 dominant	26	Good	Multiple recessive stems
1707	Quercus	1 dominant	6	Good	Multiple recessive stems
1708	Quercus	1 dominant	6	Good	Multiple recessive stems
1709	Cupresses	1 dominant	14	Good	Multiple recessive stems
1710	Pinus	Multiple stems	10 inch aggregate	Good	
1711	Pinus	1 dominant	11	Good	Multiple recessive stems
1712	Pinus	1 dominant	16	Good	Forked crown
1713	Pinus	1 dominant	15	Good	Forked crown, dead tops
1714	Pinus	1 dominant	16	Good	
1715	Pinus	1 dominant	13	Fair	Canker
1716	Pinus	1 dominant	14	Fair	Canker
1717	Pinus	1 dominant	11	Fair	Forked crown, one recessive
1718	Pinus	1 dominant	14	Good	Multiple recessive stems
1719	Pinus	1 dominant	10	Dead	Multiple recessive stems
1720	Pinus	1 dominant	10	Good	
1721	Pinus	1 dominant	14	Good	Beatles

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1722	Pinus	Multiple stems	10 inch aggregate	Fair	Dieback	
1723	Pinus	1 dominant	6	Fair	One recessive	
1724	Pinus	1 dominant	6	Good		
1725	Cupresses	1 dominant	43	Good	Forked crown	
1726	Cupresses	1 dominant	28	Good	Forked crown	
1727	Cupresses	1 dominant	24	Good	Multiple recessive stems	
1728	Pinus	1 dominant	11	Fair	Dead top	
1729	Acacia	1 dominant	7	Dead	Multiple recessive stems	47
1730	Pinus	1 dominant	14	Good	2 recessive	
1731	Cupresses	1 dominant	20	Good	Multiple recessive stems	
1732	Acacia	Multiple stems	10 inch aggregate	Dead		48
1733	Acacia	1 dominant	10	Fair		
1734	Pinus	1 dominant	11	Good	2 recessive	
1735	Pinus	1 dominant	18	Good	Forked crown	
1736	Pinus	1 dominant	10	Good	Multiple recessive stems, dead top	
1737	Pinus	1 dominant	7	Good		
1738	Pinus	1 dominant	7	Dead		49
1739	Pinus	1 dominant	12	Fair		
1740	Pinus	1 dominant	6	Fair	Multiple recessive stems	
1741	Pinus	1 dominant	22	Good	Dead top	
1742	Pinus	1 dominant	17	Good	Dead top	

1743	Pinus	1 dominant	15	Good	Dead top
1744	Pinus	1 dominant	17	Fair	
1745	Cupresses	1 dominant	23	Good	2 recessive, one fallen
1746	Pinus	1 dominant	21	Fair	
1747	Myoporum	Multiple stems	10 inch aggregate	Fair	
1748	Pinus	1 dominant	6	Good	
1749	Pinus	1 dominant	15	Poor	2 recessive, mostly dead
1750	Eucalyptus	Multiple stems	10 inch aggregate	Good	
1751	Eucalyptus	2 dominant	10, 8	Good	Multiple recessive stems
1752	Eucalyptus	5 dominant	8, 7, 8, 6, 6	Good	Multiple recessive stems
1753	Pinus	1 dominant	8	Dead	Multiple recessive stems
1754	Palm	1 dominant	24	Good	
1755	Palm	1 dominant	20	Good	
1756	Pinus	1 dominant	26	Poor	Canker
1757	Myoporum	1 dominant	6	Poor	
1758	Pinus	1 dominant	22	Good	
1759	Myoporum	2 dominant	6, 6	Poor	
1760	Cupresses	1 dominant	28	Poor	Fallen, 2 recessive
1761	Eucalyptus	2 dominant	12, 13	Good	
1762	Cupresses	1 dominant	18	Good	
1763	Pinus	3 dominant	7, 7, 6	Good	

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1764	Eucalyptus	1 dominant	11	Good	Forked crown	
1765	Pinus	1 dominant	28	Good		
1766	Pinus	1 dominant	13	Good	Dead top	
1767	Pinus	1 dominant	18	Good	Forked crown	
1768	Pinus	1 dominant	16	Fair	Dead top, one recessive	
1769	Cupresses	1 dominant	28	Good	Forked crown	
1770	Pinus	1 dominant	11	Good	One recessive w/ dead top	
1771	Pinus	1 dominant	16	Good		
1772	Pinus	1 dominant	15	Dead		51
1773	Pinus	1 dominant	15	Good		
1774	Pinus	1 dominant	12	Good	One recessive, dead tops	
1775	Pinus	1 dominant	15	Good		
1776	Pinus	1 dominant	13	Good	Dead top, one recessive	
1777	Pinus	1 dominant	11	Dead	Canker	52
1778	Myoporum	Multiple stems	10 inch aggregate	Good		
1779	Eucalyptus	1 dominant	14	Good	Forked crown	
1780	Eucalyptus	1 dominant	10	Good	Forked crown	
1781	Pinus	1 dominant	13	Good	One recessive	
1782	Cupresses	1 dominant	54	Good	Forked crown	