In 2012, the HDOT, in coordination with the Federal Highways Administration (FHWA) and with the cooperation of the landowner, West Maui Land Company, proposed the relocation of the Lāhainā By-Pass Southern Terminus to the vicinity of the former Olowalu landfill. Erosion along the highway in the Launiupoko area and a projected rise in traffic congestion between the current bypass terminus point at Launiupoko to the vicinity of the Olowalu landfill site were cited as reasons for the change in alignment (HDOT, 2012). This roadway improvement is included in the 2015-2018 State Transportation Improvement Program (STIP).

Traffic in Olowalu Town is primarily traffic passing through between Lāhainā and Central Maui. ~~Traffic~~In consultation with the HDOT, traffic counts in October 2010 taken Lāhainā-side of the Olowalu Recycling and Refuse Convenience Center indicated a daily traffic volume of 22,840 vehicles. See **Appendix "~~M~~P"**. In February 2013, new traffic counts were taken and included in the updated TIAR dated April 2015. See **Appendix "P-1"**. Based on the 2013 traffic counts, it is estimated in 2015 that Honoapi`ilani Highway has a daily traffic volume of 26,325 vehicles.

The Updated TIAR reviewed available data and determined that an annual traffic volume growth rate of approximately 1 percent would be appropriate for Honoapi`ilani Highway, resulting in a total growth of 9 percent between 2015 and full buildout of the OTMP in 2024. This 9 percent growth rate was applied to the existing through traffic volumes on Honoapi`ilani Highway to derive future year traffic volumes without the OTMP project in place. The current average daily traffic (ADT) volume was estimated utilizing the 1 percent annual growth rate from the 2013 traffic counts. Based on the updated traffic volume the updated TIAR estimated the background growth rate would be 11 percent from 2013 to full buildout in 2024. Assuming the growth rate of 11percent from 2013 to 2024, the background traffic volume growth on Honoapi`ilani Highway would be 2,325 vehicles resulting in an ADT volume of 28,650 vehicles in the future year of 2024 without the project in place.

The TIAR analyzed future traffic with the OTMP at the following intersections:

- North Access Outside Limits of Olowalu Town (Olowalu Transfer Station)

- Olowalu O-turn 1 Access
- Olowalu O-turn 2 Access
- New Access to Existing Honoapi`ilani Highway (RIRO Access)
- South Access Outside Limits of Olowalu Town at Ehehene Street

The restricted right-in/right-out or "RIRO" access, allowing right turns in from the southbound direction from Lahaina and right turn exits from the town towards Mā`alaea. No access would be allowed via left turns into or from the town. Any movements into the town from the south would have to be made via another access point followed by internal connections to the RIRO. Left turns from the part of the town with RIRO access would have to be made via internal connection to another of the two points of access.

With the project at full buildout it is projected that the ADT volume would be 32,680 vehicles at the Olowalu Transfer Station, 32,150 vehicles at Olowalu O-turn 1 Access, 34,220 vehicles at Olowalu O-turn 2 Access, 31,775 vehicles at the RIRO Access, and 31,335 at the South Access Outside of Olowalu Town. (See Figure 10 in Appendix P-1) The estimated daily maximum capacity of the realigned four-lane Honoapi`ilani Highway through OTMP is 55,500 vehicles, while the existing two-lane Honoapi`ilani Highway is estimated as 33,300 vehicles.

The estimated Level of Service (LOS) for all intersections, except the existing roadway south of the limits of OTMP, for the project is LOS "D" as identified in **Table 33**.

Table 33. Capacity, ADTs and Levels of Service for Honoapi`ilani Highway In Full Buildout Year of 2024

Segment of Honoapi`ilani Highway	Daily Maximum Capacity(1)	Predicted ADT	Volume to Capacity Level	Predicted LOS (Based on Daily Volume)(2)	Comments
North of Transfer Station	55,500	32,680	0.59	D	Assumes widening to two (2) through lanes in each direction
Transfer Station to O-turn 1	55,500	32,150	0.60	D	
O-turn 1 to O-turn 2	55,500	34,220	0.62	D	
O-turn 2 To RIRO	55,500	31,775	0.57	D	
RIRO to Existing Roadway	55,500	31,775	0.57	D	
Existing Roadway South of Olowalu Town Project	33,300	31,335	0.94	E	Under capacity on daily basis

(1) From Highplan calculations. See appendices for detailed outputs and information on Highplan.
(2) Note: Based on hourly peak volumes, LOS is C.
Source: TIAR, 2015

An analysis was made of a.m. and p.m. peak hour traffic operations for weekdays at full buildout of the OTMP in the year 2024 using the methods of the Highway Capacity Manual and the Synchro software package including its SimTraffic simulation model to provide estimates of traffic congestion measures including delays and queue lengths. Based on the 2013 traffic counts, peak hours of traffic was determined as 7:00 to 8:00 a.m. and 4:00 to 5:00 p.m. since these hours would also tend to coincide with the peak hours of traffic generation for the new town. LOS at full buildout was established for the am and pm peak hour traffic operations with LOS "D" acceptable for morning and afternoon peak traffic and LOS "E" or worse (reaching or exceeding capacity) would need to be reviewed closely to determine if any changes or improvements could be made to move the LOS to an acceptable level. On heavily traveled streets such as Honoapi'ilani Highway, it is not uncommon for side street left turn movements to have LOS "D" or "E" due to the difficulty in making the maneuver. In some cases, LOS E may be considered acceptable if the volume of traffic experiencing the LOS E is low and/or if the impacts of mitigating the LOS E are not reasonable due to cost, disruption of natural resources or other reasons. Generally, efforts were made to avoid any movements having LOS E or to minimize the overall impacts.

However, there are some side street left turn movements where the cost of improving the LOS E is not reasonable and/or where it would have an undue effect on the major traffic flows on the arterial highway.

Access Points

As required by the HDOT, three (3) access points on the realigned Honoapi`ilani Highway are proposed. To the north, Olowalu Access O-turn 1, middle Olowalu Access O-turn 2 and a RIRO at the southern end of the OTMP. Scenarios evaluated included the proposed O-turns and typical traffic signals for the recommended project internal (community) and external (outside town) capture rate of 64/36 percent and the HDOT capture rate of 25/75 percent. The HDOT capture rate increases trips to and from the town via Honoapi`ilani Highway by a factor of 2.56 for the full day with an increase of 2.44 for the a.m. peak hour and 2.48 for the p.m. peak hour. While the project recommended capture rate increases trips to and from the town via Honoapi`ilani Highway by a factor of 1.0 (daily, a.m., and p.m.).

The following **Table 34** provides the detail results for the O-turn intersections in the network for the a.m. and p.m. peak hours for the project recommended internal capture rate of 64 percent.

Table 34. Traffic Flow Measures with Project Recommended Internal Capture Rate with O-turns

Location	Movement	A.M. Peak Hour			P.M. Peak Hour		
		Speed (MPH)	Delay (Sec/Veh)	LOS	Speed (MPH)	Delay (Sec/Veh)	LOS
Transfer Station	NBD	28	2.5	A	28	2.9	A
	SBD	29	0.2	A	29	0.2	A
	WBD Lt	NA	8.7	A	NA	14.4	B
O-Turn 1W	NBD Lt	23	2.6	A	22	2.7	B
	NBD	27	0.3	A	27	1.1	A
	SBD	29	1.0	A	29	1.7	A
	WBD Lt	NA	2.1	A	NA	4.2	A
Olowalu Access 1	SBD	28	0.4	A	28	0.6	A
	SBD Rt	23	2.2	A	23	2.0	A
	NBD	28	0.8	A	28	0.9	A
	EBD Rt	NA	1.8	A	NA	2.1	A
	WBD	NA	0.7	A	NA	4.2	A
O-Turn 1E	SBD	27	3.2	A	26	1.7	A
	SBD Lt	23	1.4	A	22	3.7	A
	EBD Lt	11	1.8	A	NA	2.2	A
	NBD	28	1.2	A	28	1.3	A
O-Turn 2W	NBD Lt	24	3.2	A	23	3.6	A
	NBD	28	1.2	A	27	1.4	A
	SBD	29	0.8	A	28	1.2	A
	WBD Lt	NA	1.8	A	NA	3.3	A
Olowalu Access 2	SBD	28	0.7	A	28	0.9	A
	NBD	28	0.7	A	28	0.7	A
	EBD	NA	2.2	A	NA	3.0	A
	WBD	NA	0.8	A	NA	0.8	A
O-Turn 2E	SBD Lt	21	2.8	A	NA	3.3	A
	SBD	25	1.5	A	25	1.9	A
	EBD Lt	NA	1.9	A	NA	2.7	A
	NBD	28	1.6	A	28	1.7	A
RIRO	SBD	29	0.6	A	28	1.3	A
	SBD Rt	20	1.4	A	26	0.2	A
	EBD	NA	0.5	A	NA	0.6	A
2-1Merge	SBD	27	1.3	A	15	14.6	B
Merge	SBD	27	1.4	A	10	30.2	D
Ehehene Street	SBD	27	4.3	A	27	5.5	A
	SBD Lt	22	11.8	B	21	17.1	C
	NBD	27	2.1	A	26	3.1	A
	WBD	NA	57.0	F	NA	>200	F

Source: TIAR, 2015

NBD - North Bound Driveway
SBD - South Bound Driveway
WBD, Lt - West Bound Driveway, Left
NBD, Lt - North Bound Driveway, Left
SBD, Rt - South Bound Driveway, Right
EBD, Rt - East Bound Driveway, Right
SBD, Lt - South Bound Driveway, Left
EBD, Lt - East Bound Driveway, Left
EBD - East Bound Driveway
WBD - West Bound Driveway

The following **Table 35** provides the detail results for the O-turn intersections in the network for the a.m. and p.m. peak hours for the HDOT internal capture rate of 25 percent.

Table 35. Traffic Flow Measures with HDOT 25 Percent Internal Capture Rate with O-turns

Location	Movement	A.M. Peak Hour			P.M. Peak Hour		
		Speed (MPH)	Delay (Sec/Veh)	LOS	Speed (MPH)	Delay (Sec/Veh)	LOS
Transfer Station	NBD	28	3.0	A	27	3.3	A
	SBD	29	0.2	A	29	0.3	A
	WBD Lt	NA	14.6	B	NA	17.9	C
O-Turn 1W	NBD Lt	22	2.9	A	16	0.7	A
	NBD	27	1.2	A	26	0.8	A
	SBD	29	1.2	A	28	2.1	A
	WBD Lt	NA	2.8	A	7	9.2	A
Olowalu Access 1	SBD	28	0.1	A	28	0.8	A
	SBD Rt	23	0.1	A	23	3.3	A
	NBD	28	0.9	A	28	1.0	A
	EBD Rt	NA	3.0	A	NA	6.7	A
	WBD	NA	0.6	A	NA	0.6	A
O-Turn 1E	SBD	25	2.2	A	24	3.3	A
	SBD Lt	21	5.0	A	20	5.9	A
	EBD Lt	NA	2.6	A	NA	2.2	A
	NBD	28	1.4	A	28	1.5	A
O-Turn 2W	NBD Lt	23	3.4	A	10	36.5	E
	NBD	27	1.4	A	26	2.4	A
	SBD	29	1.0	A	28	1.8	A
	WBD Lt	NA	2.2	A	NA	10.4	B
Olowalu Access 2	SBD	28	0.6	A	28	1.1	A
	SBD Rt	23	2.8	A	21	5.2	A
	NBD	27	0.7	A	27	0.7	A
	EBD	NA	0.6	A	NA	11.2	B
	WBD	NA	0.7	A	NA	0.8	A
O-Turn 2E	SBD Lt	19	3.9	A	14	10.8	B
	SBD	23	2.4	A	16	9.4	A
	EBD Lt	NA	2.6	A	NA	4.4	A
	NBD	28	1.8	A	28	1.8	A
RIRO	SBD	29	0.2	A	26	56.6	F
	SBD Rt	26	0	A	25	3.7	A
	EBD	NA	0.6	A	NA	0.6	A
2-1Merge	SBD	27	1.5	A	5	76.4	F
Merge	SBD	27	1.7	A	7	50.4	E
Ehehene Street	SBD	27	4.6	A	27	5.5	A
	SBD Lt	21	17.8	C	9	118.3	F
	NBD	27	0.8	C	24	5.3	A
	WBD	NA	90.1	F	NA	>200	F

Source: TIAR, 2015

NBD - North Bound Driveway
SBD - South Bound Driveway
WBD, Lt - West Bound Driveway, Left
NBD, Lt - North Bound Driveway, Left
SBD, Rt - South Bound Driveway, Right
W - West
EBD, Rt - East Bound Driveway, Right
SBD, Lt - South Bound Driveway, Left
EBD, Lt - East Bound Driveway, Left
EBD - East Bound Driveway
WBD - West Bound Driveway
E - East

The following **Table 36** provides the detail results for the typical traffic signal intersections in the network for the a.m. and p.m. peak hours for the project recommended capture rate of 64 percent.

Table 36. Traffic Flow Measures with Project Recommended Internal Capture Rate with Traffic Signals

Location	Movement	A.M. Peak Hour			P.M. Peak Hour		
		Speed (MPH)	Delay (Sec/Veh)	LOS	Speed (MPH)	Delay (Sec/Veh)	LOS
Transfer Station	NBD	38	5.3	A	38	5.7	A
	SBD	43	0.4	A	42	0.7	A
	WBD	NA	18.4	C	NA	47.8	D
Olowalu Access 1	NBD Lt	15	54.6	D	15	52.4	D
	NBD	30	13.4	B	29	14.5	B
	SBD Lt	29	13.2	B	26	20.5	C
	SBD	34	10.3	B	30	17.1	B
	EBD Lt	NA	44.7	D	NA	47.7	D
	EBD Th	NA	32.4	C	NA	34.1	C
	EBD Rt	NA	1.1	A	NA	1.5	A
	WBD Lt	NA	49.9	D	NA	50.5	D
	WBD Th	NA	48.4	D	NA	49.5	D
	WBD Rt	NA	1.2	A	NA	1.1	A
Olowalu Access 2	NBD Lt	11	51.0	D	12	45.8	D
	NBD	28	10.9	B	28	11.4	B
	SBD Lt	22	27.5	C	18	39.3	D
	SBD	31	13.0	B	25	22.8	C
	EBD Lt	NA	41.9	D	NA	54.3	D
	EBD Th	NA	32.3	C	NA	36.0	D
	EBD Rt	NA	1.4	A	NA	2.1	A
	WBD Lt	NA	46.9	D	NA	44.1	D
	WBD Th	NA	53.3	D	NA	48.9	D
	WBD Rt	NA	0.7	A	NA	0.8	A
RIRO Access 3	NBD	42	0.9	A	42	0.9	A
	SBD Th	36	3.8	A	32	7.0	A
	SBD Rt	30	5.2	A	28	6.9	A
	EBD	NA	4.7	A	NA	12.5	B
Ehehene Street	NBD	40	1.8	A	34	2.6	A
	SBD Lt	33	8.7	A	20	24.9	C
	SBD	41	2.4	A	40	2.9	A
	WBD	NA	63.2	E	NA	>200	F

Source: TIAR, 2015
NBD - North Bound Driveway
SBD - South Bound Driveway
WBD, Lt - West Bound Driveway, Left
NBD, Lt - North Bound Driveway, Left
SBD, Rt - South Bound Driveway, Right
WBD Th - West Bound Driveway, Through
SBD Th - South Bound Driveway, Through
EBD, Rt - East Bound Driveway, Right
SBD, Lt - South Bound Driveway, Left
EBD, Lt - East Bound Driveway, Left
EBD - East Bound, Driveway
WBD - West Bound, Driveway
EBD Th - East Bound Driveway, Through

The following **Table 37** provides the detail results for the typical traffic signal intersections in the network for the a.m. and p.m. peak hours for the HDOT internal capture rate of 25 percent.

Table 37. Traffic Flow Measures with HDOT 25 Percent Internal Capture Rate with Traffic Signals

Location	Movement	A.M. Peak Hour			P.M. Peak Hour		
		Speed (MPH)	Delay (Sec/Veh)	LOS	Speed (MPH)	Delay (Sec/Veh)	LOS
Transfer Station	NBD	37	5.8	A	37	5.7	A
	SBD	43	0.5	A	41	0.6	A
	WBD	NA	7.0	A	NA	>200	F
Olowalu Access 1	NBD Lt	15	55.3	D	17	45.1	D
	NBD	27	17.7	B	28	16.4	B
	SBD Lt	25	23.9	C	24	24.6	C
	SBD	30	16.2	B	25	26.1	C
	EBD Lt	NA	41.2	D	NA	102.8	F
	EBD Th	NA	26.6	C	NA	37.1	D
	EBD Rt	NA	1.8	A	NA	5.2	A
	WBD Lt	NA	50.6	D	NA	49.8	D
	WBD Th	NA	44.2	D	NA	49.6	D
	WBD rt	NA	1.1	A	NA	1.2	A
Olowalu Access 2	NBD Lt	12	45.4	D	13	43.7	D
	NBD	26	14.2	B	28	11.7	B
	SBD Lt	19	36.9	E	16	48.9	D
	SBD	27	18.9	B	18	42.5	D
	EBD Lt	NA	47.4	D	NA	207.1	F
	EBD Th	NA	27.2	C	NA	73.9	F
	EBD Rt	NA	2.5	A	NA	8.5	A
	WBD Lt	NA	48.2	D	NA	48.1	D
	WBD Th	NA	51.2	D	NA	45.2	D
	WBD Rt	NA	0.7	A	NA	0.7	A
RIRO Access 3	NBD	42	0.9	A	42	0.9	A
	SBD Th	33	5.5	A	14	43.4	D
	SBD Rt	30	5.1	A	13	41.1	D
	EBD	NA	8.4	A	NA	41.5	D
2 Lane/4 Lane Transition	NBD	40	1.2	A	39	1.5	A
	SBD	29	8.3	A	6	104.4	F
Ehehene Street	NBD	40	2.1	A	33	6.4	A
	SBD Lt	28	18.7	B	13	57.2	E
	SBD	41	2.7	A	40	2.8	A
	WBD	NA	58.0	F	NA	>200	F

Location	Movement	A.M. Peak Hour			P.M. Peak Hour		
		Speed (MPH)	Delay (Sec/Veh)	LOS	Speed (MPH)	Delay (Sec/Veh)	LOS
Source: TIAR, 2015 NBD - North Bound Driveway SBD - South Bound Driveway WBD, Lt - West Bound Driveway, Left NBD, Lt - North Bound Driveway, Left SBD, Rt - South Bound Driveway, Right WBD Th - West Bound Driveway, Through SBD Th - South Bound Driveway, Through EBD, Rt - East Bound Driveway, Right SBD, Lt - South Bound Driveway, Left EBD, Lt - East Bound Driveway, Left EBD - East Bound, Driveway WBD - West Bound, Driveway EBD Th - East Bound Driveway, Through							

b. Potential Impacts and Mitigation Measures

The Master Plan for Alternatives 1 and 2 proposes to relocate and widen Honoapi`ilani Highway further inland of its present alignment in accordance with the Hawai`i Statewide Transportation Plan, Maui Long-Range Land Transportation Plan and County's proposed Pali to Puamana Parkway Master Plan, and in conjunction with the Honoapi`ilani Highway Realignment/ Widening project (Mā`alaea to Launiupoko) by the HDOT. The relocation and widening project will relocate the highway from existing shoreline erosion problems, improve highway capacity and improve the reliability of access to and from the West Maui region. The proposed relocation and widening of the highway has been designed as a ~~200~~160 feet wide corridor to accommodate mass transit or light rail, if needed in the future. It will also include a new bridge crossing at Olowalu Stream.

Portions of the existing highway corridor with its rows of monkey pod trees will be preserved and incorporated into the Master Plan for Alternatives 1 and 2 as a low speed/low volume coastal roadway providing access to the shoreline and the Master Plan area for Alternatives 1 and 2. The project will also include an internal roadway network. The principal secondary roadways will have a makai to mauka orientation that will provide visual and physical connection from the shoreline to the mountains. ~~Two~~As requested by HDOT, two (2) makai to mauka connections are proposed with the relocation and widening of Honoapi`ilani Highway that will provide access from the makai section to the mauka section of the Master Plan area for Alternatives 1 and 2. Additionally, an access to the existing Honoapi`ilani Highway will be provided at the southern end of Olowalu from the proposed relocated and widened Honoapi`ilani Highway. A ~~third~~ roadway connection is proposed

under the proposed relocated and widened Honoapi`ilani Highway that will connect the makai and mauka sections of the Master Plan for Alternatives 1 and 2 without having to cross the relocated hightway. Luawai Street will also be configured to accommodate the Master Plan for Alternatives 1 and 2, but will continue to provide access to the 14-lot Olowalu Mauka Subdivision. Refer to **Figure 4** and **Figure 5**.

In accordance with New Urbanism principles, a significant design criteria of the Master Plan for Alternatives 1 and 2 is to ensure the project is a mixed-use community providing residents access to daily needs, goods, and services within walking distance to minimize the number of daily vehicle trips within and outside the Master Plan. A network of interconnected streets, walkways, greenways and bikeways throughout the community is proposed to encourage different modes of transportation, including walking, biking, and mass transit. Pedestrian and bicycle access across the relocated Honoapi`ilani Highway is proposed to cross via grade separations or under proposed bridges that will be required to cross existing gulches.

A Preliminary Traffic Impact Analysis Report (TIAR) for the build out of the Master Plan ~~has been~~for Alternative 1 was prepared by Roger D. Dyar, Consulting Transportation Engineer. According to the TIAR, it is estimated that without the Master Plan for Alternative 1 the average daily traffic volume of approximately 24,700 vehicles will occur by future year 2020. Olowalu Town is estimated to generate approximately 32,800 total trips per day with about 26,700 of these trips being within the Master Plan area for Alternative 1. Olowalu Town will generate about 6,100 new trips per day leaving and entering the town with this traffic using the relocated Honoapi`ilani Highway to travel to or from other island destinations. Approximately 60 percent, or 3,600 vehicles, will travel towards Lāhainā while 40 percent, or 2,500 vehicles, will travel towards Mā`alaea. The proposed relocation and widening of Honoapi`ilani Highway will provide additional capacity which will be able to accommodate the additional traffic volume from the Master Plan for Alternative 1 as well as increased traffic from growth in West Maui. It is estimated that the Level of Service (LOS) of the highway will be C or better. Refer to **Appendix "~~MP~~"**.

The adoption of the MIP on December 28, 2012 deleted the area makai of Honoapi`ilani Highway from the Urban and Rural Growth Boundaries.

Alternative 2 is consistent with the MIP and proposes the housing units and commercial uses mauka of Honoapi`ilani Highway. Since publication of the Draft EIS, new traffic counts were conducted in 2013 and is included in the final TIAR prepared by Roger D. Dyar, consulting transportation engineer. Refer to **Appendix "P-1"**. The Final TIAR includes a 25 percent internal capture rate recommended by the HDOT and a 64 percent internal capture rate recommended by the transportation consultant.

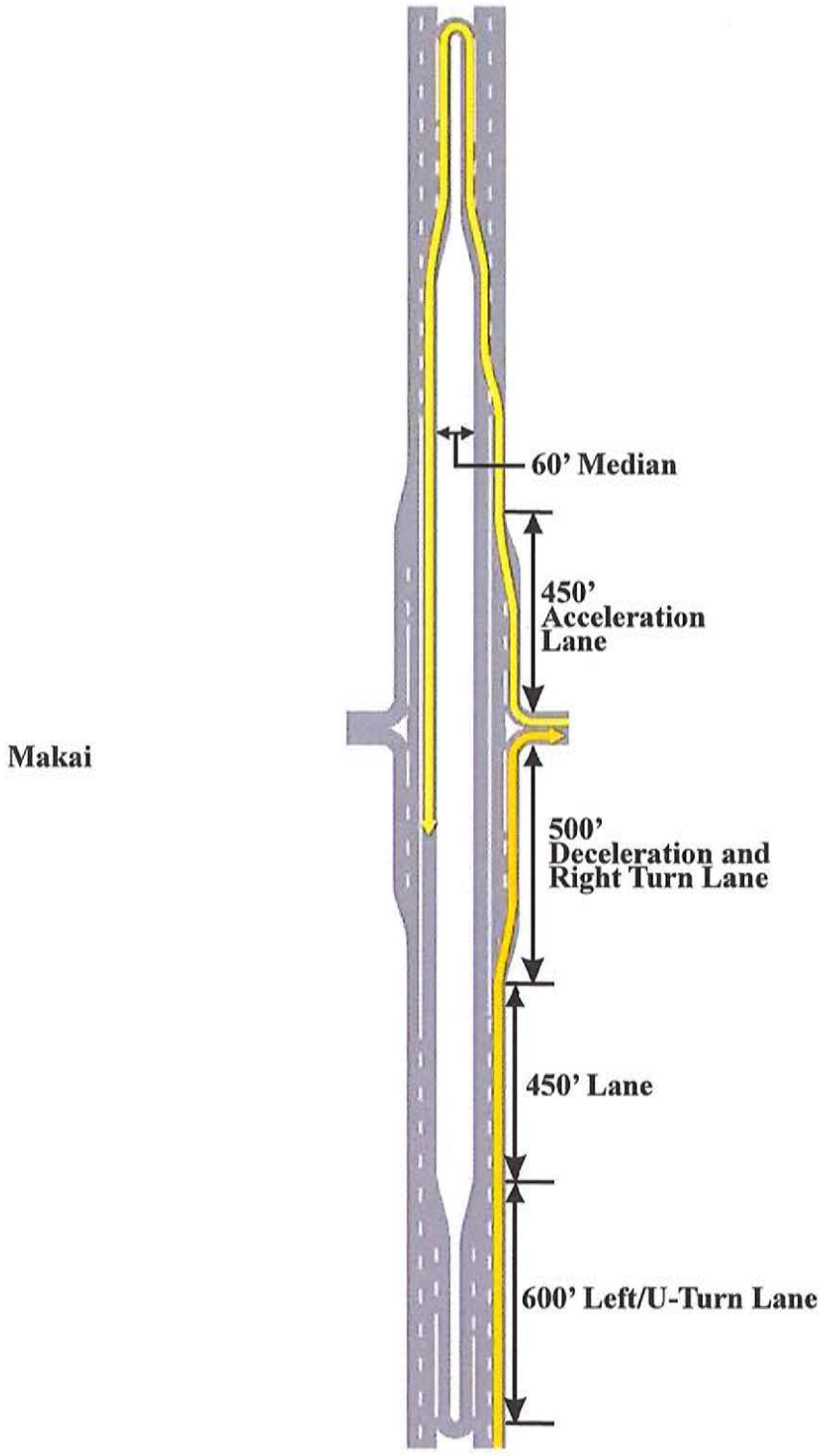
To maintain continuous through traffic on the relocated Honoapi`ilani Highway, the Master Plan for Alternatives 1 and 2 proposes to install two (2) "O-Turns" also known as "Michigan U-Turns" as well as a third restricted right-in/right-out access point near the Mā`alaea-side terminius of the relocated highway. See **Figure ~~17~~26**. The "O-Turn" works by preventing drivers from making left turns across traffic at would-be intersections. Drivers safely take a U-Turn with the help of merge lanes and enter into the flow of traffic going in the opposite direction. Then by merging to the right lane, drivers may turn right and reach their destination. Olowalu Town, LLC and Olowalu Ekolu, LLC have had several meetings with the HDOT which have been encouraging in terms of utilizing the "O-Turn" design in the HDOT highway system.

The Preliminary TIAR concluded the following:

1. The preliminary plan and roadway access plan indicates that the roadway capacity will be sufficient to accommodate the traffic added by the Master Plan.

2. The analysis of the daily capacity and traffic flow indicates the proposed roadway and access system will be sufficient.

In coordination with the HDOT, an updated TIAR was prepared. The updated TIAR recommends the following:



Source: Roger D. Dyar Consulting Transportation Engineer

Figure ~~17~~26 Proposed Olowalu Town Master Plan
O-Turn Concept

NOT TO SCALE

MUNEKIYO HIRAGA

Prepared for: Olowalu Town, LLC and Olowalu Ekolu, LLC

1. The proposed access plan should be approved with the O-turns. The design of the O-turns should include the following general concepts:

   A. For both O-turns there should be channelized right turns exiting the town on both sides of Honoapi`ilani Highway for traffic entering from both makai and mauka of the highway. There should be acceleration lanes in conformance to HDOT standards associated with the channelized right turns.

   B. For both O-turns there should be channelized right turns for traffic entering the town both makai and mauka of the highway with deceleration lanes. These should have added lanes into the town so as to allow free flow off the highway. At some point there would need to be tapers down to the expected internal roadway design.

   C. At the U-turn locations in each direction in each O-turn, there should be acceleration lanes for traffic entering Honoapi`ilani Highway that would then merge over to enter the right turn deceleration lanes to enter the town.

   D. The O-turns, including the actual locations for U-turns should be designed to accommodate trucks as per HDOT standards.

   E. Adequate signing for the new town should be provided to provide advice of destinations for drivers on Honoapi`ilani Highway. It will be necessary to distinguish between the portions of the town makai and mauka of the highway with names or a naming convention to be determined. This is needed so as to eliminate confusion for first-time visitors to the town so that they get into the proper deceleration lane for travel into the correct O-turn both makai and mauka of the highway.

   F. Provisions should be made to include technology and accommodations for a "smart highway" in the design phase. This might include the provision of video cameras and other detection devices that could be part of an HDOT or island operated traffic center in the future. Provisions for potential underground conduit should be considered in the utility plan development process.

   G. Provisions for adequate roadway lighting should be considered early in the design process.

H. Provision for pedestrian facilities along Honoapi`ilani Highway should be considered early in the design process. While it is anticipated the town plan will include a grade separated access from makai of the highway to mauka of the highway, there should also be considerations given to the possibility of pedestrian and bicycle crossings of the highway to and from the town and/or along any pathways adjacent to the highway in the future. This effort will need to take into account any HDOT standard policies for non-motorized traffic facilities and amenities.

2. A staging plan will be required for the future for the anticipated building of the new highway and for the transition from the existing highway to the new divided highway facility.

3. There should be consideration of a staging plan wherein one O-turn may be built at a time with some sort of temporary access for the other location(s). Additional study would be needed at some point in the future for this possible scenario. Generally this would be covered in the HDOT stipulation for an update of this report every three (3) years.

4. There should be some consideration to the possible removal of the right-in, right-out (RIRO) if the O-turns are going to be the access plan. This is due to the close proximity of the RIRO to the O-turn location on the south side of the Olowalu Town Access 2. If the RIRO were removed it would provide a longer distance for stacking for the O-turn as well as longer acceleration lane lengths. Since the volume using the RIRO is so low, it is expected the net effect on the other two (2) main access points would be negligible. This option can be reviewed further as the development takes shape. It may be desirable to retain a RIRO further south as an emergency access only.

The Final TIAR has been submitted to the HDOT. Coordination with the HDOT is considered an ongoing process, with actions and agreements evolving as conditions change over time. In this regard, the HDOT's review of the Final TIAR is addressed as an unresolved issue.

As the Master Plan for Alternatives 1 and 2 progresses and more specific plans are developed and more specific land use entitlements are requested, additional traffic study and assessments will be conducted ~~to provide:~~for each phase of development.

~~1. A detailed analysis of peak hour conditions for Olowalu Town.~~

~~2. A detailed analysis of traffic movements, internal and external of Olowalu Town.~~

~~3. A detailed analysis of options for new highway access and traffic control, including a comparative assessment of O-turn and conventional traffic signals.~~

2. Water

a. Existing Conditions

Ground Water Resources

According to the Impacts on Water Resources Study prepared by Tom Nance Water Resource Engineering (Refer to **Appendix "~~C~~D"**), the State of Hawai`i Commission on Water Resources Management (CWRM) in its 1990 Water Resources Protection Plan (WRPP) set the sustainable yield for the Olowalu Aquifer System as three (3) million gallons per day (MGD) based on: 1) recharge to groundwater of four (4) to seven (7) MGD; 2) the assumption of all of the developable supply is basal groundwater with an initial head (i.e. water level) of five (5) feet; and 3) an analytical method that, for the basal groundwater conditions assumed, calculated that 44 percent of the aquifer's recharge can be developed as its sustainable yield. In 2008, the CWRM reduced the sustainable yield to two (2) MGD using the lower end of the estimated aquifer recharge.

Recharge calculations utilized by the CWRM are based on annual averages of rainfall, surface runoff, and evapotranspiration (ET). In relatively dry areas such as Olowalu, the use of annual averages to compute recharge often results in an overestimate of ET and a resulting underestimate of recharge and the sustainable yield as illustrated in the U.S. Geological Survey (USGS) Scientific Investigations Report 2007-5103. Using a daily time step method of computation, the USGS calculated the recharge to be 16 MGD.

The USGS Scientific Investigation Report 2012-5010 modified the method of computing recharge in the earlier 2007 USGS report. These modifications resulted in a slight increase in the weighted average recharge in the Olowalu Aquifer from 16.12 MGD (USGS, 2007) to 17.15 MGD (USGS, 2012).

Using the CWRM methodology to derive the sustainable yield from recharge, the USGS study suggests that the Olowalu Aquifer System may have a developable supply on the order of seven (7) MGD.

During the plantation period, Pioneer Mill Company developed two (2) wells ("O" Pump and "N" Pump) for irrigation purposes. Both wells are capable of producing 1.0 MGD of slightly brackish water suitable for supplemental irrigation use.

Water quality samples were taken from the Olowalu Wells and Olowalu Stream, as identified in **Table 38**.

Table 38. Water Quality of Samples from Olowalu Wells and Olowalu Stream

Sample Location	Sample Date	Forms of Nitrogen				Forms of Phosphorus			Silica (µM)	Salinity (PPT)
		NO_3 (µM)	NH_4 (µM)	DON (µM)	TN (µM)	PO_4 (µM)	DOP (µM)	TP (µM)		
Olowalu-Elua Well	6-11-10	4.00	0.90	16.70	21.60	0.70	1.60	2.30	760	0.175
Olowalu-Elua Well	6-09-11	7.60	39.40	12.50	12.50	0.64	1.36	2.00	726	0.183
Olowalu Shaft - Pump N	6-11-10	34.40	2.10	2.80	2.80	3.30	1.70	5.00	844	0.294
Olowalu Stream at 520'	6-11-10	0.40	0.80	20.20	20.20	0.60	1.70	2.30	721	0.160
Olowalu Stream at 210'	6-11-10	0.20	0.80	22.40	22.40	0.40	1.50	1.90	698	0.177

Notes:
1. Samples collected by Tom Nance of TNWRE
2. Water quality analyses by Marine Analytical Specialists.
3. The symbol µM stands for micro-molar. To convert µM to milligrams per liter (mg/l), multiply by the atomic weight and divide by 1000.

NO_3 = Nitrate
NH_4 = Ammonium
DON = Dissolved Organic Nitrogen
TN = Total Nitrogen
PO_4 = Phosphate
DOP = Dissolved Organic Phosphorus
TP = Total Phosphorus
Source: Tom Nance Water Resource Engineering

The water chemistry at the lower site was identical to the upper site, indicating that the water had emerged into the stream was probably discharged from high level ground compartments. Refer to **Appendix "D"**.

Surface Water Resources

Surface runoff results from the inefficiencies of Olowalu Ditch and the changes to rainfall-runoff. As observed in 2010, water diverted from the stream into the ditch was estimated to be about two (2) MGD. The flowrate recorded prior to discharge into the open storage reservoir was less than 0.9 MGD. The difference is attributed to leakage in transit, with essentially all of that leakage returning back to the stream and ultimately disappearing into the streambed below the 200-foot elevation.

Olowalu Water Company

The County of Maui, Department of Water Supply (DWS) presently does not service the Olowalu area. Water supply for the limited number of residential and commercial uses (including the Master Plan area for Alternatives 1 and 2) in the Olowalu area is provided by Olowalu Water Company, Inc. (OWC). OWC is a privately owned public water system (PWS) identified as DOH Public Water System No. 209 and State Well No. 4937-02, regulated by the State of Hawai`i, Public Utilities Commission (PUC). OWC provides both ~~potable~~drinking water and non-~~potable~~drinking irrigation water for residents and agricultural uses in Olowalu. The OWC received a Certificate of Public Convenience and Necessity (CPCN) from the PUC to provide ~~potable~~drinking water service in August of 2000. In November 2003, OWC amended the CPCN to add the sale of irrigation water from its ~~potable~~drinking and non-~~potable~~drinking water systems.

On August 17, 2011, the PUC approved a water rate increase to OWC for a total annual revenue increase of approximately $43,000.00 for its operating expenses. On March 12, 2012, the rate for both drinking and non-drinking water increased (Olowalu Water Company, 2015).

Water sources are from groundwater and surface water sources. The ~~potable~~drinking groundwater source is from the Olowalu Elua Well located

approximately 4,500 feet inland of the ocean at an elevation of 205 feet above mean sea level (MSL), and 100 feet west of Olowalu Stream.

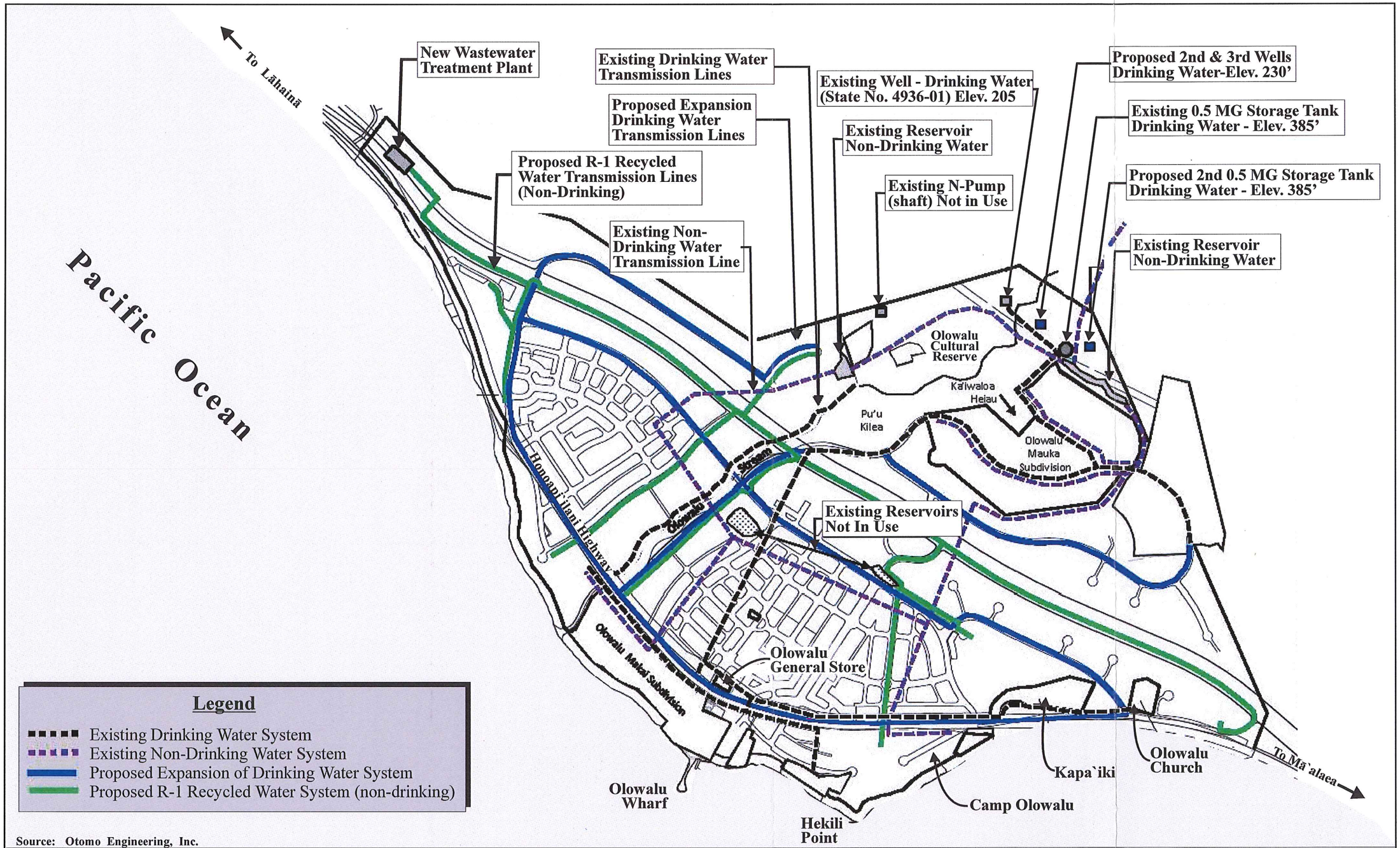
The Olowalu Elua Well provides freshwater with very low chlorides of 20 milligrams per liter (mg/L). The current pumping capacity of the well is approximately 250 gallons per minute (GPM) or 0.36 MGD. The extrapolation of the well's specific capacity suggests that it may be capable of producing approximately 400 GPM or 0.6 MGD. A 500,000 gallon storage tank with a 385-foot spillway is located above the Olowalu Mauka Subdivision. See **Figure ~~18~~27**.

The non-~~potable~~drinking surface water used for irrigation is provided by an existing diversion in Olowalu Stream at the 502 foot elevation, a 1.1-mile long conveyance ditch and tunnel system, and a main lined open storage reservoir at about the 360 foot elevation. The low head diversion dam on Olowalu Stream and conveyance ditch system is referred to as the Olowalu Ditch. There are also three (3) other lower elevation and unlined reservoirs, one (1) of which is still in use. Historically, the ditch system has averaged four (4) to five (5) MGD and daily flows have rarely dropped below two (2) MGD.

Year-round average supply from the PWS has varied between 0.04 and 0.06 MGD with an approximate year round average of 0.055 MGD. This system also provides fire protection to the existing Olowalu Mauka and Makai subdivisions.

b. <u>Potential Impacts and Mitigation Measures</u>

According to the Preliminary Engineering Report (PER) prepared by Otomo Engineers (Refer to **Appendix "~~B~~C"**), preliminary estimates indicate the average daily ~~potable~~drinking water demand for the Master Plan will be approximately 672,300 gpd, ~~which includes the users of the existing water system.~~due to sustainable measures proposed by LEED ND and incorporated into the Master Plan for Alternatives 1 and 2. The standards used in the PER reflect this reduced usage of water and for planning purposes is based on an estimated 900 single-family units and 600 multi-family units. The approximate 672,300 gpd is the total average daily demand for all drinking water uses, including the existing users of the existing water system.



Legend

- Existing Drinking Water System
- Existing Non-Drinking Water System
- Proposed Expansion of Drinking Water System
- Proposed R-1 Recycled Water System (non-drinking)

Source: Otomo Engineering, Inc.

Figure ~~18~~27

Proposed Olowalu Town Master Plan

Existing and Conceptual Water System

NOT TO SCALE

MUNEKIYO HIRAGA

Prepared for: Olowalu Town, LLC and Olowalu Ekolu, LLC

OlowaluTown/MasterPl/Final EIS/ExistConceptWaterSystem

For comparison, the DWS's current planning standard for single-family units is 600 gpd and 560 gpd for multi-family units, which is higher than the standards used in the PER. Based on the DWS standards it is estimated that water for the single-family units would be approximately 540,000 gpd and 336,000 gpd for the multi-family units, totaling 876,000 gpd for the 1,500 new units. It is further estimated that water usage for the existing users including full buildout of the 14-lot Olowalu Mauka Subdivision will be approximately 75,000 gpd. Based on the DWS standards it is estimated the average daily demand for water will be approximately 951,000 gpd which is within the sustainable yield of the Olowalu Aquifer of 2.0 MGD established by the CWRM.

The existing water system will require the installation of a second well to meet the increased demand and a third well for back-up purposes. A new storage tank will also be constructed near the existing storage tank to meet the storage requirements of the project. Distribution lines will be installed from the storage tanks throughout the project site and will also include the installation of fire hydrants at appropriately spaced intervals. Refer to **Figure ~~18~~27**.

The maximum fire flow demand for the project will be based on the commercial and multi-family portions of the development at 2,000 GPM for a two- (2) hour duration with a maximum hydrant spacing of 250 feet. The DWS standards also require a minimum flow of 500 GPM with 500 foot hydrant spacing for agricultural use and 1,000 GPM with 350 foot hydrant spacing for rural and single-family residential uses. The existing water system providing fire protection to the Olowalu Mauka and Makai subdivisions will need to be upgraded to provide fire protection to the Master Plan area. The Applicants also propose to upgrade the water system to Olowalu General Store and Kapa`iki. Refer to **Figure ~~18~~27**.

For irrigation purposes, it is estimated that the Master Plan for Alternatives 1 and 2 will need approximately 0.65 MGD of water. A key component of the Master Plan's Integrated Resource Management Plan for Alternatives 1 and 2 is to significantly reduce or eliminate the use of ~~potable~~ groundwater (for drinking purposes) for irrigation needs. As such, irrigation water will be provided by multiple sources, including 0.24 MGD of R-1 water from the wastewater system, 0.39 MGD from surface water supplied by the Olowalu Ditch, and 0.02 MGD (as a year-round average) would be periodically

supplemented by Pumps "N" or "O". The existing non-~~potable~~drinking water system will be expanded to service the Master Plan for Alternatives 1 and 2 to include additional storage and distribution lines, as necessary.

These improvements will provide sufficient and reliable water supply to meet the ~~potable~~drinking, non-~~potable~~drinking and fire protection needs of the Master Plan for Alternatives 1 and 2 and existing users.

Water Resources

It is estimated that groundwater discharged at the shoreline will be reduced by six (6) percent, with an increase in nitrogen by 10 percent and a decrease in phosphorus by about one (1) percent ~~and is~~. These changes are not anticipated to have an impact on water quality. Refer to **Appendix "~~C~~D"**.

~~As projected,~~For planning purposes, the estimated 900 single-family and 600 multi-family units of the Master Plan ~~will~~for Alternatives 1 and 2 and the existing users is estimated to require approximately ~~0.60~~0.95 MGD of groundwater for ~~potable~~drinking water use and 0.02 MGD of brackish water from Pump "N" or "O" for irrigation use. This will increase the use of groundwater to ~~0.70~~0.97 MGD, including the existing users of ~~potable~~drinking water. The projected future groundwater use of ~~0.70~~0.97 MGD is ~~substantially below~~within the sustainable yield of two (2) MGD established by the CWRM.

Of the estimated 0.65 MGD of water needed for irrigation purposes, approximately 0.39 MGD would be provided by surface water supplied by the Olowalu Ditch. The Olowalu Ditch is estimated to transport approximately two (2) MGD while only 0.9 MGD discharges into the storage reservoir due to leakage. Appropriate repair and maintenance of the ditch will supply the additional surface water needed for irrigation and will not create a difference in surface water discharge at the shoreline by Olowalu Stream.

3. Wastewater Systems

a. Existing Conditions

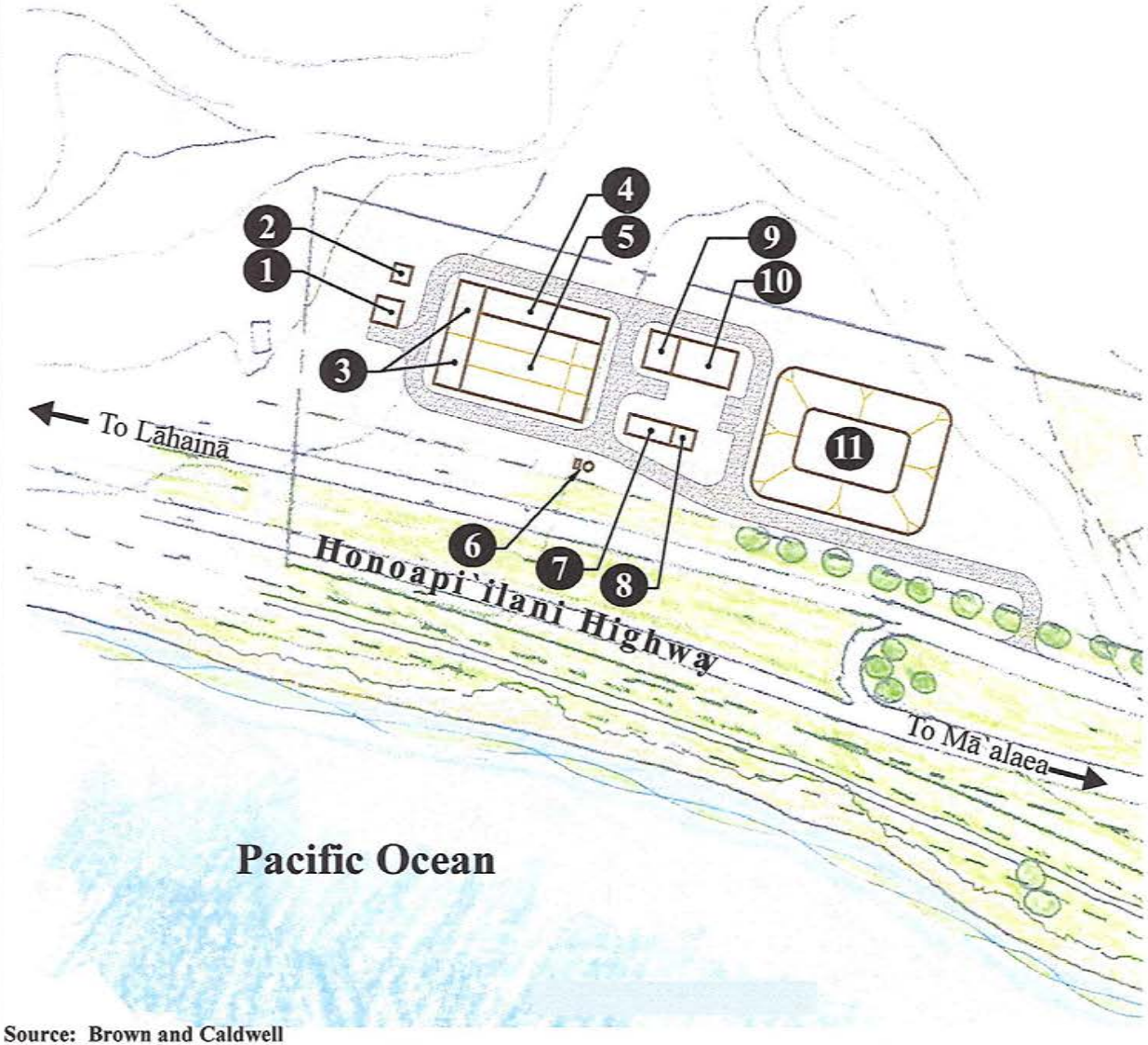
There are no County operated wastewater disposal facilities in the Olowalu area. The Olowalu community is serviced by independent private wastewater facilities. The residents at Kapa`iki have individual cesspools.

b. Potential Impacts and Mitigation Measures

A Wastewater Management Plan was prepared by Brown and Caldwell. See **Appendix "~~N~~Q"**. Based on County of Maui standards it is estimated that the Master Plan for Alternatives 1 and 2 will generate approximately 0.525 MGD of wastewater at buildout. A wastewater management plan was developed to handle the wastewater generated by the Master Plan for Alternatives 1 and 2 in accordance with the following goals:

- No injection wells for effluent disposal purposes.
- Provide for a high degree of water recycling to make the best use of water resources.
- Incorporate nutrient removal technology to protect the environment.
- Incorporate natural treatment systems where feasible and appropriate.
- Use conservative planning assumptions to ensure a high factor of safety.
- Meet or exceed all regulatory requirements.

Wastewater generated by the Master Plan for Alternatives 1 and 2 will be collected and pumped to a Wastewater Treatment Plant (WWTP) to be located adjacent to the Olowalu Recycling and Refuse Convenience Center, where the wastewater will be treated to DOH R-1 recycled water standards and Total Nitrogen (TN) reduced to less than 10 milligram/Liter (mg/L). The conceptual site plan for the WWTP identifying the components of the WWTP are shown in **Figure ~~19~~28**. Conceptually, the R-1 recycled water will be pumped to a storage tank located above the Olowalu Mauka subdivision to be used for irrigation. Supplemental groundwater will be added to the storage tank when



KEY

1. Headworks
2. Biofilter
3. Equalization Basins
4. Aerobic Sludge Digester
5. Membrane Bioreactor
6. Plant Drain Pump Station
7. UV Disinfection
8. Effluent Pump Station
9. Sludge Dewatering
10. Operations Building
11. Emergency Storage Basin

Source: Brown and Caldwell

Figure ~~19~~28

Proposed Olowalu Town Master Plan

Conceptual Wastewater Treatment Plant Site Plan

NOT TO SCALE

MUNEKIYO HIRAGA

Prepared for: Olowalu Town, LLC and Olowalu Ekolu, LLC

the R-1 recycled water supply is insufficient to meet the irrigation demands of the Master Plan for Alternatives 1 and 2. During wet weather periods there may be excess recycled water that will require disposal by innovative natural treatment systems dependent primarily on natural components (e.g., vegetation, soil, etc.), which include a constructed wetland and soil aquifer treatment system. It is estimated that 90 percent of the recycled water will be used for irrigation purposes over the course of an average precipitation year.

The wastewater management system will include two (2) natural treatment systems that depend primarily on natural components to dispose of the excess recycled water. Such systems are designed to protect the environment by providing additional treatment benefits. The natural treatment systems include a constructed wetland and a soil aquifer treatment system. Refer to **Appendix "~~N~~Q"**.

The constructed wetland will be sized to treat the entire peak day wet weather flow of approximately 2.01 MGD and include open water areas and will provide additional (effluent polishing) treatment of recycled water as it flows through the wetland by naturally-occurring bacteria attached to the submerged vegetation, as well as by physical and chemical processes. The wetland will also provide bird habitat and a public open space amenity accessible to walking paths.

A soil aquifer treatment system will be used to dispose of excess recycled water after it has received the additional treatment benefits ~~that the~~. During most months the basins will be dry. During the wet winter months there may be excess recycled water that will flow to the soil aquifer treatment system. There will be additional treatment benefits, such as reduction of nutrients, and the removal of heavy metals, trace organic compounds and endocrine disrupting chemicals as the recycled water percolates through the soil at the bottom of the basins.

At full buildout, the wastewater treatment plant is expected to produce approximately nine (9) wet tons of sludge per week or about one (1) truck load. The dewatered sludge will be trucked to the Central Maui Landfill for processing with other wastewater sludge generated on the island. Currently, wastewater sludge is composted at the landfill. The proposed wastewater management system meets its goals, as follows:

- The project will not have injection wells for effluent disposal purposes.

- Provision of a high degree of water recycling to make the best use of water resources.

- Incorporation of non-chemical nutrient removal technology to protect the environment.

- Incorporation of natural treatment systems.

Through addressing the foregoing system goals, the Master Plan ~~is~~for Alternatives 1 and 2 is not anticipated to create significant adverse impacts on the environment and community.

4. Drainage

a. Existing Conditions

According to the PER, there are no existing drainage improvements within the project area. However, there are several unnamed drainageways that traverse the site in the north to south direction, as well as Olowalu Stream which direct both onsite and offsite surface runoff towards Honoapi`ilani Highway, which acts as a berm retaining or trapping a majority of the runoff mauka of the highway. Existing swales along the highway convey runoff into the HDOT drainage system consisting of grated inlet catch basins and inlet headwall structures which intercept surface runoff along the highway shoulder and conveys it under the highway via several drainage culverts to allow runoff to continue downstream into the ocean.

There are several retention basins and drainage culverts within the surrounding existing subdivisions and improved areas that have been developed. The existing retention basins were designed to accommodate only the increase in surface runoff due to the development of those areas.

There are four (4) distinct drainage areas within the Olowalu area that extend mauka. It is estimated that the existing onsite runoff for a 100-year, 24-hour storm from the four (4) drainage areas within Olowalu is approximately 1,010

cubic feet per second (cfs) and approximately 322 acre-feet of runoff volume. Refer to **Appendix "BC"**.

b. Potential Impacts and Mitigation Measures

The PER estimates the post development runoff from the built out Master Plan for Alternative 1 for a 100-year, 24-hour storm will be approximately 1,710 cfs and approximately 395 acre-feet of runoff volume, creating an increase of 700 cfs and 73 acre-feet of runoff volume. Alternative 2 involves a reduced drainage area and is estimated to have an onsite runoff volume of 57 acre-ft. See **Appendix "C-1"**.

According to the PER, the project will not involve significant alterations to the existing drainage pattern. Runoff will be collected by various methods, such as curb and grated inlet catch basins and conveyed by an underground drainage system to onsite retention basins and underground retention systems within the Master Plan area for Alternatives 1 and 2. The retention basins will generally be located within the parks and open space areas throughout the Master Plan area for Alternatives 1 and 2. The Master Plan for Alternatives 1 and 2 proposes approximately 223 acres and 200 acres, respectively, for parks and open space throughout the project, of which approximately 140 acres are available for drainage improvements. Approximately 15 to 20 percent of the 140 acres would be utilized for stormwater retention. Overflow from the retention basins will be allowed to continue downstream along the existing drainage pattern at no greater than pre-development rates. Project implementation, therefore, will not have an adverse effect to downstream properties and the nearshore environment. It is noted that Alternative 2 will retain the area makai of Honoapi`ilani Highway in its existing uses. Drainage patterns and existing conditions will remain unchanged. Refer to **Appendix "C-1"**.

The existing drainageways and Olowalu Stream traversing the Master Plan area for Alternatives 1 and 2 will remain generally in its natural condition except at road crossings where appropriate sized drainage culverts will be installed to allow runoff to continue downstream. The area around the drainageways will be graded and vegetated such that it will not have the existing runoff rates increased by the addition of runoff from the project improvements. The improvements will be designed in accordance with

Chapter 4, "Rules for the Design of Storm Drainage Facilities in the County of Maui".

The Master Plan for Alternatives 1 and 2 will be able to utilize the existing relatively flat topography with slopes between three (3) and five (5) percent and limit the need for extensive grading. Site specific grading plans and Best Management Practices (BMPs) will be developed to include construction and long-term measures to reduce erosion and mitigate adverse impacts to the environment.

The Stormwater Quality Enhancements Study for the Master Plan for Alternatives 1 and 2 proposes to implement an aggressive stormwater quality management program that aims to reduce the amount of stormwater from a development and to improve the quality of the runoff that occurs. The goals of the BMPs for the Master Plan for Alternatives 1 and 2 are as follows:

- Increase the volume of stormwater that infiltrates into the soil.
- Reuse stormwater where feasible.
- Improve the quality of stormwater that does run off.

To accomplish these goals, stormwater BMPs are being considered for the project as previously identified in **Table ~~10~~21**. Implementation of BMPs will reduce the amount of stormwater runoff from the project and improve the quality of the runoff that may occur. These BMP measures will reduce adverse impacts to downstream properties and the nearshore environment due to runoff from the Master Plan area for Alternatives 1 and 2. Refer to **Appendix "~~B-1~~C-2"**.

5. Electrical, Telephone and CATV Considerations

a. Existing Conditions

Electrical power and telephone service are provided to the Olowalu area by Maui Electric Company, Ltd. (MECO) and Hawaiian Telcom, via overhead lines along Honoapi`ilani Highway. MECO's 69 kilovolt overhead transmission lines from Central Maui to the Lāhainā-Kapalua area extend

along the lands situated mauka of the Honoapi`ilani Highway. Oceanic Time Warner does not currently provide cable service to the Olowalu area.

b. Potential Impacts and Mitigation Measures

Coordination with MECO and Hawaiian Telcom will be undertaken to ensure that all electrical and telephone service requirements for the proposed project are adequately addressed. Electrical and telephone distribution systems will be extended to serve the Master Plan for Alternatives 1 and 2. As the population increases in OTMP, the Applicants will coordinate with the cable company to discuss cable expansion requirements.

It is noted that energy saving measures prescribed by the U.S. Green Building Council will be utilized in all vertical construction. The principles of the LEED Green Building Rating System will be employed to advance energy sustainability principles envisioned for the Master Plan for Alternatives 1 and 2. Moreover, renewable energy systems will be further studied and explored ~~by the project's Natural Resource Engineer~~ as project planning continues. Examples of such systems include the use of photovoltaic-generated energy to pump R-1 effluent from the project's wastewater treatment system to higher elevation storage tanks or reservoirs. The use of hydro-power from Olowalu Stream flows or from the gravity flow of the R-1 recycled water leaving the storage tanks or reservoirs may also be considered as part of the project's utilization goal for energy efficient and sustainable systems.

As the project progresses through the development process, the following LEED ND recommendations will be considered for the Master Plan for Alternatives 1 and 2:

- Encourage the design and construction of energy-efficient buildings that reduce air, water, and land pollution and adverse environmental effects from energy production and consumption.
- Design or construct buildings beyond the prerequisite, to be certified under LEED green building rating systems.
- For new single-family residential buildings and new multi-unit residential buildings three (3) stories or fewer, 90 percent of the buildings must achieve a Home Energy Rating System (HERS) index score of at least 75.

- Encourage building orientations that provide natural lighting and cooling effects to reduce dependency on artificial lighting and air conditioning.

- Incorporate on-site nonpolluting renewable energy generation, such as solar, wind, geothermal, small-scale or micro hydroelectric, and/or biomass, with production capacity of at least five (5) percent of the project's annual electrical and thermal energy cost.

- Encourage the development of energy-efficient neighborhoods by employing district heating and cooling strategies that reduce energy use and adverse energy-related environmental effects.

- Design, purchase, or work with the local government to install all new infrastructure, including but not limited to traffic lights, street lights, and water and wastewater pumps, to achieve a 15 percent annual energy reduction below an estimated baseline energy use for this infrastructure.

E. CUMULATIVE AND SECONDARY IMPACTS

1. Context for Cumulative Impact Analysis

Pursuant to Section 11-200-2 of the HAR, Chapter 200, entitled Environmental Impact Statement Rules, a cumulative impact means:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

A key element in understanding the requirement for assessing cumulative impacts, therefore, is the need to recognize what constitutes "reasonably foreseeable actions". Projects having relevance in this regard are the land use entitlements in Olowalu which are identified on the West Maui Community Plan, which include Kapa`iki and the surrounding agriculture designated lands.

2. Cumulative Impact Evaluation Parameters

To ensure that cumulative impacts are analyzed in a structured and systematic manner, parameters described in **Table ~~2139~~** have been used to address cumulative effects.

Table ~~21~~39. Criteria for Evaluating Cumulative Impacts

Assessment Criteria	Basis for Impact Evaluation
Time Crowding	Effects of frequent and repetitive actions on the environment
Time Lags	Delayed effects of a proposed action
Space Crowding	Effects of spatial density on the environment
Cross Boundary	Effects of an action occurring away from the source
Fragmentation	Effects or changes in landscape pattern
Compounding Effects	Effects arising out of multiple pathways
Indirect Effects	Secondary effects
Triggers and Thresholds	Effects defined by agency laws, policies or regulations

3. Methodology for Addressing Cumulative Impacts

A list of potential cumulative impact issues and concerns were identified through full review of comment letters received on the ~~EA/EISPN~~Draft EIS. While the issues and concerns addressed a broad range of impact considerations, screening of these issues and concerns was required to ensure that the scope of the cumulative impact assessment fell within the scope of a "cumulative impact" analysis, as set forth in Section 11-200-2 of the HAR, Chapter 200. Issues and concerns relating to cumulative impacts, as well as secondary impacts are listed below:

1. Impacts on natural resources, such as coastal ecosystems

2. Impacts to archaeological and cultural resources, including traditional and customary practices

3. Impacts of the proposed action on neighboring land uses, (e.g., Kapa`iki, Olowalu Makai Subdivision ~~and~~, 14-lot Olowalu Mauka Subdivision, and Olowalu General Store)

4. Implementation relationship between Master Plan for Alternatives 1 and 2 and the provision of infrastructure and public facilities systems

5. Impacts on State and County transportation systems (e.g., Honoapi`ilani Highway)

6. Impacts of the proposed action on shoreline access and recreational use of the shoreline

7. Impacts to the County land use plans

8. Impacts to the County water resources

The next step in the analysis involved the identification of applicable evaluative criteria to each of the issues and concerns raised. This step resulted in the formulation of an evaluative criteria matrix, as presented in **Table ~~22~~40**.

Table ~~22~~40. Evaluation Criteria Matrix

Assessment Criteria	Issues to be Addressed
Time Crowding	a. Impacts to natural resources b. Effects on water resources c. Impacts on archaeological and cultural resources d. Impacts on shoreline access and recreation
Time Lags	a. Impacts on County land use plans b. Effects on County water resources c. Effects on the State and County transportation systems
Space Crowding	a. Impacts to existing neighboring land uses b. Impacts to water resources c. Impacts on natural resources d. Impacts on archaeological and cultural resources
Cross Boundary	a. Effects on County land use plans b. Effects on State and County transportation systems
Fragmentation	a. Impacts upon existing neighboring land uses
Compounding Effects	a. Impacts on County land use plans b. Impacts on infrastructure systems and public services
Indirect Effects	a. Impacts to County land use plans b. Impacts on infrastructure systems and public services
Triggers and Thresholds	a. Effects on water resources b. Effects on State and County transportation systems

4. Cumulative Impact Assessment

Based on the methodology described in the previous sections, an analysis of each assessment criteria was undertaken for each applicable issue/concern. The analyses are presented below.

a. **Time Crowding Effects on Natural Resources, Water Resources, Archaeological and Cultural Resources and on Shoreline Access and Recreation**

Time crowding refers to the repetitive and frequent effects from an action upon a particular component of the environment. For example, from a natural resource perspective, time crowding effects may be possible depletion of a resource or opportunity based on recurring impacts on that resource or opportunity.

Natural Resources

Natural resources having a potential time crowding relationship to the Master Plan for Alternatives 1 and 2 include marine waters, marine biota, flora and fauna. The time crowding effect associated with marine waters, for example, includes potential water quality degradation, with repetitive contributions of stormwater runoff from the project site. The time crowding effect on flora and fauna relates to displacement of onsite flora and fauna and their habitat on an incremental basis over the anticipated construction build-out period.

With regard to the marine biota and flora and fauna, biological resource investigations have concluded that populations of reef fish in the area are typical of Hawai`i reefs ~~and there are no rare,~~. No threatened or endangered species ~~or their habitat~~ were found within the Master Plan area and along its offshore waters.

The endangered nēnē goose may use a portion of an irrigated pasture as a temporary habitat. Development of the Master Plan will retain some of the existing reservoirs that will remain available for wildlife. No mitigation measures are necessary. The OCR has succeeded in cultivating native dry land species which the Master Plan for Alternatives 1 and 2 will incorporate in its landscaping, to the extent practicable. Refer to **Appendices "D", "E"** ~~and "E-1"~~, **"F"**, and **"F-1"**.

~~With respect to marine waters, appropriate stormwater runoff mitigation will be required in accordance with County drainage regulations.~~ Information received from NOAA, NMFS identified three (3) marine species protected under the ESA. They included the threatened green sea turtle, endangered

hawksbill sea turtle, and endangered Hawaiian monk seal. Consultation with USFWS and NOAA will continue through project design to ensure the protection of ESA protected species, such as designing the outdoor lighting to be shielded and directionally downward. Measures such as developing an educational program, including appropriate signage within the project limits, to inform residents and visitors to Olowalu of the need to minimize human disturbances and interactions with Hawaiian monk seals will be coordinated with USFWS and NOAA. Although not listed under the ESA, it was noted by several commenters of the Draft EIS that the Olowalu waters are home to manta rays and is a nursery for black tip reef sharks, as well as frequented by tiger sharks.

Sediments from stormwater runoff is a major stressor of corals in the area. The OTMP proposes implementation of Stormwater Quality Enhancements (refer to **Table 21** and **Appendix "C-2"**) to reduce sediments and stormwater runoff from entering the ocean.

Proposed surface and subsurface retention basins, as well as LID measures in the Stormwater Quality Enhancements (refer to **Appendix "C-2")**, will handle 100 percent of the increased stormwater runoff from the project at full build-out as well as retaining a portion of the pre-development runoff. Project plans will also include mechanical filtration measures to mitigate impacts to the ocean's water quality. Properly managed, the use of the mechanical filtration measures and the retention basins with its natural filtering characteristics and implementation of the Stormwater Quality Enhancements and recommended BMPs will ensure that water quality degradation will not occur as a result of time crowding effects. It is anticipated the reduction of stormwater runoff to the ocean will improve water quality in the nearshore waters, especially at Olowalu Stream. Refer to **Appendices "BC"** and **"~~B-1~~C-2"**.

The implementation of BMPs and the reduction of stormwater runoff and sediments to the ocean primarily from Olowalu Stream is expected to improve the limited affected areas of the reefs off Olowalu and maintain the ecological settings unaffected by most human activities, with the exception of fishing. Refer to **Appendix "~~D~~E"**.

Water Resources

According to the Impact on Water Resources Study prepared by Tom Nance Water Resource Engineering, the Olowalu Aquifer has sufficient resource to accommodate existing users and the Master Plan. ~~Although the~~The CWRM in 2008 set the sustainable yield at two (2) MGD~~, the~~ using the low estimated recharge of 3.89 MGD. The 2012 USGS study suggests that the Olowalu Aquifer System may have a developable supply of approximately seven (7) MGD based on a higher estimated recharge of 16.12 MGD to 17.15 MGD. Preliminary calculations indicate that based on DWS standards at full build-out, utilizing for planning purposes 900 single-family and 600 multi-family units, it is estimated that daily ~~potable~~drinking water demand for the Master Plan ~~and~~, all existing users and the eventual buildout of the Olowalu Mauka Subdivision is approximately ~~672,300~~951,000 GPD, which is ~~well below~~within the threshold of the sustainable yield established by the CWRM. Refer to **Appendix "~~C~~D"**.

It is also estimated that approximately 0.65 MGD of total non-~~potable~~drinking water will be needed of which 0.24 MGD will be provided by the R-1 water from the wastewater system, and 0.39 MGD from surface water supplied by an improved Olowalu Ditch system that will reduce leakage from the system. Additionally, 0.02 MGD of brackish water (as a year round average) would be periodically supplemented by Pumps "N" or "O".

Archaeological and Cultural Resources

Several archaeological inventory surveys have been conducted within the project area. An Archaeological Literature Review was prepared by CSH for the proposed action. Refer to **Appendix "~~F-1~~G-1"**. Interim protection measures during construction will be implemented and long-term preservation measures shall be implemented in accordance with the Secretary of the Interior's Standards for Historic Preservation Projects to protect archaeological and cultural resources. As the Master Plan is developed during the ten (10) year period as may be required, site specific detailed archaeological surveys will be conducted and as appropriate, mitigation measures incorporated into the Master Plan, in consultation with SHPD.

A ~~Preliminary~~Final Cultural Impact Study prepared by CSH indicated there are traditional cultural practices that need to be preserved and safeguarded. Refer to **Appendix "H-1"**. Traditional access between the mountains and ocean, abundant ocean resources and rich forest resources need to be preserved and protected to ensure the quality of these resources are not degraded or over-used by the new residents and public. However, an increase in traditional Hawaiian fishing and gathering practices are viewed as a good thing.

Cultural participants noted that Olowalu, besides limu gathering, has excellent opportunities for fishing. The waters of Olowalu contain subsistence resources for the community and is known for its ʻōʻio, aku, and akule fishing. Concerns voiced included sediment-laden runoff and potential injection wells degrading the waters of Olowalu. As noted previously, measures proposed in the Stormwater Quality Enhancements are expected to reduce sediments and stormwater runoff from entering the ocean. Also, OTMP proposes to utilize a constructed wetland and soil aquifer treatment system to treat wastewater prior to reuse of the R-1 recycled water. These measures are proposed to mitigate potential impacts to water quality and marine resources at Olowalu. Refer to **Appendix "H-1"**.

The OCR will ensure that access between the mountains and ocean is maintained and preserved in perpetuity ~~and work~~. The ongoing work of the OCR includes the perpetuation of traditional Hawaiian agriculture, as well as restoration of native plants and historic properties, and educational and outreach programs developed by members of the OCR. Work in the OCR will safeguard the natural, archaeological and cultural resources in the Olowalu Ahupuaʻa. Development of the Master Plan for Alternatives 1 and 2 will incorporate environmental systems that will protect the environment. As such, adverse impacts to cultural resources are not anticipated.

Shoreline Access and Recreation

The shoreline area located within the State of Hawaiʻi beach reserve area is designated ~~as~~ "Conservation" ~~on the State land use map~~by the State Land Use Commission. The beach reserve is not included in the Master Plan for Alternatives 1 and 2. The Master Plan does not propose any changes to the SLU "Conservation" ~~designated lands~~district lands in ~~the Master Plan~~Olowalu. Accordingly, those lands will remain designated as

"Community Plan", "Open Space" or "Park" land under the West Maui Community Plan.

~~The~~As previously noted, the Master Plan observes an existing minimum 150 ~~feet~~-foot shoreline setback from the current shoreline where no development is proposed except for public access to and along the shoreline and non-structural recreational parks uses. It is noted that Alternative 1 encompasses both mauka and makai lands, while Alternative 2 covers land mauka of Honoapi`ilani Highway. Refer to **Figures 4** and **5**. The setback was established in 2000 as part of the SMA Use Permit granted for the Olowalu Mauka subdivison, as well as in~~In~~ recognition of potential concerns related to shoreline erosion and sea level rise that may result in an inland recession of the shoreline and disappearance of the beach reserve over time~~, a~~. The existing minimum 150-foot shoreline setback area will be maintained within the Master Plan during its development to prevent future endangerment of structures, as well as ensure public access to the shoreline. Refer to **Figure 4** and **Figure 5**.

Makai of the existing Honoapi`ilani Highway, the Master Plan for Alternative 1 proposes establishing significant land areas as "Open Space" or "Park" to provide continuous access to and along the shoreline and greater opportunities for recreational purposes. Alternative 2 will retain the makai lands in its existing use, which includes limited public access to the shoreline. Once Honoapi`ilani Highway is relocated further mauka, the existing highway will become a lower speed roadway that will provide safer access to the recreational uses in the makai shoreline area as well as to the Master Plan area.

b. <u>Time Lag Effects on County Land Use Plans, County Water Resources and State and County Transportation Systems</u>

Time lag effects refer to changes to the environment which may occur over a longer duration. Such effects, for example, may include changes in microclimates resulting from changes in land cover characteristics. Such changes may not be immediately identified, but may, over a period of time, become apparent. The applicability of time lag effects to cumulative impact issues has been evaluated with regard to the County's land use plans, County water resources and the State and County transportation systems.

County Land Use Plans

The Master Plan ~~is~~for Alternatives 1 and 2 is consistent with the themes and principles of the Maui County General Plan Countywide Policy Plan. Refer to Chapter ~~HH~~IV, Section ~~D~~F. The ~~draft~~ Maui Island Plan (MIP) ~~which~~ will guide long range planning for the island ~~is currently under review by the Maui County Council. Both the General Plan Advisory Committee (GPAC) and Maui Planning Commission (MPC) recommended inclusion of the Master Plan in the Urban and Rural Growth Boundaries for the West Maui region. Olowalu Town, LLC and Olowalu Ekolu, LLC will continue to be an active participant in the MIP process to encourage the County Council to include the Master Plan in the growth boundaries of the MIP. If the MIP is adopted prior to the Final EIS, conformity with the MIP will be addressed.~~and was approved by Ordinance No. 4004 on December 28, 2012.

The MIP included portions of the OTMP in the Urban Growth Boundary (UGB) and the Rural Growth Boundary (RGB). The makai (ocean-side) portion of the OTMP was not included in the directed growth maps. However, the MIP includes language that the future delineation of potential urban growth areas makai of the existing Honoapi`ilani Highway may be undertaken in conjunction with updates or amendments to the West Maui Community Plan. Alternative 1, in an application for a community plan amendment, will request inclusion of the makai portion in the UGB. The proposed request is in accordance with the MIP in order "to enhance public shoreline access and open space; protect adjacent coastal and marine ecosystems (including the reefs of Olowalu); and implement the proposed Pali to Puamana Parkway Plan" (MIP at 8-64).

Alternative 2 implements OTMP in accordance with the current UGB and RGB of the MIP. However, exclusion of the makai lands leaves the area in its present use and does not enhance shoreline access, parks, and recreational facilities, or implement the intent of the Pali to Puamana Parkway Plan to provide shoreline parks.

It should be noted that "the distinct boundaries of the parks and open space, specific locations of the recreational uses, and the precise amenities will be further defined during the West Maui Community Plan Update and the project review and approval process" (MIP at 8-64). As such, during the community

plan amendment process, the parks and open space areas and uses will be further defined.

In addition to the State Land Use Commission district boundary amendment, the Master Plan for Alternatives 1 and 2 will require a community plan amendment and change in zoning to establish appropriate underlying land use designations. The approving authority for the community plan amendment request and the change in zoning request is the Maui County Council. Applications will be filed with the County of Maui ~~after the MIP has been adopted~~.

The County's proposed Pali to Puamana Parkway Master Plan proposes to preserve lands on the makai side of a future mauka relocation of Honoapi`ilani Highway for parks and open space. The plan includes the ~~Master Plan~~OTMP area and identifies a mauka alignment of the highway and parks makai of the existing and realigned Honoapi`ilani Highway at both ends of ~~the Master Plan~~Olowalu at Camp Olowalu and on lands north of Olowalu Stream. The ~~Master Plan~~OTMP as identified in Alternative 1 is consistent with the purpose of the proposed Pali to Puamana Parkway Master Plan and includes a future mauka relocation and widening of Honoapi`ilani Highway, an expanded Camp Olowalu area as "Park" and "Open Space", and a portion of the area north of Olowalu Stream and along the shoreline within the 150 feet shoreline setback area as "Park" and "Open Space". ~~A~~In Alternative 1, a sizable amount of park and open space area makai of the existing highway has been provided in the vicinities recommended by the Pali to Puamana Parkway Master Plan. Refer to **Figure 4**.

It is noted that the proposed Pali to Puamana Parkway Master Plan has not been adopted by the County of Maui through an amendment to the West Maui Community Plan. However, both Alternatives 1 and 2 include the corridor for the realignment of Honoapi`ilani Highway inland from the shoreline and retention of the existing highway. Alternative 1 also promotes the intent of the Pali to Puamana Parkway Master Plan to establish parks, open space, and recreational amenities on the makai-side of Honoapi`ilani Highway. Although it maintains existing public access to the shoreline and recreational uses, Alternative 2 lands lie mauka of Honoapi`ilani Highway and does not affect park and open space development potential on the makai side of the highway.

County Water Resources

The County's Water Use and Development Plan was adopted in 1990 and is currently being updated by the DWS. Significant changes have occurred since development of the plan such as the demise of large scale agriculture (sugarcane and pineapple) by Pioneer Mill Company and Maui Land and Pineapple Company, who were major users of surface water and groundwater in West Maui. The plan also envisioned the development of brackish groundwater sources as ~~potable~~drinking water in areas such as Olowalu by utilizing new technologies, such as reverse osmosis, electrophoresis, and solar powered stills to reduce chloride levels to acceptable levels.

The Master Plan for Alternatives 1 and 2 proposes to expand and upgrade the existing public water system servicing Olowalu Town, including those to existing users, and installing two (2) new ~~potable~~drinking water wells in the Olowalu Aquifer. Besides improving the ~~potable~~drinking water source, the upgrade of transmission lines will provide improved fire protection to Olowalu. The approximate total ~~potable~~drinking water demand, including current water users, is estimated as ~~672,300~~951,000 GPD, well below the two (2) MGD sustainable yield for the Olowalu Aquifer. The lower demand for ~~potable~~drinking water is due to the proposed reuse of R-1 recycled water and repair of the leaks in the Olowalu Ditch system for irrigation purposes, as well as on an as-needed basis brackish water from pumps "N" and "O".

The Master Plan for Alternatives 1 and 2 will require two (2) new wells in the Olowalu Aquifer. The future development of the new wells will follow the process for well construction and pump installation set forth under Chapter 174, HRS, with the likely imposition of conditions. Pump capacity limits for the wells, will be required to respect the Olowalu Aquifer's two (2) MGD sustainable yield, although the 2012 U.S.G.S. study has indicated the sustainable yield may be greater at 7.0 MGD.

Measures such as the use of recycled water and repairs to the existing Olowalu Ditch for irrigation reduces the use of ~~potable~~drinking water for such purpose and ensures long-term water availability will be provided for the project and existing users. As a self–sustaining privately-owned public water system with an independent source not connected to the County's West Maui water system,

the Master Plan for Alternatives 1 and 2 will not affect the County's water system.

State and County Transportation Systems

Both the Hawai`i Statewide Transportation Plan and Maui Long-Range Land Transportation Plan recommend improving Honoapi`ilani Highway to a four-lane roadway. The HDOT's Honoapi`ilani Highway Realignment/ Widening Mā`alaea to Launiupoko project and County's Pali to Puamana Master Plan proposes to relocate Honoapi`ilani Highway further mauka to facilitate the State's and County's vision to move the highway inland, away from its existing, more environmentally sensitive coastal alignment. In accordance with these plans the Master Plan for Alternatives 1 and 2 includes the corridor for a future relocated highway following a mauka alignment.

Existing traffic flows through Olowalu is primarily through traffic entering or leaving West Maui communities. Construction of the future relocated highway will allow traffic to continue to flow freely through Olowalu while the existing Honoapi`ilani Highway will become a local roadway providing access mainly to the Master Plan area and shoreline recreation areas. The future widening of the relocated highway to four (4) lanes will provide increased highway capacity to accommodate future traffic flows to the West Maui region as well as accommodate a future transit system.

In terms of time lag, therefore, processes are in place to ensure that the County's land use plans and State and County transportation plans are implemented and that water resources of the Olowalu Aquifer are adequately protected. Approval processes for the two (2) new wells ensure that long-term water availability will be provided for the project, within the context of protocols and measures designed to protect the integrity of the Olowalu Aquifer.

c. Space Crowding Effects on Existing Neighboring Land Uses, Water Resources, Natural Resources and Archaeological and Cultural Resources

Space crowding refers to the effects of added density of the proposed Master Plan for Alternatives 1 and 2 upon the Olowalu community, including

neighboring landowners. In this regard, comments were raised expressing concern regarding the density of the project and the effects of the project's added population.

Existing Neighboring Land Uses

The Master Plan for Alternatives 1 and 2 proposes the addition of another 1,500 dwelling units, plus commercial and public/quasi-public uses. The estimated population of the Master Plan for Alternatives 1 and 2 at full build out is approximately 4,239 persons. The Master Plan ~~was~~for Alternatives 1 and 2 was developed with the input of the residents of Olowalu and neighboring landowners to ensure that impacts on the existing community are appropriately addressed. In particular, the proposed SmartCode will be incorporated into the Project District ordinance development standards to encourage the orderly development of a sustainable community.

To minimize impacts to Kapa`iki, park land is proposed adjacent to Kapa`iki as a separation from the urban town center. To moderate the effects of added densities, the future relocation and widening of Honoapi`ilani Highway and lower density rural lots serve as a transition zone between the country town centers and the existing 14-lot Olowalu Mauka agricultural subdivision. The proposed agricultural lots along Olowalu Stream will minimize impacts to the OCR, while the Olowalu Makai agricultural subdivision will preserve the low density character along the shoreline. Olowalu Stream and the OCR preserve the physical connection between the ocean and mountains, as well as separating the urban densities into two (2) lower density urban centers to encourage a country town character rather than a single consolidated higher density urban center.

In summary, the Master Plan for Alternatives 1 and 2 considers spatial relationships which seek to ensure an integrated land plan encompassing density allocations which respect surrounding land uses, as well as land use transitions which preserve character distinctions among the various land use types (i.e., urban-agricultural conflicts are avoided with appropriate land use transitions).

Water Resources

The Master Plan for Alternatives 1 and 2 will create additional water usage needs in order to accommodate the increased population. The need for additional water will improve the existing service in Olowalu Town with an expanded and upgraded water source and transmission system, including fire protection, for the existing residents. The improved water system serves to mitigate space crowding effects on water resources which may otherwise occur.

Natural Resources

The Master Plan for Alternatives 1 and 2 will create increased stormwater runoff and additional wastewater and solid waste disposal needs.

Stormwater runoff will be collected by a system of retention basins and filtration measures that will accommodate 100 percent of the increased runoff as well as a portion of the pre-development runoff. The drainage system is expected to prevent flooding in the area, as well as improve the near shore water quality by removing a portion of the sediment that currently enters the ocean. The construction of an environmentally sound wastewater treatment facility adjacent to the County's Recycling and Refuse Convenience Center will provide the opportunity for portions of the existing community to connect to the system and eliminate individual cesspools and septic systems ~~and accommodate solid waste from the Master Plan~~.

The foregoing measures serve to mitigate the space crowding effects on natural resources which may otherwise occur.

Archaeological and Cultural Resources

As stated previously, the proposed agricultural lots along Olowalu Stream will minimize impacts to the OCR by providing a buffer from the two (2) country town centers. The OCR is an integral part of the Master Plan for Alternatives 1 and 2. The OCR, with the continued support of Olowalu Town LLC and Olowalu Ekolu, LLC, will be able to implement its mission to create an educational and cultural pu`uhonua or sanctuary in Olowalu.