



**EXHIBIT 1—SPECIAL USE PERMIT,
DOCKET NUMBER SP73-146**



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BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

DEPT. OF LAND AND NATURAL RESOURCES
CITY & COUNTY OF HONOLULU

In The Matter Of The Application Of	)	DOCKET NO. SP73-147
)	
GRACE PACIFIC CORPORATION	)	FINDINGS OF FACT, CONCLUSIONS
(Formerly Pacific Concrete & Rock Co.,	)	OF LAW, AND DECISION AND ORDER
Ltd.)	)	APPROVING WITH MODIFICATIONS
	)	THE RECOMMENDATION OF THE
To Extend The Life Of The Makakilo	)	CITY AND COUNTY OF HONOLULU
Quarry Resource Extraction And	)	PLANNING COMMISSION TO (1)
Aggregate Processing Operations To	)	EXTEND THE LIFE OF THE
2032 And To Expand The Resource	)	MAKAKILO QUARRY RESOURCE
Extraction And Buffer Areas Of The	)	EXTRACTION AND AGGREGATE
Quarry On Approximately 541.5 Acres	)	PROCESSING OPERATIONS TO 2032;
Of Land Within The State Land Use	)	AND (2) EXPAND THE RESOURCE
Agricultural District At Pu`u Makakilo,	)	EXTRACTION AND BUFFER AREAS OF
`Ewa, O`ahu, Hawai`i, Tax Map Keys:	)	THE QUARRY
9-1-16: 4 And 9-2-03: Por. 74 And Por. 82)	
_____)	

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER
APPROVING WITH MODIFICATIONS THE RECOMMENDATION OF THE CITY
AND COUNTY OF HONOLULU PLANNING COMMISSION TO (1) EXTEND THE
LIFE OF THE MAKAKILO QUARRY RESOURCE EXTRACTION AND AGGREGATE
PROCESSING OPERATIONS TO 2032; AND (2) EXPAND THE RESOURCE
EXTRACTION AND BUFFER AREAS OF THE QUARRY

This is to certify that this is a true and correct copy of the document on file in the office of the State Land Use Commission, Honolulu, Hawaii.

11/17/08 by 
Executive Officer

should be a conclusion of law is to be taken as such notwithstanding its denomination as a finding of fact.

DECISION AND ORDER

Having duly considered the complete record in this matter, the oral arguments presented by the parties in this proceeding, the LUC, through an amended motion having been duly made at a meeting conducted on October 2, 2008, in Honolulu, Hawai`i, and the amended motion having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the amended motion, hereby APPROVES with modifications the recommendation of the Planning Commission to (1) extend the life of the Makakilo Quarry resource extraction and aggregate processing operations to 2032; and (2) expand the resource extraction and buffer areas of the quarry on the Property for a total special use permit area in this docket of approximately 541.5 acres of land within the State Land Use Agricultural District at Pu`u Makakilo, `Ewa, O`ahu, Hawai`i, identified as TMKs: 9-1-16: 4 and 9-2-03: por. 74 and por. 82,¹⁰ and approximately shown on Exhibit B and described in Table 1, attached hereto and incorporated by reference herein, subject to the following conditions to replace all other conditions imposed by the LUC on March 23, 1973, in this docket that are applicable to the rock quarrying operations:

1. Within six (6) months of the Land Use Commission's Decision and

¹⁰ The approximately 541.5 acres of land also includes that portion of the tunnel located beneath the H-1 Freeway, which is not assigned a TMK parcel.

Order approving the Special Use Permit, the Applicant shall submit:

- a. A new site plan with metes and bounds map and description delineating the approximately 541-acre Property, including the boundaries of the quarry excavation and berming areas, the processing site and conveyor tunnel, and the buffer area to the Director of Planning and Permitting for review and approval. The site plan shall also be submitted to the Land Use Commission.
- b. A fire protection and control plan to Honolulu Fire Department for review and approval. A copy of the approved plan shall be submitted to the Director of Planning and Permitting within 30 days of approval.

2. Within one (1) year of the Land Use Commission's Decision and

Order approving the Special Use Permit, the Applicant shall submit to the Director of Planning and Permitting for review and approval a renaturalization plan in coordination with the proposed Closure Grading Plan for the quarry site and buffer area mauka of the H-1 Freeway showing landscaping details including plant types, sizing and spacing, irrigation facilities and distribution systems.

3. All resource extraction, related aggregate processing and concrete and asphalt production activities, including recycling activities shall cease by December 31, 2032. Final beneficial re-use plans as approved by the Department of Planning and Permitting shall be implemented immediately upon the cessation of said resource extraction and related quarrying activities.

4. The Applicant shall close the processing site on Parcel 4 by relocating all uses on the site into the quarry pit or Campbell Industrial Park by

December 31, 2012, and Parcel 4 shall be returned to landscaped open space use within six (6) years of the date of the Land Use Commission's Decision and Order. A landscape plan shall be submitted to the Director of Planning and Permitting for review and approval on the second anniversary date of the Land Use Commission's Decision and Order and the approved landscape plan shall be implemented within one (1) year of its approval. Landscaping shall be maintained in a natural state for the life of the Special Use Permit.

5. Beginning January 1, 2012, quarry operations shall be limited to the following days/hours:

- a. Quarry excavation, crushing, stockpiling, equipment maintenance, and recycling facility – 6:00 a.m. to 6:00 p.m., Monday to Saturday.
- b. Hot-mix asphalt plant – 6:00 a.m. to 6:00 p.m., Monday to Friday.
- c. Unloading of cold-planed asphaltic concrete during re-paving jobs – 6:00 p.m. to 10:00 p.m., Sunday to Friday.

6. Except for quarry, recycling activities in the quarry, and renaturalization activities, the remainder of Tax Map Key: 9-2-03: 74 shall remain in open space buffer for the life of the quarry and related activities. Minor accessory uses or structures may be permitted on Parcel 74 with the express written consent of the Director of Planning and Permitting. Any other uses shall be processed pursuant to Section 205-6, Hawai'i Revised Statutes.

7. As may be required by the State Department of Health, the Applicant shall place in service additional dust control measures to control dust generation at the project such that no visible fugitive dust shall cross the combined property boundaries of Tax Map Key: 9-2-03: 74 and 82.

8. The Applicant shall, as a result of modifications to the final grading and beneficial re-use plans, submit an update of the drainage plan, prepared by a qualified civil engineer, as may be required by the Director of Planning and Permitting for review and approval.

9. On each anniversary date of the Land Use Commission's Decision and Order, the Applicant or its successor shall file with the Department of Planning and Permitting and the Land Use Commission a report and supporting documentation demonstrating the status of compliance with each of the conditions of the Special Use Permit approval. Included in the supporting documentation shall be an updated rectified aerial imagery of the quarry, buffer area and processing site and dust control management plan. The following items shall also be a part of the supporting documentation:

- a. Observations of fugitive dust.
- b. A report on replanting activities, including the areas replanted, and the type of vegetation planted.
- c. A report of any citizen's complaints relating to the operation along with the actions taken to ameliorate those complaints.

The Director may present its analysis and recommendations on the annual report to the Planning Commission and the State Department of Health for further action pursuant to the Rules of the Planning Commission.

10. The Applicant shall provide a beneficial re-use plan for lands disturbed by its quarry operations. The plan shall include planning and preparation of design and implementation scenarios for the beneficial re-use of the pit area consistent with established land use policies for the site and surrounding area. The re-use planning document and accompanying scenarios and drawings shall be submitted to the Department of Planning and Permitting, for review and approval within the fifth (5th) year after the date of the Land Use Commission's Decision and Order approving this expansion. An updated re-use plan shall be submitted to the DPP for review and approval every five (5) years thereafter. The beneficial re-use planning and design document shall be an ongoing document prepared by a professional qualified in re-use planning and contain objectives, implementation and funding strategies for reclamation of the pit area for the purpose of achieving the area's long term land use policies. The Applicant will update the plan, as may be required by the Director of Planning and Permitting, to respond appropriately to any changes in the surrounding area's land use policies.

The beneficial re-use plan shall include at least one public access across Tax Map Key: 9-2-03: 74, connecting Tax Map Key: 9-2-03: 81 and the extension of

Makakilo Drive, across the project in which safe pedestrian/bicycling passage can be established. Access requirements, such as but not limited to, subdivision, nature of improvements, routing, hours accessible, shall be established as part of the final beneficial re-use plan. Suggested routing of the public access is shown on Exhibit A.

11. Approval of this Special Use Permit does not constitute compliance with other land use ordinances or governmental agencies' requirements. They are subject to separate review and approval. The Applicant shall be responsible for insuring that the final plans for the project approved under this permit comply with all applicable provisions of the Land Use Ordinance and other governmental agencies' provisions and requirements.

12. The Applicant and/or landowner shall notify the Director of Planning and Permitting and the Land Use Commission of any changes in uses on the Property; termination of any uses on the Property; and/or transfer in ownership of the Property or any uses on the Property. The Planning Commission shall then, in consultation with the Director of Planning and Permitting, determine the appropriate disposition of this Special Use Permit and facilities.

13. In the event of noncompliance with any of the conditions set forth herein, the Director of Planning and Permitting may terminate all uses approved under this Special Use Permit or the Director may declare this Special Use Permit null and void or seek available civil procedures to enforce compliance.

14. The Applicant shall, for the life of the Special Use Permit, establish and disclose to the community, a telephone number dedicated to receiving and recording complaints relating to quarry and recycling operations. A continuous volume of complaints shall warrant reconsideration of the Special Use Permit by the Planning Commission.

15. The uses in the quarry excavation area shall be limited to rock excavation, crushing, stockpiling, a new hot-mix asphalt plant, recycling of concrete rubble, glass, and asphaltic concrete pavement, equipment maintenance, employee support, parking, administration, and a water well and pump. No other uses shall be permitted without the approval of the Land Use Commission.

16. The Applicant shall establish the quarry expansion in substantial compliance with the representations made to the Land Use Commission in obtaining the Land Use Commission Special Use Permit. Failure to do so may result in the revocation of the permit.

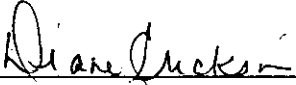
IT IS FURTHER ORDERED that the conditions imposed by the LUC on March 23, 1973, in this docket that are applicable to the sanitary landfill operations shall remain in full force and effect.

ADOPTION OF ORDER

The undersigned Commissioners, being familiar with the record and proceedings, hereby adopt and approve the foregoing ORDER this 6th day of November, 2008. This ORDER and its ADOPTION shall take effect upon the date this ORDER is certified and filed by this Commission.

Done at Honolulu, Hawai'i, this 6th day of November, 2008, per motion on Nov. 6, 2008.

APPROVED AS TO FORM



Deputy Attorney General


LAND USE COMMISSION
STATE OF HAWAII



DUANE KANUHA
Chairperson and Commissioner

ABSENT

RANSOM PILTZ
Vice-Chairperson and Commissioner



VLADIMIR PAUL DEVENS
Vice-Chairperson and Commissioner

ABSENT

KYLE CHOCK
Commissioner

ABSENT
THOMAS CONTRADES
Commissioner

Lisa M. Judge
LISA M. JUDGE
Commissioner

[Signature]
NORMAND LEZY
Commissioner

[Signature]
NICHOLAS W. TEVES, JR.
Commissioner

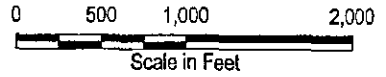
[Signature]
REUBEN S.F. WONG
Commissioner

Filed and effective on: November 7, 2008

Certified by:

[Signature]
ORLANDO DAVIDSON
Executive Officer

Approved Special Use Permit Area



Suggested Public Access

Expansion of Buffer Area

Expansion of Pit & Berm

Existing Approved Area

Expansion of Process Site

Existing Approved Area

SP73-147 GRACE PACIFIC CORPORATION
(formerly Pacific Concrete & Rock Co., Ltd.)
Pu`u Makakilo, `Ewa, O`ahu, Hawai`i
TMKs: 9-1-16: 4 and 9-2-03: por. 74 and por. 82

EXHIBIT A



EXHIBIT B

Table 1

Acreage of Existing Quarry and Proposed Expansion Areas

Description of Area	Existing Acreage	Proposed Additional Acreage	Total	TMKs Affected
Quarry Excavation & Berming (including landscaping and grading)	78.4	105.8 (including 20.6 acres of quarry expansion & 44 acres of landscaping and grading in Parcel 74 and 41.2 acres in Parcel 82)	184.2	9-2-03: por. 74 & por. 82
Processing Site & Conveyor Tunnel	54.6 (comprising 53.6 Parcel 4, 0.6 flag-strip connecting to Parcel 10, 0.3 road remnant, and 0.1 tunnel)	0.00	54.6	9-1-16: 4
Buffer Area Surrounding Quarry (Passive Open Space)	188.0	114.7	302.7	9-2-03: por. 74 & por. 82
Offsite Stilling Basin (to be abandoned)	1.4	(1.4)	0.00	9-1-16: por. 108
Access Road	0.00	0.00	0.00	9-2-02: por. 6
Total	322.4	219.1	541.5	

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In The Matter Of The Application Of) DOCKET NO. SP73-147
)
 GRACE PACIFIC CORPORATION) CERTIFICATE OF SERVICE
 (Formerly Pacific Concrete & Rock Co.,)
 Ltd.))
)
 To Extend The Life Of The Makakilo)
 Quarry Resource Extraction And)
 Aggregate Processing Operations To)
 2032 And To Expand The Resource)
 Extraction And Buffer Areas Of The)
 Quarry On Approximately 541.5 Acres)
 Of Land Within The State Land Use)
 Agricultural District At Pu`u Makakilo,)
 `Ewa, O`ahu, Hawai`i, Tax Map Keys:)
 9-1-16: 4 And 9-2-03: Por. 74 And Por. 82)
 _____)

CERTIFICATE OF SERVICE

I hereby certify that a certified copy of the FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER APPROVING WITH MODIFICATIONS THE RECOMMENDATION OF THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION TO (1) EXTEND THE LIFE OF THE MAKAKILO QUARRY RESOURCE EXTRACTION AND AGGREGATE PROCESSING OPERATIONS TO 2032; AND (2) EXPAND THE RESOURCE EXTRACTION AND BUFFER AREAS OF THE QUARRY was served upon the following by either hand delivery or depositing the same in the U. S. Postal Service by regular or certified mail as noted:

DEL. ABBEY MAYER, Director
 Office of Planning
 P. O. Box 2359
 Honolulu, Hawai'i 96804-2359

BRYAN C. YEE, Esq.
Deputy Attorney General
425 Queen Street
Honolulu, Hawai'i 96813
Attorney for State Office of Planning


ROBERT M. CREPS
Senior Vice President Administration
Grace Pacific Corporation
P. O. Box 78
Honolulu, Hawaii 96810

DOUGLAS ING, Esq.
Watanabe Ing Kawashima & Komeiji LLP
999 Bishop Street, 23rd Floor
Honolulu, Hawaii 96813
Attorney for Petitioner

HENRY ENG, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

CARRIE OKINAGA, ESQ.
Corporation Counsel
City & County of Honolulu
530 South King Street
Honolulu, Hawaii 96813
Attorney for City and County of Honolulu

DATED: Honolulu, Hawai'i, Nov. 7, 2008



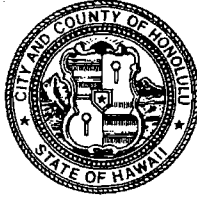
ORLANDO DAVIDSON
Executive Officer

**EXHIBIT 2—CONDITIONAL USE PERMIT,
FILE NUMBER 2007/CUP-91**

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honolulu.gov • CITY WEB SITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR



DAVID K. TANOUÉ
DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2007/CUP-91(RY)

July 17, 2009

Mr. Lee Sichter
Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Sichter:

Subject: Conditional Use Permit No. 2007/CUP-91
Grace Pacific Corporation
92-1130 Pueonani Street - Makakilo
Tax Map Keys 9-2-3: Portion of 74 and 82; 9-2-2: Portion of 6

The Director of Planning and Permitting has **APPROVED** the above Conditional Use Permit application, subject to conditions. A copy of the Director's Findings, Conclusions, and Decision and Order, including the conditions of approval, are attached.

Any party (to the case) wishing to appeal the Director's action must submit a written petition to the Zoning Board of Appeals (ZBA) within 30 calendar days from the date of mailing or personal service of the Director's written decision (Zoning Board of Appeals' Rules Relating to Administrative Procedure, Rule 22-2, Mandatory Appeal filing deadline). Essentially, the Zoning Board of Appeals' rules require that a petitioner show that the Director based his action on an erroneous finding of a material fact, and/or that the Director acted in an arbitrary or capricious manner, or manifestly abused his discretion. Generally, the ZBA can only consider the evidence previously presented to the Director of Planning and Permitting. The filing fee for appeals to the ZBA is \$200 (payable to the City and County of Honolulu).

Failure to comply with ZBA Rule 22-2, Procedures for Appeals, may result in the dismissal of the appeal. Copies of the ZBA rules are available at the Department of Planning and Permitting. Appeals should be addressed to:

Zoning Board of Appeals
c/o Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Mr. Lee Sichter
Belt Collins Hawaii, Ltd.
July 17, 2009
Page 2

If you have any questions, please contact Raymond Young at 768-8049.

Very truly yours,

A handwritten signature in black ink, appearing to read 'D. Tanoue', with a horizontal line extending to the right.

David K. Tanoue, Director
Department of Planning and Permitting

DKT:lh
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Attachment

DEPARTMENT OF PLANNING AND PERMITTING
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION)

OF)

GRACE PACIFIC CORPORATION)

FOR A)

CONDITIONAL USE PERMIT - MAJOR)

FILE NO. 2007/CUP-91

FINDINGS OF FACT, CONCLUSIONS
OF LAW, AND DECISION AND ORDER

I. APPLICATION

A. Basic Information

APPLICANT:	Grace Pacific Corporation
LANDOWNER:	Puu Makakilo, Inc. James Campbell Company LLC D R Horton – Schuler Homes LLC
LOCATION:	92-1130 Pueonani Street, and two lots situated between Parcel 74 and the H-1 Freeway, Ewa, Oahu, Hawaii (Exhibit 1)
TAX MAP KEY:	9-2-3: (Portion of) 74 and (Portion of) 82 Access: 9-2-2: (Portion of) 6
LAND AREA:	488.4 Acres
ZONING DISTRICT:	AG-2 General Agricultural District (Exhibit 2)
EXISTING USE:	Quarry, manufacturing and processing, recycling facility, support facilities, and open space (Exhibit 3)

precluding the use of surrounding properties for the principal uses permitted in the underlying zoning district; and

4. The use at its proposed location will provide a service or facility that will contribute to the general welfare of the community-at-large or surrounding neighborhood.

V. DECISION AND ORDER

Pursuant to the Findings of Fact and Conclusions of Law, the Director of the Department of Planning and Permitting (DPP) hereby APPROVES the application for a Conditional Use Permit to allow resource extraction, recycling of concrete and cold-planned asphalt, HMA plant, and other uses and structures as shown on Exhibit 5, subject to the following conditions:

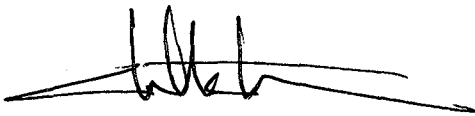
1. Blasting shall be restricted to the hours of 8:00 a.m. to 12 noon, Mondays through Fridays.
2. Within one year of this Decision and Order, the applicant shall submit to the Director of the DPP for review and approval, final grading plans with contour intervals of five feet in areas where the slope is greater than ten percent; two feet in areas where the slope is ten percent or less.
3. On the fifth anniversary date of this Decision and Order, and an update every fifth year thereafter, as may be required by the Director, the applicant shall submit a beneficial reuse plan which shall show how the property is to be left in a form suitable for reuse for purposes permissible in the district, relating such reuses to existing or proposed uses of surrounding properties. Among items to be included in the plan are feasible circulation patterns in and around the site, the treatment of exposed soil or subsoil, including measures to be taken to replace topsoil or establish vegetation in excavated areas in order to make the property suitable for the proposed reuse, treatment of slopes to prevent erosion and delineation of floodways and floodplains (if any) to be maintained in open usage. Submittal of the beneficial reuse plan under Condition 12 of the Land Use Commission Decision and Order, dated November 7, 2008, may satisfy the requirements of this condition (providing the reuse plan complies with Land Use Ordinance Section 5.520, Specific Use Development Standards, for Resource Extraction).
4. Prior to the issuance of a building permit for any structures within and/or the relocation of any structures to the Project Site, the applicant shall submit to the Director for review and approval:
 - a. A site plan showing compliance with all development standards of the Land Use Ordinance, including but not limited to, parking and loading, structure heights and setbacks, and building coverage.

- b. A water source and distribution plan approved by the Board of Water Supply. The plan shall include the disposition of the existing water source in the processing site.
 - c. An outdoor lighting plan showing all existing and proposed outdoor lighting fixtures. All exterior lighting shall be fully shielded to prevent glare and light spillage on surrounding lots and public rights-of-way. Lighting for unloading of cold-planed asphalt shall be directed away from adjoining residential uses and be turned off upon completion of unloading operations.
5. The applicant shall stabilize exposed soils during the construction of any berms to minimize runoff impacts to the area's natural drainage features. Landscaping of any berms shall commence within 30 days of completion of berm construction.
6. Operation of the resource extraction facility and accessory uses shall be in general conformance with the approved project, as described herein and shown on plans on file with the DPP. Any modification to the project and/or plans shall be subject to the prior review and approval by the Director. Major modifications shall require a new Conditional Use Permit.
7. This application has only been reviewed and approved pursuant to the provisions of Section 21-5.520 (Resource Extraction), and its approval shall not constitute compliance with the requirements of other governmental agencies. These are subject to separate review and approval. The applicant shall be responsible for insuring that the final plans for the project approved under this permit comply with all applicable government agencies' provisions and requirements, including compliance with all other provisions of the Land Use Ordinance.
8. The applicant and/or landowner shall submit written notification to the Director of DPP of any change in use, including the addition of any accessory uses and/or structure, termination of any use on the property; and/or transfer in ownership of the property or of any use on the property. In the case of any addition and/or change in use, the Director shall determine if the proposed change requires a minor or major modification of the Conditional Use Permit. In the event of a change in ownership, the Director shall notify the new owner (by copy of this report) that the site and/or facility is permitted and/or governed by the Conditional Use Permit, and that compliance with all conditions of approval is required.
9. The Director may modify the conditions of this permit by imposing additional conditions, modifying existing conditions, or deleting conditions deemed satisfied upon a finding that circumstances related to the approved project have significantly changed so as to warrant a modification to the conditions of approval. In the event of the noncompliance with any of the conditions set forth herein, the Director may terminate all uses approved under this permit or halt

their operation until all conditions are met or may declare this Conditional Use Permit null and void or seek civil enforcement.

Dated at Honolulu, Hawaii this 17th day of July 2009.

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
STATE OF HAWAII

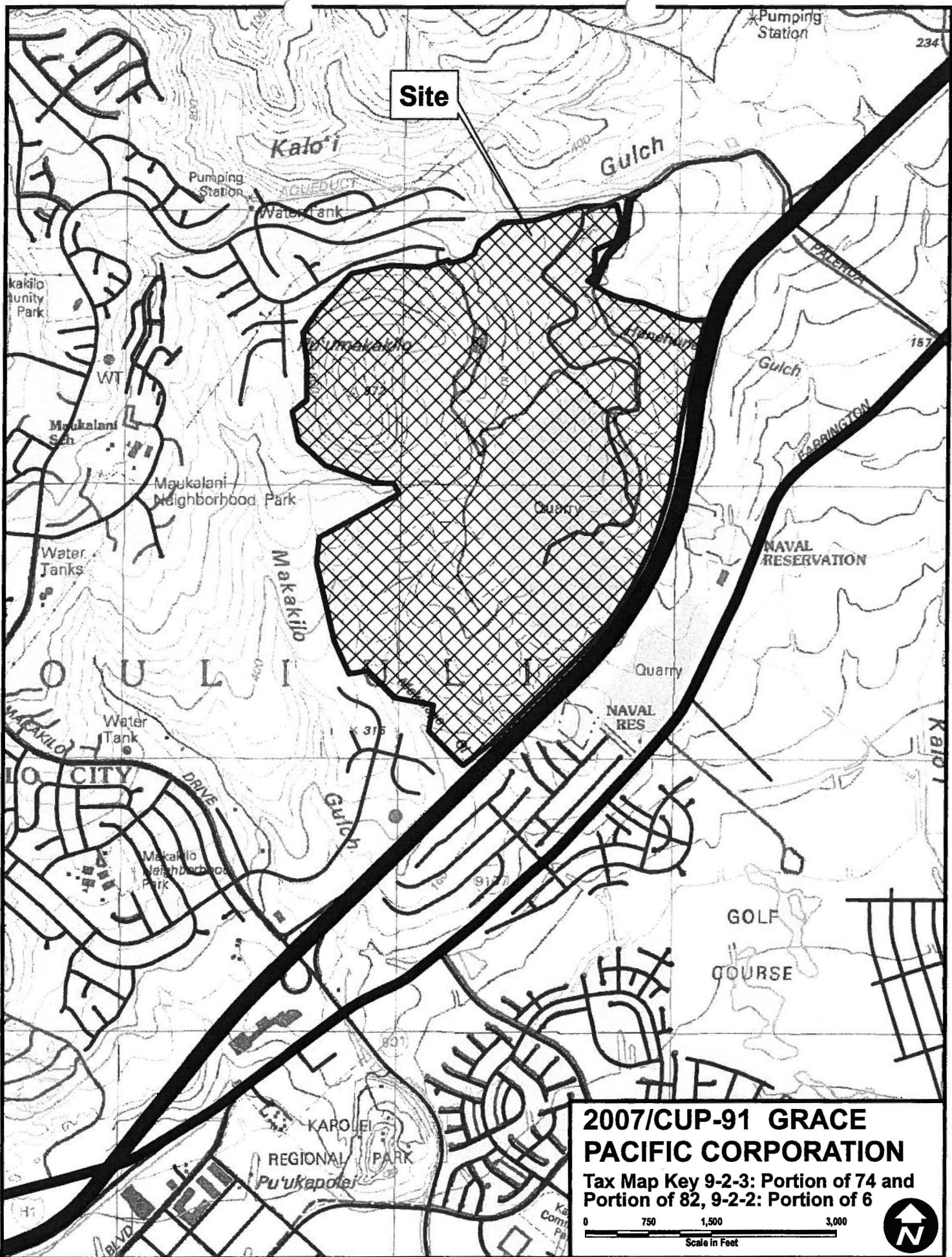
By 

David K. Tanoue, Director

DKT:lh
Doc. 695938

Attachments

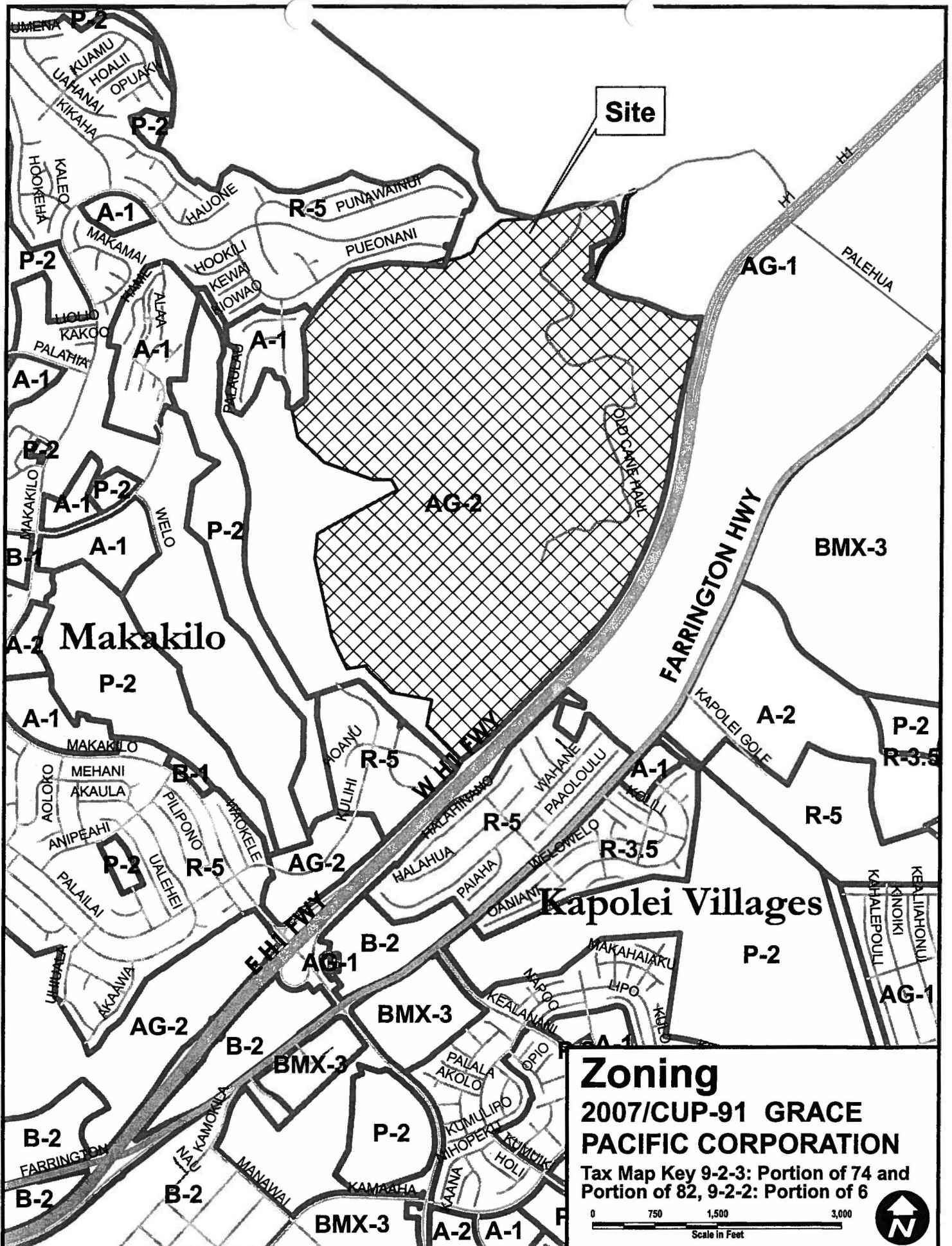
EXHIBITS



**2007/CUP-91 GRACE
PACIFIC CORPORATION**

Tax Map Key 9-2-3: Portion of 74 and
Portion of 82, 9-2-2: Portion of 6





Zoning
2007/CUP-91 GRACE
PACIFIC CORPORATION

Tax Map Key 9-2-3: Portion of 74 and
 Portion of 82, 9-2-2: Portion of 6





Site

Makakilo

North-South Road Interchange

Parangton Hwy

Quarry Pit

Quarry Process Site

Makakilo

Makakilo Drive

KAHIWELo SUBD.

I-1 Freeway

KAPOLEI KNOLLS

MALANAI IKI

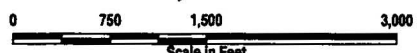
Kapolei Villages

KAPOLEI S.C.

Kapolei City

Existing Uses
2007/CUP-91 GRACE
PACIFIC CORPORATION

Tax Map Key 9-2-3: Portion of 74 and
 Portion of 82, 9-2-2: Portion of 6



Scale in Feet



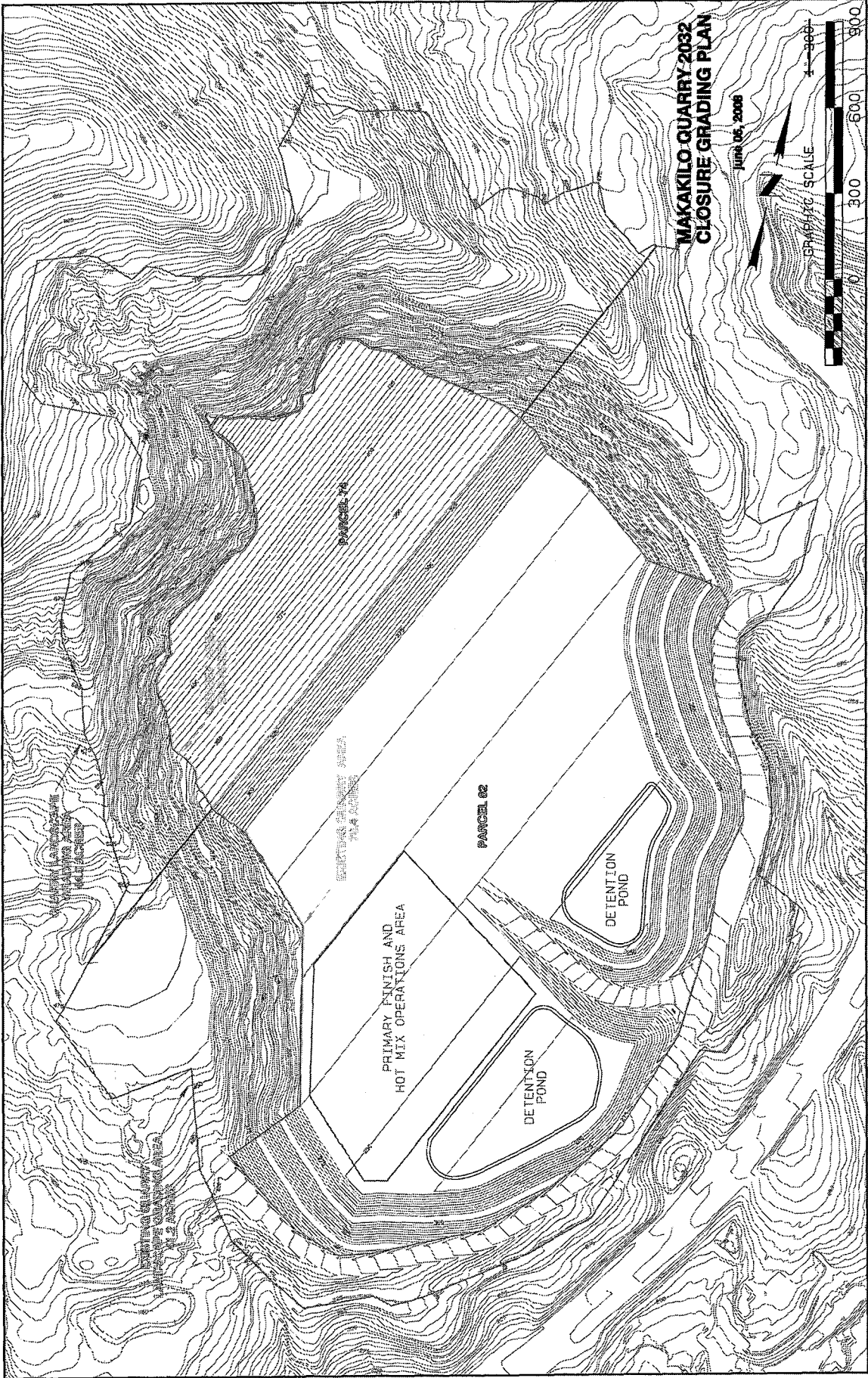


EXHIBIT 4

Proforma Site Plan List for the Makakilo Quarry, November 04, 2008

The site plan list below describes the building and structures that will be contained in the various areas of operation in the Makakilo Quarry. As stated in the permit submittal due to the conditions placed on the use and the extensive planning necessary for final fabrication of the processing equipment, a final mutually agreeable site plan between the City and Grace Pacific will be provided one year from the approval of the C.U.P.. The dimensions, areas, heights and ground elevations below are an approximations to quantify the necessary operational areas for the C.U.P.. See Figure 6 for location of designated areas.

AREA # 1 "Items to be included in the Scale and Access Road area"

Scale House					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
SCALE HOUSE	12	30	360	15	355
TRUCK SCALE	12	60	720	5	355
TRUCK SCALE	12	60	720	5	355
SECURITY OFFICE	8	16	128	15	355
DECKS AND WALKWAYS			1,000		
ROADS			270,000		
TOTAL ACRES AREA # 1			6.3		

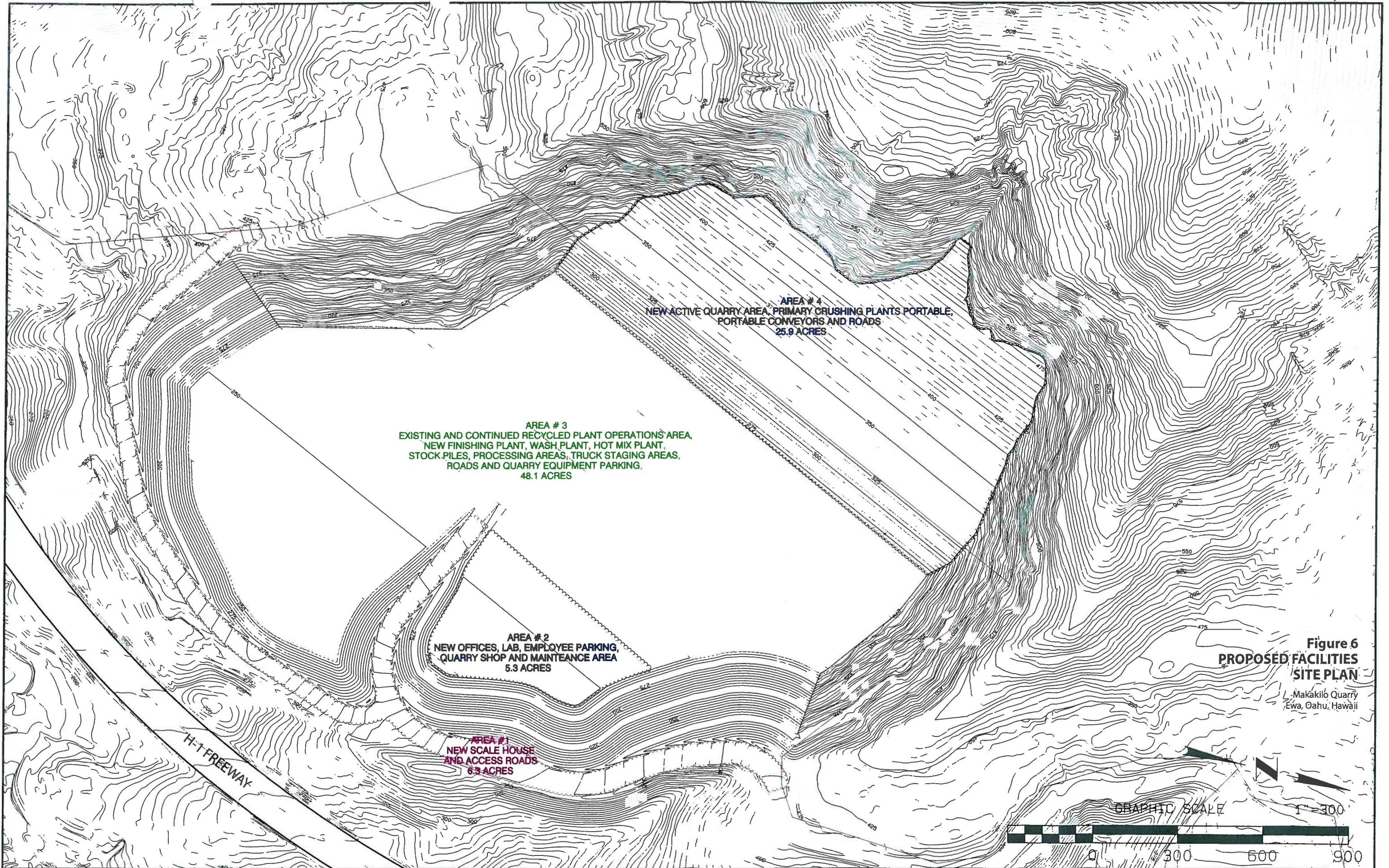
AREA # 2 "Items to be included in the Office and Maintenance area"

Office area					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
SALES OFFICE	36	60	2,160	20	275
FIELD OFFICES	36	60	2,160	20	275
TESTING LAB AND OFFICES	24	60	1,440	20	275
DECKS WALKWAYS			15,000		
EMPLOYEE PARKING			25,000		
QUARRY MAINTENANCE SHOP	70	200	14,000	35	275
QUARRY MAINTENANCE AREA			28,000		
ROADS			48,000		
OPEN SPACE			94,000		
TOTAL ACRES AREA # 2			5.3		

AREA # 3 "Items to be included in the Existing Recycle Plant area and the New Plant(s) area"

Recycle Plant					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
JAW CRUSHER	12	52	624	20	275
SCREEN AND SECONDARY CRUSHER PLANT	12	50	600	18	275
SECONDARY SCREEN	10	25	250	15	275
GENERATOR SET TRAILER	8	40	320	18	275
SWITCH HOUSE	8	30	240	18	275
FUEL TANK WITH ENCLOSURE	10	30	300	9	275

HYDROLIC HAMMER (VER)	8	()	64	25	275
CONVEYORS					275
CONVEYORS (PORTABLE)					275
Finish Plant					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
SCREEN HOUSE	24	50	1,200	35	275
CRUSHER HOUSE	20	30	600	30	275
GENERATOR SET TRAILER	8	40	320	18	275
CONVEYORS					275
CONVEYORS (PORTABLE)					275
Wash Plant					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
ENCLOSURE	15	50	750	25	275
CONVEYORS					275
CONVEYORS (PORTABLE)					275
Hot Mix Plant					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
STRUCT. BURNER, DRYER, AND BAG HOUSE	20	80	1,600	40	275
SCALE WITH FOUR SILOS IN LINE	20	120	2,400	70	275
FEED BINS	12	50	600	20	275
OPERATORS HOUSE AND SWITCH GEAR	10	50	500	18	275
GENERATOR SET TRAILER	10	50	500	18	275
FUEL STORAGE TANK WITH ENCLOSURE	10	40	400	12	275
HOUSE AND SHOP	10	50	500	12	275
Topsoil Plant (Re-naturalization)					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
SCREEN HOUSE	24	50	1,200	25	275
ENCLOSURE STORAGE FOR PRODUCTION	10	30	300	21	275
CONVEYORS					275
Quarrying Supply Storage Area					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
4 STORAGE CONTAINERS	10	24	960	8	275
SECURE CONTAINMENT AREA			160,000		275
QUARRY EQUIPMENT PARKING			25,000		
TRUCK STAGING AREA			50,000		
ROADS			560,000		
STOCK PILES			386,000		
OPEN SPACE			900,000		
TOTAL ACRES AREA # 3			48.1		
AREA # 4 "Items to be included in the New Active Quarry area"					
Primary Plant(s) (Portable)					
Group and Individual Items	Width Ft.	Length Ft.	Square Ft.	Height Ft.	Ground El.
PRIMARY CRUSHER	12	52	624	20	325 - 650
PRIMARY CRUSHER	12	52	624	20	325 - 650
GENERATOR SET TRAILER	10	50	500	18	325 - 650
GENERATOR SET TRAILER	10	50	500	18	325 - 650
FUEL TANK TRAILER	8	30	240	10	325 - 650
FUEL TANK TRAILER	8	30	240	10	325 - 650
CONTAINER FOR PARTS AND TOOLS	10	24	240	8	325 - 650
CONVEYORS (PORTABLE)					325 - 650
OPEN SPACE			1,125,000		
TOTAL ACRES AREA # 4			25.9		



ATTACHMENT 1



RECEIVED

'08 NOV 19 P1:00

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

DEPT. OF PLANNING
AND CONSTRUCTION
CITY & COUNTY OF HONOLULU

In The Matter Of The Application Of	)	DOCKET NO. SP73-147
)	
GRACE PACIFIC CORPORATION	)	FINDINGS OF FACT, CONCLUSIONS
(Formerly Pacific Concrete & Rock Co.,	)	OF LAW, AND DECISION AND ORDER
Ltd.)	)	APPROVING WITH MODIFICATIONS
	)	THE RECOMMENDATION OF THE
To Extend The Life Of The Makakilo	)	CITY AND COUNTY OF HONOLULU
Quarry Resource Extraction And	)	PLANNING COMMISSION TO (1)
Aggregate Processing Operations To	)	EXTEND THE LIFE OF THE
2032 And To Expand The Resource	)	MAKAKILO QUARRY RESOURCE
Extraction And Buffer Areas Of The	)	EXTRACTION AND AGGREGATE
Quarry On Approximately 541.5 Acres	)	PROCESSING OPERATIONS TO 2032;
Of Land Within The State Land Use	)	AND (2) EXPAND THE RESOURCE
Agricultural District At Pu`u Makakilo,	)	EXTRACTION AND BUFFER AREAS OF
`Ewa, O`ahu, Hawai`i, Tax Map Keys:	)	THE QUARRY
9-1-16: 4 And 9-2-03: Por. 74 And Por. 82)	
_____)	

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER
APPROVING WITH MODIFICATIONS THE RECOMMENDATION OF THE CITY
AND COUNTY OF HONOLULU PLANNING COMMISSION TO (1) EXTEND THE
LIFE OF THE MAKAKILO QUARRY RESOURCE EXTRACTION AND AGGREGATE
PROCESSING OPERATIONS TO 2032; AND (2) EXPAND THE RESOURCE
EXTRACTION AND BUFFER AREAS OF THE QUARRY

This is to certify that this is a true and correct
copy of the document on file in the office of the
State Land Use Commission, Honolulu, Hawaii.

11/17/08 by 
Executive Officer

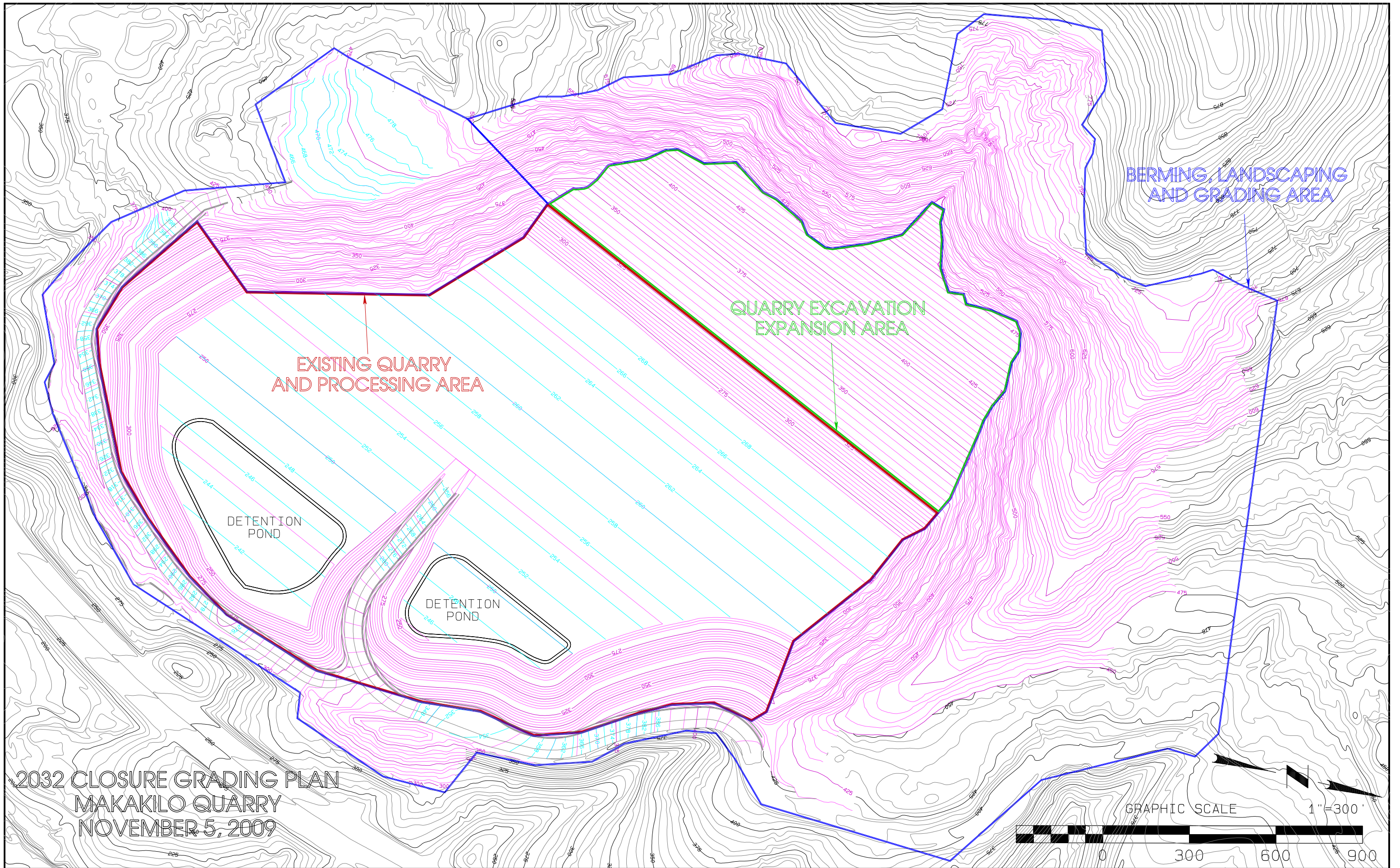
**EXHIBIT 3—
PERMITS AND APPROVALS FOR THE
OPERATION OF MAKAKILO QUARRY**

Permits and Approvals for Operation of Makakilo Quarry

Since the original 1973 regulatory approvals for resource extraction at the Makakilo Quarry, there have been five approvals from the State of Hawai‘i LUC (SUPs for land use in the State Agricultural District) and DPP (CUPs (Major) and (Minor), and Zoning Variances). Approved permits are included in the following table.

Date of Approval	Type of Permit	Document/File Identification Number	Granting Authority	Approved Land Use
02/28/1973	SUP	72/CUP-15	Planning Commission	Rock quarrying operations on the southeastern slopes of Pu‘u Makakilo to produce basalt for concrete production and fill rock.
03/23/1973	SUP	SP73-147	LUC	Rock quarrying operations on the southeastern slopes of Pu‘u Makakilo to produce basalt for concrete production and fill rock.
04/17/1973	CUP	72/CUP-15	City Council Resolution No. 95	Establishment of quarry and related facilities; 72 acres mauka H-1; 35 acres Makai of H-1 Interstate Freeway.
10/19/1998	Compliance with Condition No. 2	72/CUP-15	DPP	Acceptance of engineering report and grading plans prepared by Parametrix, July 1998.
11/13/2002	Zoning Variance	2002/VAR-51	DPP	Establishment of an asphalt and concrete recycling facility in the quarry pit.
04/23/2004	CUP Minor Modification	72/CUP-15	DPP	Specific revisions to grading and revegetation plans.
04/27/2007	CUP (Minor)	2007/CUP-47	DPP	Joint development of lots 82 and 74 to allow quarry expansion of excavation and buffer areas.
11/07/2008	SUP	SP73-147	LUC	Extend the life of Makakilo Quarry extraction and processing to 2032, and expand the extraction and buffer areas of the quarry.
07/17/2009	CUP	2007/CUP-91	DPP	Expand the excavation and buffer areas of the Makakilo Quarry and extend its use and operations to 2032.
12/27/2011	Zoning Variance	2011/VAR-28	DPP	Allow various structures and equipment for existing quarry to exceed height limit and increase nonconformity.

EXHIBIT 4—CLOSURE GRADING PLAN



EXISTING QUARRY
AND PROCESSING AREA

QUARRY EXCAVATION
EXPANSION AREA

BERMING, LANDSCAPING
AND GRADING AREA

DETENTION
POND

DETENTION
POND

2032 CLOSURE GRADING PLAN
MAKAKILO QUARRY
NOVEMBER 5, 2009

GRAPHIC SCALE

1" = 300'

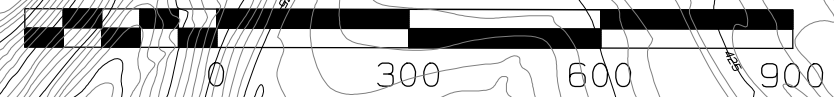


EXHIBIT 5—RENATURALIZATION PLAN SUBMITTAL

GRACE PACIFIC CORPORATION

Renaturalization Plan Submittal

Makakilo Quarry, Hawaii

Prepared By:

Grace Pacific Corporation

Belt Collins Hawaii Ltd.

(Aaron A. Akau Director of Landscape Architecture)

11/5/2009



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1.0 INTRODUCTION

S.U.P. Decision and Order # 2 (docket # SP73/147 November 7, 2008)

Within one (1) year of the Land Use Commission's Decision and Order approving the Special Use Permit, the Applicant shall submit to the Director of Planning and Permitting for review and approval a renaturalization plan in coordination with the proposed Closure Grading Plan for the quarry site and buffer area mauka of the H-1 Freeway showing landscaping details including plant types, sizing and spacing, irrigation facilities, and distribution systems.

The following sections are for submittal and review in response to the S.U.P Decision and Order # 2 above. (See Appendix A for a copy the Proposed Closure Grading Plan for the Quarry Site).

1.0.1 PURPOSE

This report outlines the necessary steps for the renaturalization of Makakilo quarry along the outer rim, with the end goal of visually integrating the quarry with the surrounding hillside by the time the quarry ceases operation. Obtaining this goal will be by the process of establishing designated planting areas at one end of the quarry and as these plots become established and self sufficient, additional plots will be constructed adjacent to these until the entire site is complete. In order to plant in the designated areas, multiple steps will be needed to construct an environment conducive to plant growth and health. These steps will include the importation of topsoil, installation of irrigation, installation of erosion control devises, and the planting of native shrubs.

1.1 SOILS

A soil analysis will be performed for all potential soil sources before it is acquired. This will insure that the soil will be free from any contaminants that it will inhibit plant growth, and that the amount of any amendments needed to be added will be economically feasible.

1.1.1 ANALYSIS

All potential imported soil shall be tested for nutrient deficiencies prior to being brought on-site. Soil samples shall be submitted to either C. Brewer

Analytical Laboratory or the University of Hawaii, College of Tropical Agriculture and Human Resources, for testing. After testing, soil shall be brought on-site and amended per the soil analysis' recommendations. See Appendix D for a guide to soil testing in Hawaii.

1.1.2 PLACEMENT

After the imported soil has been amended, it shall be placed at the designated planting areas (The maximum number of planting areas in operation at one time will be determined by the available water supply). The soil will be evenly spread across the site to a depth of 8"-12" after settlement (Figure 1).

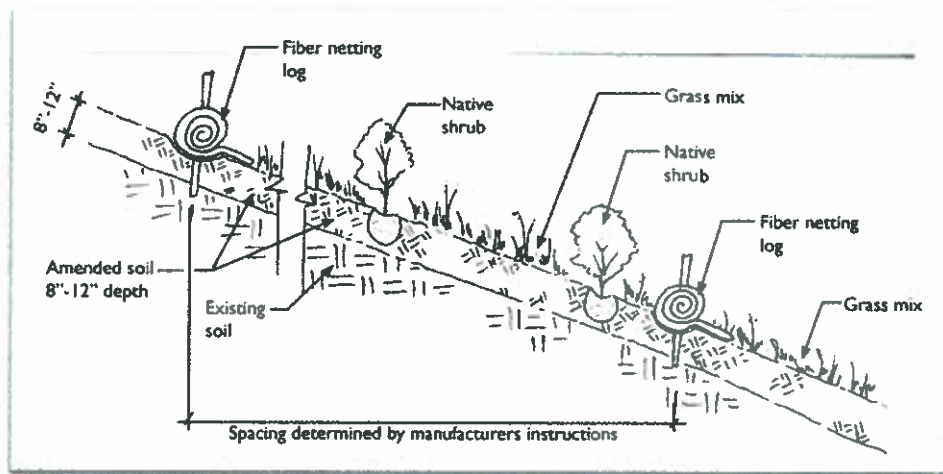


Figure 1: Placement of soils

1.2 EROSION CONTROL

Erosion control will be implemented in planting areas to reduce soil movement. It will be implemented by the placement of fiber netting logs and the application of hydromulch.

1.2.1 FIBER NETTING LOGS

Fiber netting logs will reduce loss of soil caused by water runoff, but will allow water to pass through (See Appendix E for further details of Fiber netting products). The logs will be laid out perpendicular to the slope and the spacing will be determined in the field to effectively deal with varying slopes in the terrain and the manufacture instructions. Examples of a steep grade

condition (Figure 2) and a mild slope condition (Figure 3) have been given for reference.

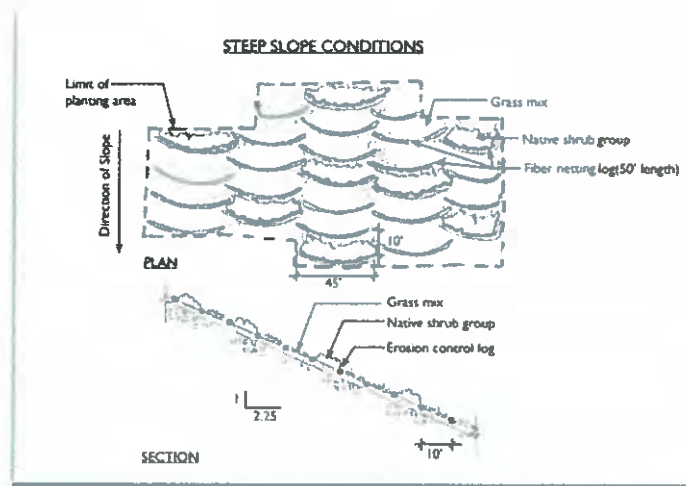


Figure 2: Steep Slope Conditions

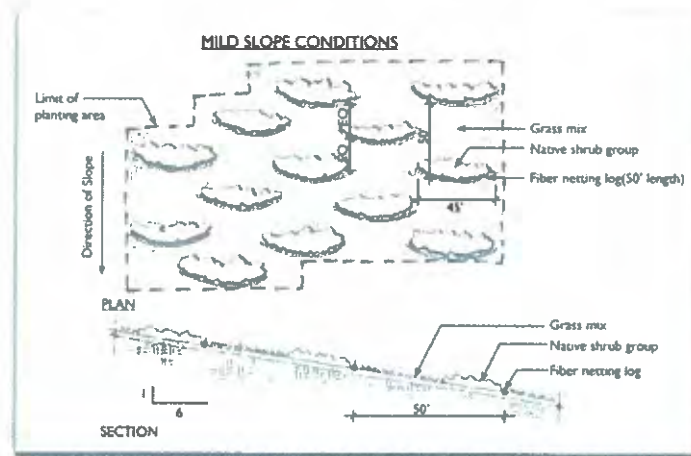


Figure 3: Mild Slope Conditions

1.2.2 HYDROMULCH

The hydromulch is a slurry mixture combination of straw, cotton fibers, seeds, fertilizer and soil tackifiers which is sprayed onto the newly laid topsoil. This application promotes the rapid growth and establishment of grasses for renaturalization (See Appendix F for further details of hydromulch products).

1.3 IRRIGATION

Temporary irrigation will be supplied for the start of each planting area until the vegetation has established itself to the point that it is self sufficient and no longer requires supplemental water for survival. Two types of systems will be needed for each planting area. Spray rotors will be used to irrigate the grass mix, and a drip system will be used to water the native shrub groups (see Figure 4 for graphic example). As the plants grow and become established the amount of water will be cut back to start the process of “weening off”. Eventually the plants will be established enough that they will no longer need irrigation, and at this point both irrigation systems for that plant area can be removed for re-use at the next planting area.

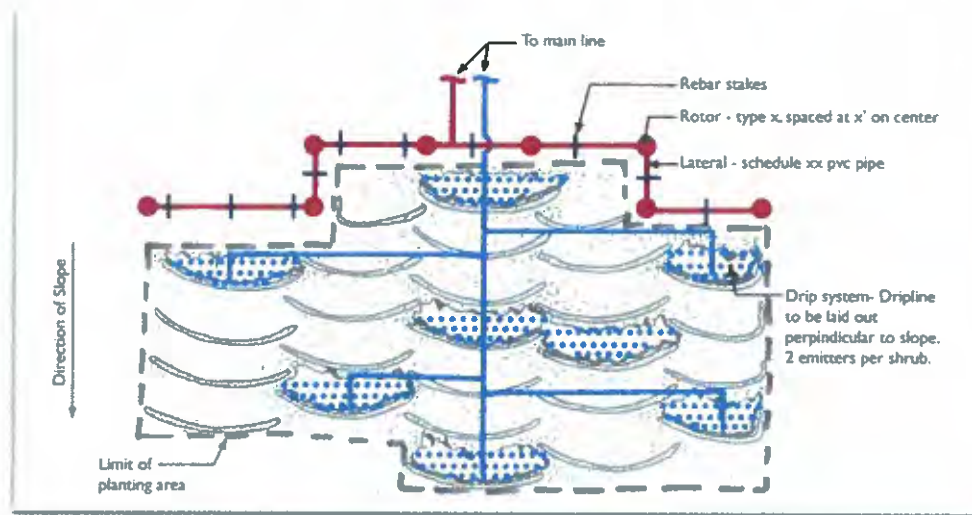


Figure 4: Irrigation System

1.3.1 IRRIGATION MATRIX

Table 1 below provides the plant palette for Makakilo Quarry used in the renaturalization plan along with essential irrigation details.

Table 1: Irrigation Matrix

PLANT PALETTE FOR MAKAKILO QUARRY							
Type	Manufacturer	Model	Description	Operating Pressure (PSI)	Flow Range	Coverage Radius	Remarks
Rotor	Toro	TG-101-NPT	Gun style sprinkler	40-95	42-248 GPM	91'-178'	Cannot use effluent water supply
Rotor	Rain Bird	2045-PJ Maxi-Bird	Riser mounted impact head	25-60	1.5-8.4 GPM	22'-45'	
Drip							
Dripline	Toro	T-EHD2057-050A	3/4" polyethylene hose	59 max			
Emitter	Toro	T-DPJ04-1	Pressure compensating emitter	10-50	1 GPH		Two emitters per shrub
Checkvalve							
Controller	Toro	DDCWP	8-station battery operated controller				
Gate Valve							
Back Flow Preventer							
Quick Coupler							
Valve Box							

1.4 PLANTING

The planting of drought resistant native shrubs, in addition to the hydromulch grasses, will occur on approximately 11.5 acres of enclosed planting areas where slope is suitable as shown in Appendix B. By utilizing these shrubs water demands will be reduced in addition to creating visual integration with the surrounding area.

1.4.1 PLANT MATRIX

Table 2 below provides the plant palette for Makakilo Quarry used in the renaturalization plan along with essential planting details for determining layout and patterns.

Table 2: Plant Matrix

PLANT PALETTE FOR MAKAKILO QUARRY								
Value	Common Name	Botanical Name	Seed Source	*Propagation Techniques	Outplanting Size (hardened to sun and drought)	Average Outplanting Spacing	Estimated Outplanting Quantity per Acre	Remarks
1	'A'ali'i	<i>Dodonaea viscosa</i>	*Wild populations on Pu'u Makakilo.	Pgs. 352-353	Mature 6" pot	5'	1,750	Requires well drained soil.
3	Naio	<i>Myoporum sandwicense</i>	*Wild populations in Kalaeloa and Campbell Industrial Park.	Pgs. 254-255	Mature 6" pot	10'	450	Requires well drained soil.
1	Ma'o	<i>Gossypium tomentosum</i>	*Wild populations in Honokai Hale.	Pgs. 237-238	Mature 6" pot	5'	1,750	Requires well drained soil.
1	'Ilihi (coastal variety)	<i>Santalum ellipticum</i>	*Wild populations on Pu'u Makakilo.	Pgs. 347-349	Mature 6" pot	15'	175	Plant next to a host plant. Requires well drained soil.
2	Pohinahina	<i>Vitex rotundifolia</i>		Pgs. 390-391	Mature 6" pot	5'	1,750	
1	Ilima (shrub form)	<i>Sida fallax</i>	*Wild populations in Makakilo.	Pgs. 248-249	Mature 6" pot	5'	1,750	Requires well drained soil.
1	Uhalou	<i>Waltheria americana</i>	*Wild populations on Pu'u Makakilo.		Mature 6" pot	5'	1,750	
1	Laredo Buffel grass	<i>Cenchrus ciliaris</i> 'Laredo'	Koolau Seed & Supply Co., Inc.		Un-hulled Seeds		10 lbs. de-hulled seeds	Hydro-seed with bonded fiber matrix (Airtrol (seobinder), fertilizer (450#/acre 10-30-10 +2% iron/zinc) and mulch in one mix. Establish mature grass coverage before planting potted materials.
1	Annual ryegrass	<i>Lolium multiflorum</i>	Koolau Seed & Supply Co., Inc.		Seeds		25 lbs. seeds	
1	Common bermuda	<i>Cynodon dactylon</i>	Koolau Seed & Supply Co., Inc.		Hulled Seeds		25 lbs. de-hulled seeds	
			*Seed source information from Shad Kane	*See book: "Growing Hawaii's Native Plants" by Lilleeng-Rosenb...				

Photos of recommended native shrubs and also grasses for hydromulch mixture can be found in Appendix C.

1.4.2 LAYOUT

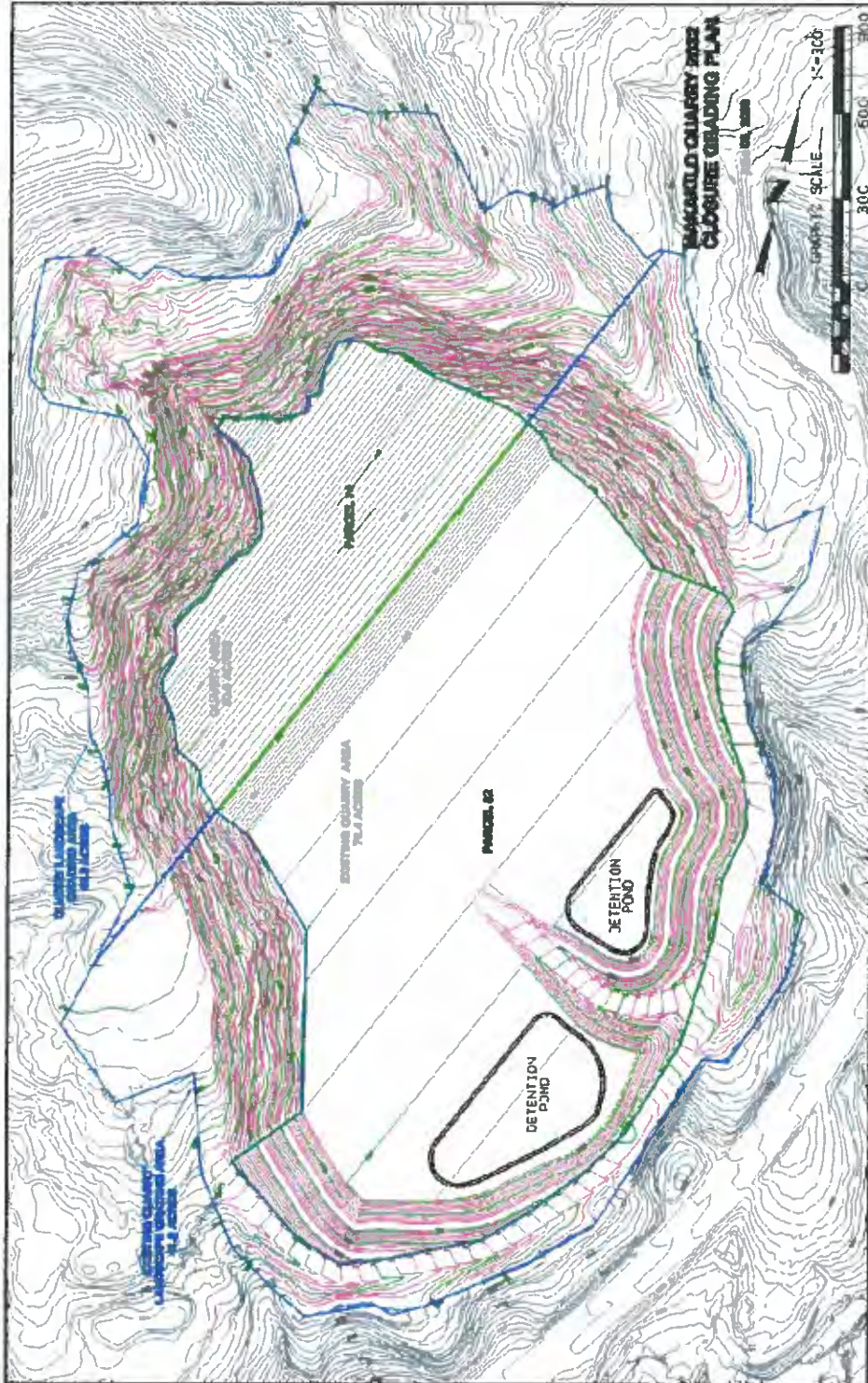
The placement of the native shrubs groups will be random across the planting area to give more of the desired naturalistic look (see Figure 2 & Figure 3 for examples of two different slope conditions). Two methods will need to be tried to find the best overall success of the grass mix and native shrub combination.

Method "A": will consist of applying the hydromulch mix across the entire planting area, with no planting of native shrubs at this time. After the grass mix has been well established and growth is healthy, native shrubs will then be planted in groupings.

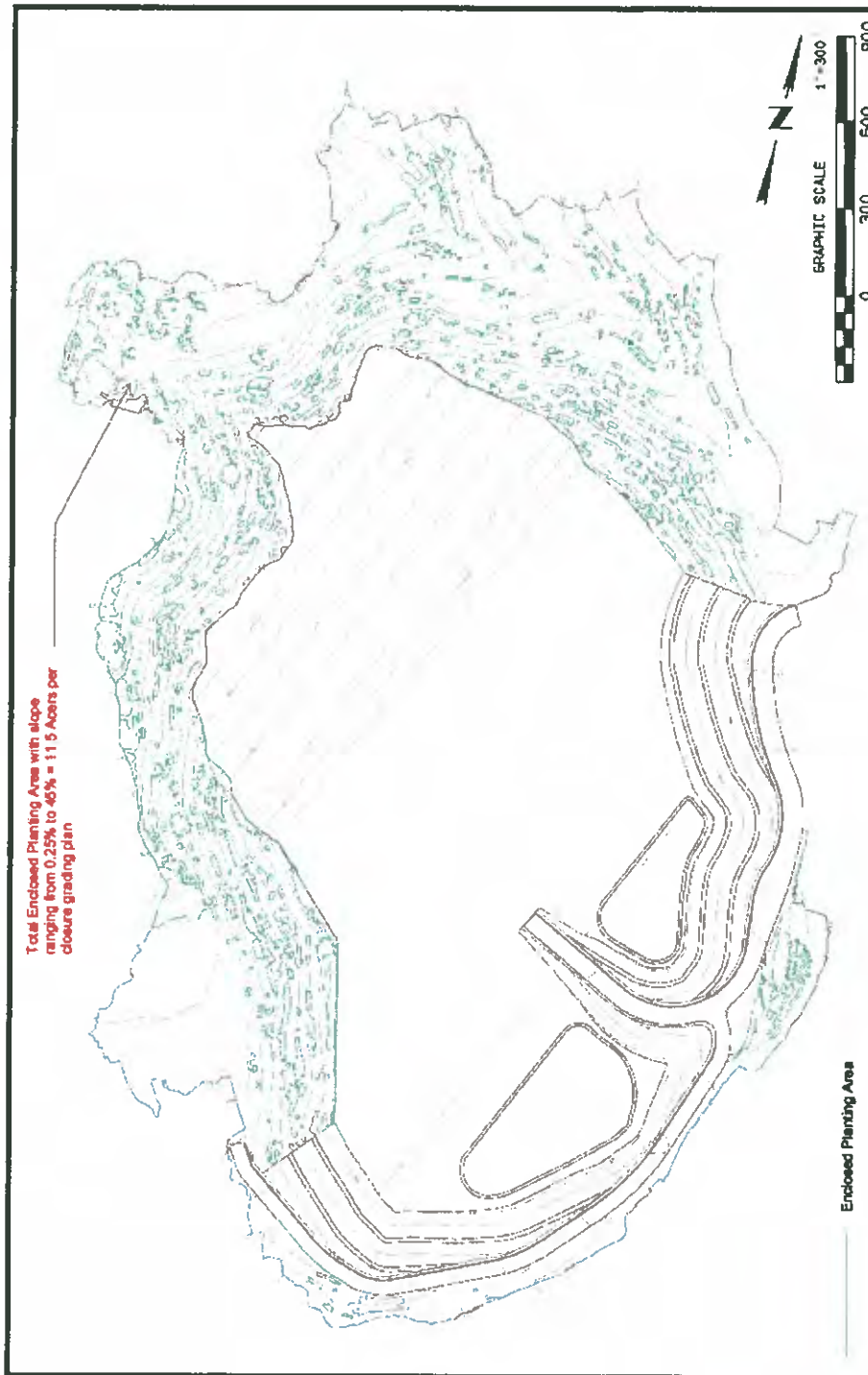
Method "B": native shrub groupings will be installed first, then immediately afterward the hydromulch mix will be sprayed across the entire planting area.

For both methods the size of the native plant groupings will be an area approximately 10'x45'.

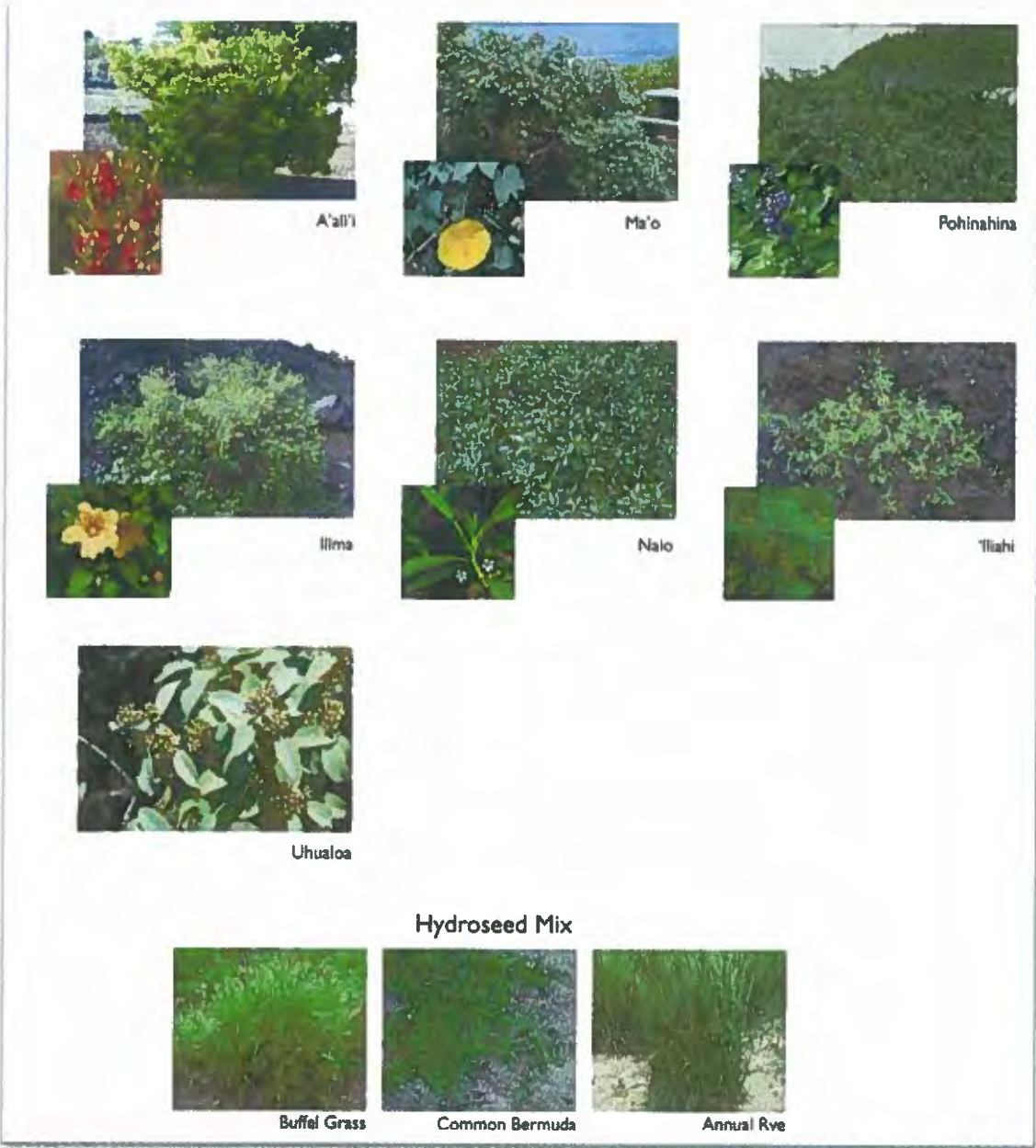
APPENDIX A: PROPOSED CLOSURE GRADING PLAN FOR THE QUARRY SITE



APPENDIX B: CLOSURE PLAN PLANTING AREAS



APPENDIX C: PLANT IMAGES



APPENDIX D: SOIL ANALYSIS

(Hue, Uchida, & Ho, 2009)

Rx for Soils and Crops

Page 1 of 6

[Return to Rx for Soils and Crops](#)

Rx for Soils and Crops

Date Last Edited: 09/13/2009

A Guide To Soil Testing For Hawaii's Residents

N. V. Hue, R. Uchida, and M. C. Ho

Department of Tropical Plant and Soil Sciences
and
Agricultural Diagnostic Service Center

College of Tropical Agriculture and Human Resources
University of Hawaii at Manoa

Why have a soil tested?

Having a soil tested is an integral part of good farming/gardening because it will let you know if your soil needs any fertilizer, what kind and how much so that your crop can grow better. In this factsheet, we will show you how to obtain a good soil test. Because laboratory analyses are performed on a small sample of soil from an entire field or garden, the analytical results are useless if the sample submitted does not represent the soil you intend to grow your plants in. A properly collected sample makes test results valid, and will produce correct recommendations that enhance yields, make efficient use of resources, and/or preserve quality of the environment.

How to take a representative soil sample

When sampling home gardens, one composite sample consisting of 5-10 subsamples per 100 sq. ft. collected over the planting area should be taken. For larger areas like pastures or tree orchards, first make a detailed map of your area, then divide your map into smaller uniform soil-test areas of a few (1-5) acres each. Label each area clearly on the map by using a combination of letters/numbers that make sense and thus are easy to remember. Each test area should be uniform with regard to soil type or condition. Fields with different slope, soil color, drainage, apparent texture (for example, heavy, light, or A'a) or cropping history should be sampled separately. A soil-test sample for each area should be a composite of 10-15 subsamples.

Soil subsamples consist of 1-inch thick slices of the soil taken to a



http://www2.ctahr.hawaii.edu/tpas/research_extension/rxsoil/soilsample.htm

9/17/2009

specified depth, normally 4 inches for no-till fields or established pasture, lawn and turf and 8 inches for conventionally tilled fields. For tree crops (forests, nuts, tree fruits), where possible, collect a surface sample to a depth of 8 inches and a sub-soil sample from 8-24 inches deep. Each sample to be tested should be a thorough mix of the cores taken randomly, say, in a zigzag pattern as shown in Figure 1.



Figure 1. Sampling soil using a zigzag pattern.

Such a sampling technique minimizes the variability that may be present in your field or garden, and allows you to obtain a reasonably representative soil

sample.

A specially designed soil probe is often used for collecting soil subsamples (called cores). However, if you do not own a probe, then use a steel or plastic garden spade or shovel to collect soil cores as follows. Dig a hole to the sampling depth, then cut a 1-inch thick slice from the top to bottom of the hole. Take a 1" wide by 1" thick segment of the slice, and place it in a clean mixing bucket, preferably made of plastic.

Plan to collect soil samples two to three months before planting so you will get your test results in plenty of time to plan your liming and fertilization. Depending on workload, the turnaround time at the lab can be up to two-three weeks. Soil in fields or gardens should be tested at least once every two years.



Submitting samples and providing relevant information

After collecting the soil samples, take them to the county extension office in your area or send them directly to the Agricultural Diagnostic Service Center (ADSC) in the College of Tropical Agriculture and Human Resources, University of Hawaii (*University of Hawaii, Agricultural Diagnostic Service Center, 1910 East-West Road, Rm 134, Honolulu, HI 96822*). To get the most accurate recommendations from your soil test, be sure to fill out a soil information sheet, which is available from your county extension office or the ADSC. A blank soil information sheet is shown in Figure 2.

Figure 2. Soil information sheet used by the ADSC, Univ. of Hawaii.

Agricultural Diagnostic Service Center
College of Tropical Agriculture & Human Resources
 1910 East-West Rd., Honolulu, HI 96822
 Phone: 956-6706/7980 Fax: 956-2592

Department of Agronomy and Soil Science
University of Hawaii at Manoa
 1910 East-West Rd., Honolulu, HI 96822
 Phone: 956-7530 Fax: 956-6539
 email: agras@hawaii.edu

DATE: _____

Name:		Address:		City:	
State:	Zip:	Phone:	Fax:		
Client ID:	Sample Type:	Sample Location:			
Agent:		Address:		City:	
State:	Zip:	Phone:	Fax:		
Job Control No.:	Sample ID:	*Serial No.:	*Date (m/d/y):		
Soil or Mbx:	Size of area: sq. ft.:		Acres:		
Soil Depth (inches):	Map unit:	Series:	Apparent density: heavy, light, or Aa		
Elevation:	Annual rainfall (inches):	Drainage:	Slope (%):	Irrigation:	
Lime used:	Yr. of application:	Rate:	Type of Lime:		
Fertilizer used:	Analysis:	Rate:	Method:		
Manure type:	Rate:	Compost:	Rate of compost:		
Has rock phosphate been applied?	Plant grown:		Plant to be grown:		
Can you till in fertilizer 4-6 inches if necessary?		Bottom land:	Rolling:		
Describe the problem &		Send copies to:	Objectives for this sample:		

observations:	NRCS	Diagnosis only
	ASCS	

Complete information will provide you with the best possible recommendation. Fertilizer and lime requirements vary with soils and crops; therefore, the soil's apparent density, namely heavy (most Hawaii's soils), light (volcanic ash-derived soils on the Big Island) or A'a land (irregular pieces of lava), crop to be grown and crop previously grown are among the most important items of information needed to make correct recommendations.

How are soil samples tested?

The ADSC provides all residents of Hawaii with a reasonably priced soil and plant tissue testing service. Routine analyses of soils include acidity/alkalinity (pH), extractable phosphorus (P), potassium (K), calcium (Ca), and magnesium (Mg). Soil organic carbon (organic matter), total nitrogen, extractable aluminum (Al), boron (B), and other micronutrients (e.g., zinc, manganese, copper) are measured on request. Detailed descriptions of the analytical procedures are given in the *Soil Fertility Manual*, 1996, published by the College of Tropical Agriculture and Human Resources, University of Hawaii.

Soil test results and fertilizer recommendations

Within two to three weeks after you submit your samples to the ADSC, you should receive the test results for your soil along with fertilizer recommendations for your garden or field. The results should include at least pH, and levels of P, K, Ca and Mg in ppm (or mg per kg). A brief interpretation of these levels is also provided as either: very low, low, sufficient, high, very high, or extremely high. An example of the form for the analytical results and interpretations is shown in the upper half of Figure 3.

Figure 3. ANALYTICAL RESULTS AND FERTILIZER RECOMMENDATIONS PROVIDED BY THE ADSC

Analytical Results / Interpretations

*Soil Lab No:	Interpretation	Plant Lab No:	Interpretation
Soil pH:		Nitrogen (%N):	

Phosphorus (ppm) MT or OL:	Phosphorus (% P):
Potassium (ppm K)	Potassium (% K):
Calcium (ppm Ca)	Calcium (% Ca):
Magnesium (ppm Mg)	Magnesium (% Mg)
Salinity (EC, mmhos/cm)	Sulfur (% S)
Zinc (ppm Zn)	Iron (ppm Fe)
Manganese (ppm Mn)	Manganese (ppm Mn)
Copper (ppm Cu)	Zinc (ppm Zn)
Boron (ppm B)	Copper (ppm Cu)
Total N (%)	Boron (ppm B)
Org. C (%)	Molybdenum (ppm Mo)
NH4-N (ppm)	Aluminum (ppm Al)
NO3-N (ppm)	Nitrate (ppm NO3-N)

Fertilizer Recommendation

Total nutrient requirement (lbs/A):	Nitrogen(N):	Phosphorus (P):	Potassium (K):
Fertilizer/Material Options	Fertilizer Amount		Est. Cost
	lbs/1000sq ft./Crop	lbs/1000sq. ft./mo.	\$/1000sq. ft.
Lime			
Fertilizer selection			
Micronutrient			
Other Fertilizers			
Comments:			

Note: The interpretations are based on the Fact Sheet No. 3 "Adequate Nutrient Levels in Soils and Plants in Hawaii".

Did the recommendation help? To help improve future recommendations, please answer the following questions, photocopy this form and return it to above address (ADSC).

1. Did you need to modify the recommendations? If so, how?
2. Did your plants improve? Please give unit area yield before and after the recommendation was applied.

Although these results and interpretations are essential to making fertilizer recommendations, they may not be very helpful to you. That's why we also provide fertilizer recommendations for your garden or field as shown in the lower half of Figure 3. These include amounts of lime (in either lbs/1000 sq. ft. or tons/acre), and its estimated cost, fertilizer type (for example, 21-0-0, 21-0-32, 10-30-10), and its amount and cost.

At the bottom of the form, we ask you to give us some feedback in terms of how your crop performed as a result of our fertilizer recommendations. Such information would allow us to fine-tune our recommendations so that we can better serve you in the future.

We hope that with this information you can make your garden or field more productive as well as help protect the quality of our environment.



[Return to Rx for Soils and Crops](#)

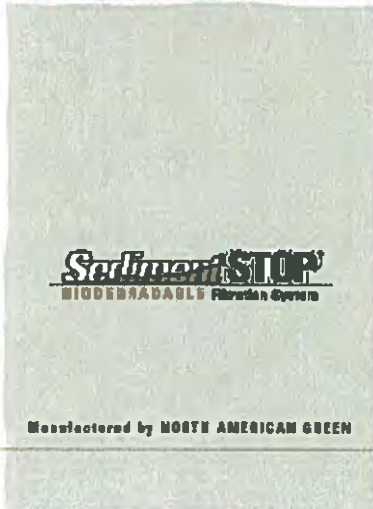
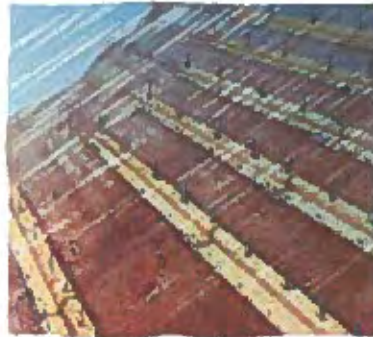
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APPENDIX E: FIBER NETTING LOG

(Green, SedimentSTOP, 2008)



in its tracks with



the Versatile

SEDIMENT CONTROL SOLUTION

North American Green's SedimentSTOP® Biodegradable Filtration System is a temporary sediment filtration device that provides highly effective sediment control for a wide range of applications.



SedimentSTOP consists of a 70% straw / 30% coconut fiber matrix reinforced with a 100% biodegradable netting that is rolled from edge to edge to create a seamless temporary, water-permeable three-dimensional sediment filtration structure.

A Best Management Practice that reduces soil loss caused by stormwater runoff, SedimentSTOP traps soil particles while allowing water to pass through, protecting waterways, sidewalks and roads from sediment accumulation.

SedimentSTOP assists engineers, specifiers and contractors in complying with many NPDES Phase II rules and other environmental regulations.

SedimentSTOP saves soil, time, and money in applications that include:

- Forest Fire Rehabilitation
- Bioengineering Projects
- Active Jobsites – Commercial/New Home Construction
- Ski Slopes
- Highway Construction
- Industrial Sites
- Pipeline Revegetation
- Steep Slopes
- Wet Areas
- Edging/Perimeter Control



VERSATILE

the SedimentSTOP® ADVANTAGE

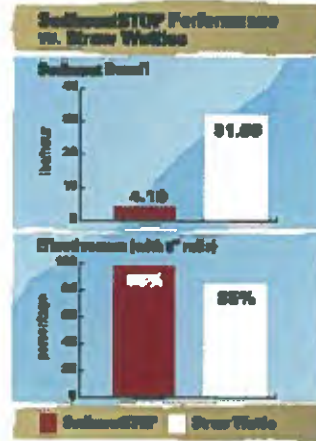
SedimentSTOP dramatically reduces surface sheet erosion, and offers significantly greater filtration capabilities and sediment retention than wattles, straw bales or silt fences. And unlike wattles, which use a single netting on the outside to encapsulate the fiber fill, SedimentSTOP utilizes multiple layers of netting to eliminate the possibility of failure if the outer netting is ever damaged.



SedimentSTOP is more porous than a wattle, allowing it to perform as a buffer strip that slows water and filters sediment. In the event that water does flow over the top, SedimentSTOP has an attached Splash Apron, which reduces rill formation and potential down slope erosion.



Wattles create a dam-like structure that causes water to back up and flow over the top, resulting in potentially severe erosion on the down slope side of the wattle.



SedimentSTOP was put to the test against straw wattles in research recently conducted at Utah State University's Water Research Facility.

Three 20-ft. long plots of sandy loam soil were set at a 2:1 gradient. SedimentSTOP rolls with a 9-inch diameter were placed at the mid-point and 2 ft. from the bottom of one plot, straw wattles of the same diameter were similarly placed on a second plot, and one plot was left unprotected as the control. Sediment runoff was then collected and measured as each plot was exposed to 4 inches of rainfall over a one-hour period.

The sediment control effectiveness of SedimentSTOP versus the wattles was significant. While 31.66 lbs. of sediment was collected from the plot with straw wattles, only 4.16 lbs. of sediment was collected from the plot protected by SedimentSTOP. Compared to the bare soil control plot, the straw wattles were only 85% effective, while the SedimentSTOP was independently proven to be 88% effective at reducing sediment runoff.

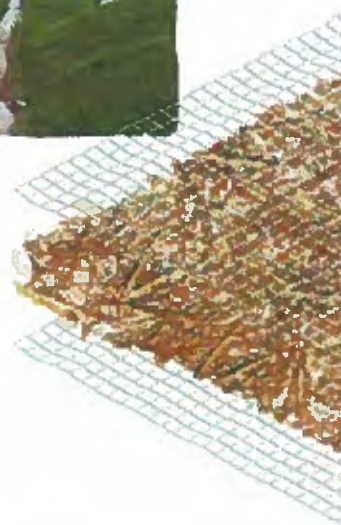


Biofriendly

SEDIMENT CONTROL

SedimentSTOP is an environmentally friendly, 100% biodegradable product. It can be incorporated with a variety of planting techniques such as: live planting, live staking and seed incorporation. The leno woven net enables its jute strands to move independently of each other, allowing the net openings to expand as necessary. This flexibility, combined with the 100% biodegradability, minimizes the risk of accidental wildlife entrapment.

Because it leaves absolutely no synthetic residues on site, SedimentSTOP is ideal for use in bioengineering projects, wetland mitigation, riparian area protection, shaded areas, stream bank restorations and environmentally sensitive areas where synthetic-netted products may pose a threat to wildlife. By eliminating the need to return to the jobsite to remove the sediment control structure, SedimentSTOP saves you time, money and potential headaches.



NATURAL

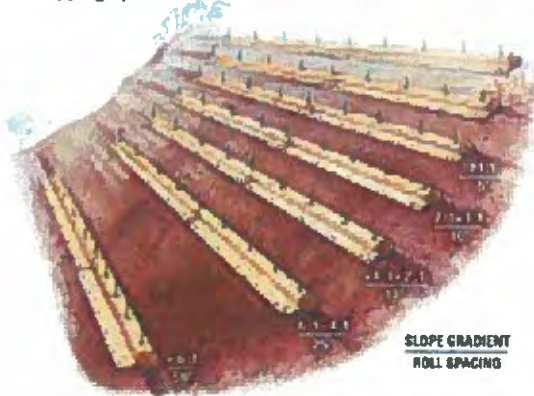
SedimentSTOP® is

EASY TO
INSTALL

SedimentSTOP is easy to install, and features a two to three year functional lifespan. The structurally sound net-reinforced layers prevent failures – even if the outer netting wrap is damaged during or after installation.

SedimentSTOP is easily field fabricated for greater flexibility to specific site requirements. It is extremely flexible and readily conforms to the ground surface, minimizing undercutting. Longer, 50-foot finished roll length reduces the number of overlaps, and its leno woven natural jute net allows easier contouring to the soil. The short, lightweight packaged rolls are easily transported over difficult terrain and to remote areas.

Finished roll diameter can also be increased, if necessary, by simply adding other organic materials such as grass clippings, pine needles, straw, or leaves.



This illustration provides general guidelines to assist in the design, installation and spacing of SedimentSTOP. These guidelines may require modification due to variation in soil type, rainfall intensity or duration, and amount of runoff affecting the application site. As slope gradient increases the spacing between the SedimentSTOP structures should decrease. For example, on a slope with a gradient of 8:1 – 4:1 (44%), the SedimentSTOP structures should be installed 25 feet apart. However, on a slope with a gradient of 2:1 – 1:1 the spacing should be reduced to 10 feet.

HERE'S HOW IT IS DONE:

Step 1

Dig a 3" deep x 8" wide anchor trench along the contour of the slope or across the slope.

Step 2

Position the SedimentSTOP® packaged roll perpendicular to the trench so the double-netted portion covers the anchor trench and extends downslope one foot beyond the anchor trench. (This forms the Splash Apron™.) Unroll to cover the trench.

Step 3

Secure SedimentSTOP material into the anchor trench with a row of staples, and then secure the downslope edge of the Splash Apron with another row of staples 12" apart.

Step 4

Roll the remaining SedimentSTOP material from the upslope edge into the anchor trench. (If a thicker roll is needed, simply add organic materials across the product width prior to rolling.)

Step 5

Once the product has been rolled up, secure it to the soil surface using wooden stakes 2' on center.

NOTE: The company fertilizer instructions are printed on each package of SedimentSTOP®.

PACKAGED ROLLS

Width - 6.67 ft (2.03 m)

Length - 50.0 ft (15.24 m)

Weight - 65.00 lbs (29.50 kg) ± 10%

Matrix - 70% Straw Fiber
1.225 lbs/yd² (0.885 kg/m²)
30% Coconut Fiber
0.525 lbs/yd² (0.285 kg/m²)

Bottom Netting - leno woven jute net

Splash Apron Top Net - 2.00 ft leno woven jute net

FINISHED INSTALLED STRUCTURE

Diameter - Approximately 8.00 in. (0.23 m)

Length - 50 linear feet (15.2 m)

Downhill Splash Apron Length - 1.00 ft (0.3 m)

EASY

If you are thinking about using wattles, you need to STOP and consider

the advantages of using

SedimentSTOP.

SedimentSTOP Benefits Comparison Chart

When you compare the benefits of using SedimentSTOP against other sediment filtration methods, you'll see that there really is no comparison.

	SedimentSTOP	Straw Wattle	Silt Fence
Completely Biodegradable	YES		
Reduces Rill Formation	YES		
Customizable Diameter	YES		
Allows Water Filtration	YES		
Shallow Anchor Trench	YES	YES	
No Special Equipment Needed	YES	YES	
Little to no Risk of Wildlife Entrapment	YES	YES	
Seamless Joints	YES		YES
No Removal Required	YES		
Used on Slopes >2:1	YES	YES	
Multiple Layers of Netting	YES		
Customizable Lengths	YES		YES
Economical Bundles for Shipping	YES		YES

SedimentSTOP is economical, delivers exceptional performance, and is easily installed. Contact North American Green today for even more reasons to stop using wattles and start using SedimentSTOP.

1-800-772-2040
www.SedimentSTOP.com



SedimentSTOP
BIODEGRADABLE Filtration Systems

Manufactured by NORTH AMERICAN GREEN



North American Green
www.nagreen.com

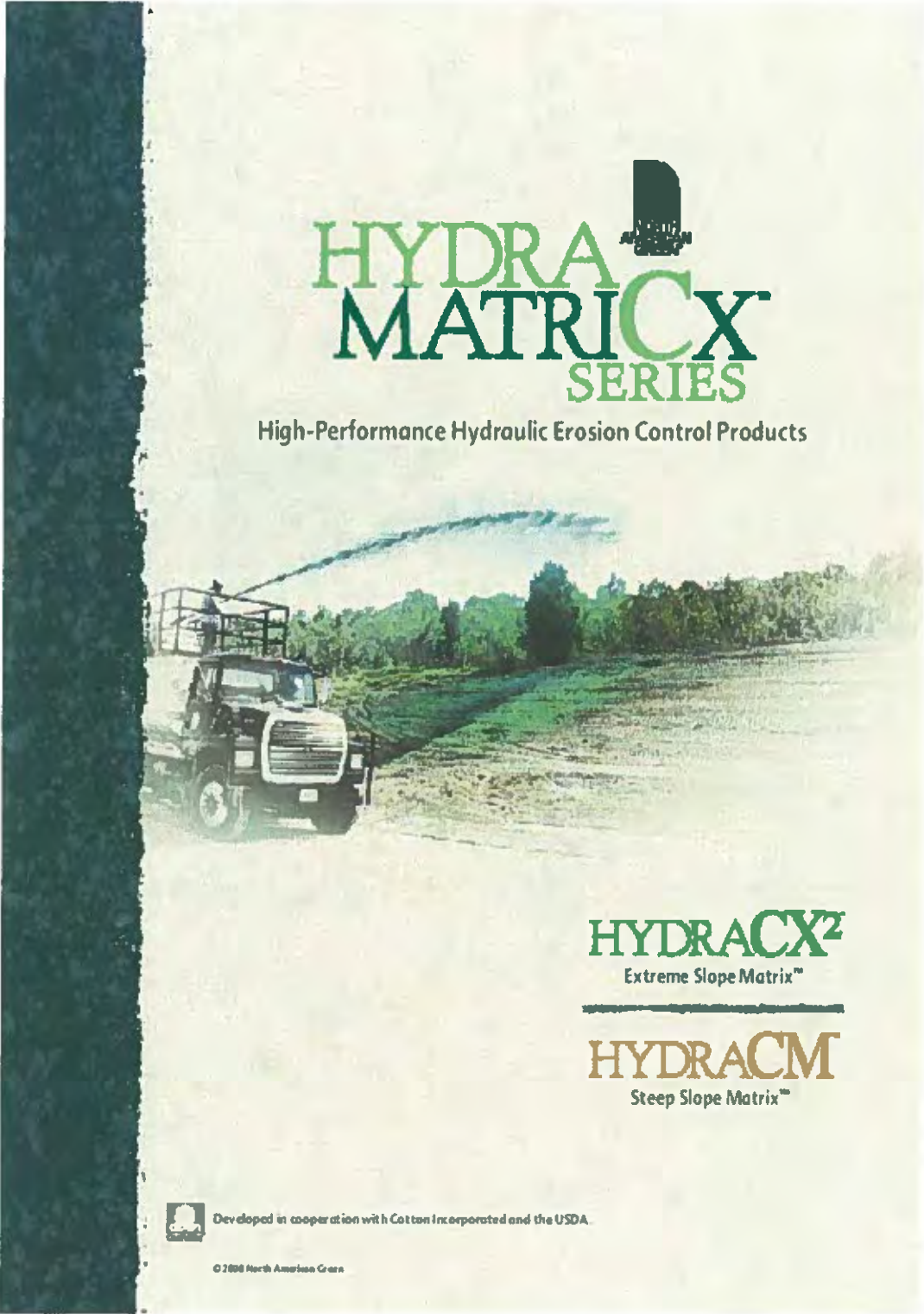
A **GREEN** Company

14840 Highway 41 North
Evansville, Indiana 47726 U.S.A.
800-772-2040 | 812-867-8832 | www.nagreen.com

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APPENDIX F: HYDROMULCH

(Green, Hydra MatriCx S Eries, 2008)




**HYDRA
MTRICX
SERIES**

High-Performance Hydraulic Erosion Control Products

HYDRACX²
Extreme Slope Matrix™

HYDRACM
Steep Slope Matrix™

 Developed in cooperation with Cotton Incorporated and the USDA.

© 2008 North American Green

HydraMatriCx™ Series

High-Performance Hydraulic Erosion Control Products

HydraMatriCx™ Series high-performance hydraulic erosion control products are made with a proprietary blend of straw, reclaimed cotton plant material, tackifiers, and polymers.

This exciting line of products from North American Green was developed in cooperation with Cotton Incorporated and the U.S. Department of Agriculture.

Consider the benefits of HydraMatriCx Series products:

- Cost-effective application
- Low water-to-mulch ratio
- One-step application of seed, fertilizer, and mulch
- No synthetic fibers
- Pleasing, deep-green color

In many slope-protection applications, HydraMatriCx products can replace temporary erosion control blankets.

HYDRACX²

HydraCX²™ Extreme Slope Matrix™ is a high-performance hydraulic mulch designed especially for steep to severe slopes, 2:1 to 1:1.

HYDRACM

HydraCM™ Steep Slope Matrix™ is a high-performance hydraulic mulch designed especially for medium-length, moderate to steep slopes, 4:1 to 3:1.



HydraCX²: Proven Performance

The porosity, absorbency, and proprietary blend of tackifiers and polymers of HydraCX² deliver exceptional erosion control and fast vegetation establishment.

San Diego State University Slope Testing

Cover Factor (2, 4, and 6 inches/hour event, 20-minute-duration events)	ASTM D 6459*	0.002*
Percent Effectiveness	ASTM D 6459*	99.8%*
Vegetation Establishment	ECTC Test Method #4	500%

*Modified ASTM D 6459 (Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Preventing Hillslopes from Rainfall-Induced Erosion) conducted by the Soil Erosion Research Laboratory (SERL) at San Diego State University in December 2007. Test beds utilized by SERL measure 2 m x 8 m. Target application rate was 3,500 pounds per acre.

To push HydraCX² to its performance extremes, one of the test beds received an extended rain event:

Slope	Rainfall	Duration	Extended Intensity	Extended Duration
3H:1V	2, 4, and 6 inches per hour	20 minutes	6 inches per hour	60 minutes

This extended rain event totaled 10 inches of rain over a two-hour time period (an average of 5 inches of rain per hour). The data from this event showed that HydraCX² can reduce sediment loss by as much as 99.7% compared to a non-protected plot.

TRI/Environmental Slope Testing

ASTM D 6459†			
Cover Factor	Rainfall	Duration	Percent Effectiveness
0.004	2, 4, and 6 inches per hour	20 minutes	99.6%

†Testing pursuant to ASTM D 6459 (Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Preventing Hillslopes from Rainfall-Induced Erosion) was conducted by TRI/Environmental, Inc. The test used two plots on a 3H:1V slope gradient with an application rate of 4,000 pounds per acre. The plots used were 8 feet wide by 40 feet long. Rainfall rate varied as a function of rainfall intensity. Wind speeds were maintained below 3 miles per hour. Rainfall height was a minimum of 15 feet. Each of the plots received an average rainfall of 2.2 inches per hour, 4.75 inches per hour, and 6.5 inches per hour for 20-minute duration. The average sediment loss for both plots was less than 2 pounds each. HydraCX² was determined to be 99.6% effective, with a C factor of 0.004.

HydraMatriCx Series products achieve maximum performance once the matrix has dried.



Cost-Effective Application

- One-step application
- Low water-to-mulch ratio
- Ready to agitate instantly
- Uses convenient, spray-on technology
- Easy to clean up



Low Water-to-Mulch Ratio

HydraCX² and HydraCM require a maximum of only 100 gallons of water per 50 pounds of mulch. Water-to-mulch ratio is important when you consider the costs of water and the time, labor, and fuel consumption for trips to and from the water source.

One-Step Application

HydraMatriCx products can be applied in one step together with seed and fertilizer. Contractors will appreciate the convenience and the quick, easy tank loading and one-step application of HydraMatriCx products.

No Synthetic Fibers

HydraCX² and HydraCM contain no synthetic fibers.

In multiple toxicity studies conducted according to EPA-821-R-02-123 Methods for Measuring Acute Toxicity of Effluents, the *Ceriodaphnia dubia*, *Daphnia magna*, and *Pimephales promelas* tests of HydraCX² detected no significant toxicity in any of the tests, and control performance criteria were met.

In addition, HydraCX² contains beneficial nitrogen, phosphorous, and potassium, nutrients that are important for plant growth.



Grows Grass Fast

HydraCX² enhances seed germination and vegetation establishment. Its natural absorbency holds moisture and promotes seed-to-soil contact and germination, quickly promoting vegetation.

HydraCX² has been tested according to ASTM 7322, Determination of Rolled Erosion Control Products (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions. The results concluded that the average plant height was improved by 35 percent in comparison to the control plot. In addition, vegetation establishment was increased by 500 percent.

Compost Analysis of HydraCX² Extreme Slope Matrix

Item	% Dry Basis	% Wet Basis	lbs./100 cu. ft.	lbs./cu. yd.	lbs./ton
lbs./gal		0.83			
lbs./cu. ft.		6.26	626	168.5	
Total Solids (TS)		86.62			
Moisture		13.38			
Total Nitrogen (TKN)	1.59	1.38	8.61	2.32	27.60
Available Nitrogen	0.54	0.47	2.93	0.79	9.40
Ammonia Nitrogen	0.04	0.03	0.19	0.05	0.60
Available Ammonia	0.02	0.02	0.13	0.03	0.40
Organic Nitrogen	1.55	1.34	8.36	2.26	26.80
Available Organic N	0.52	0.45	2.81	0.76	9.00
Phosphorous (P)	0.28	0.17	1.06	0.29	3.40
Phosphate (P2O5)	0.46	0.40	2.50	0.67	8.00
Potassium (K)	2.49	2.16	13.48	3.64	43.20
Potash (K2O)	2.99	2.59	16.16	4.36	51.80
Calcium (Ca)	0.50	0.43	2.68	0.72	8.60
Carbon: Nitrogen Ratio		29:1			

These analyses are representative samples. Percentages may vary from sample to sample. Calculations are approximate and are not guaranteed.

Unlike some wood-based mulches that may have carbon-to-nitrogen (C:N) ratios of more than 300:1, HydraCX² has a carbon-to-nitrogen ratio that is typically less than 40:1. HydraCX² requires less nitrogen from the soil for decomposition, leaving more of that nutrient available for plant growth.

HydraCX² Content

65% ± 3% Mechanically processed straw

25% ± 3% Mechanically processed cotton fibers and byproducts

10% ± 1% Proprietary hydrocolloidal tackifiers and activators

HydraCM Content

75% ± 3% Mechanically processed straw

15% ± 3% Mechanically processed cotton fibers and byproducts

10% ± 1% Proprietary hydrocolloidal tackifiers and activators

EXHIBIT 6—ENGINEERING REPORT

**MAKAKILO QUARRY
(Tax Map Key 9-2-3: 82)
CONDITIONAL USE PERMIT NO. 72/CUP-15
ENGINEERING REPORT AMENDMENT**

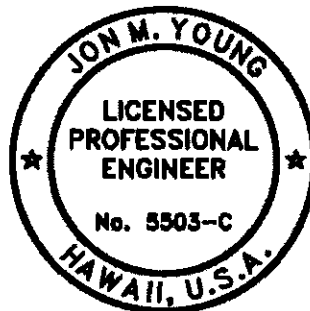
Prepared for:

GRACE PACIFIC CORPORATION
P.O. Box 78
Honolulu, Hawaii 96810

Prepared by:

BELT COLLINS HAWAII, LTD.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819

April 2007
and Amended May 2008



This work was prepared by me or under my supervision.

April 30, 2008

Expiration Date of the License



ENGINEERING REPORT AMENDMENT

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APPENDICES

Appendix A - Restoration Grading Plan Recommendations

Agra Earth & Environmental (from July 1998 Engineering Report)

Appendix B - Grading Figures, Plans and Sections

Map of 100 Year Rainfall, Oahu, Hawaii	Figure 1
Existing Drainage	Figure 2
Developed Drainage	Figure 3
Overall Site Plan (Closure Grading Plan)	Figure 4
Closure Grading Plan with Index	Figure 5a
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Planting Slope Index	Figure 5d
Aerial Photo with Planting Slope Index	Figure 5e
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Appendix C - Storm Drainage Calculations

C-1	Existing Runoff and Rainfall Storage Calculations
C-2	Developed Runoff and Rainfall Storage Calculations
C-3	Berm Surface Water Calculations
C-4	Storage-Elevation Tables

Appendix D - Not Used

Appendix E - Revised Mitigation/Revegetation Plan

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Location of View Planes	Exhibit 2-0
Viewplane Exhibits	Exhibits 2-1 - 2-9
Recommended Plant Palette	Exhibit 3
Revegetation Matrix	Exhibit 4
Revegetation Phasing	Exhibit 5

Appendix F - Not Used

1. INTRODUCTION

1.1 PURPOSE

This Makakilo Quarry Engineering Report, dated April 2007 and amended May 2008 (the "April 2007 Report"), is prepared to assist Grace Pacific Corporation in its application for a modification to use permits 72/CUP-15 and 73/SUP-147, to allow the relocation and continuation of quarrying activities at Pu'u Makakilo (the "Application").

The original Makakilo Quarry Engineering Report was approved by the City and County of Honolulu Department of Planning and Permitting on October 19, 1998 (the "1998 Report"). The 1998 Report was prepared to satisfy Condition no. 2 of City Council resolution 95. An amendment was made to the 1998 Report in March of 2004 (the "2004 Report"). The 2004 Report dealt largely with the retention of run-off within the property, visual mitigation and landscaping.

While this report is written to be a free-standing document, a review of the 1998 Report and the 2004 Report is of value in understanding the current operations. These reports are included as Exhibit J of the Application.

1.2 SITE DESCRIPTION

The James Campbell Company owns the land under the Makakilo Quarry (Tax Map Key 9-2-3:82), and licenses it to Grace Pacific Corporation for quarry operations. The license agreement expires in the year 2017. Subject to the approval of the Application, Grace Pacific has negotiated with Campbell for an extension of the license to 2032.

The quarry is situated on the slopes of Pu'u Makakilo. The west bound lanes of the H-1 Freeway front the southeast side of the property. The area makai of the H-1 Freeway is used as a processing site for quarry, but its operations are not included in this report.

Pu'u Makakilo Inc., a subsidiary of Grace Pacific Corporation, owns the property surrounding the existing quarry. The land is characterized as dry-range land with poor, scrub-type vegetation on greater than 10 percent slopes.

2. GRADING PLAN

2.1 GRADING

The attached grading plan (Figure 4, Appendix B) shows the proposed final grades prior to reclamation of the quarry in the year 2032. The plan maximizes the excavation of the known basalt reserve while minimizing visual and environmental impacts to the surrounding community.

The southeast boundary of the quarry, which consists of undisturbed ridges and gullies, parallels the H-1 freeway. This area serves as a buffer and will remain undisturbed,

providing a noise and visual barrier from the freeway. The quarry sides and mauka face will utilize slopes averaging flatter than 1.5 (horizontal) to 1 (vertical) and undulating faces to minimize the appearance of a man-made landform. The existing quarry floor will gently slope from the back and sides to the front at approximately a 2% grade. The floor of the proposed mauka quarry area will be steeper, at 15% to 25%, matching the gradients of the existing Pu'u formation.

Restoration grading recommendations prepared by a geotechnical engineer are attached as Appendix A. Several key methods are recommended to provide an adequate foundation for access roads, residential and light loaded commercial development. Excess stockpile material, 1 inch minus, may be used for landscape restoration provided the material contains or is amended with proper portions of organics, sand and silts.

The proposed relocation of the quarry extends up the Pu'u from existing lower elevations between 500 feet to 550 feet to an upper elevation of 700 feet. An access road running across the 350 foot elevation of Parcel 82 will be constructed to allow vehicle access from the southwest portion of the 312 acre parcel (TMK 9-2-3-74) to the northeast portion of the parcel.

As part of this proposal, two drainage basins will be constructed within the lower active pit for runoff retention. There is only minimal additional run-on arising from this proposal, representing runoff from the southwestern portion of the berm that is to be constructed on the northeast boundary. Today, approximately one-half of the runoff in the vicinity of the proposed berm finds its way into the Kalo'i Gulch watershed.

Two new landforms will be created from the 475 foot to 700 foot elevations in conjunction with the relocation of quarrying activities. On the southwest boundary, the ridgeline of the Puu will be cut and graded by up to 50 feet to reduce the visual impact of the quarrying, as seen from the H-1 freeway on the approach to Kapolei. For the same reason, Grace Pacific will construct a ridge-like berm extending from the northeastern ridge of the Puu. This berm will range in height from 15 feet to 100 feet above the existing ground. The berm will be constructed with flatter than 2:1 horizontal to vertical slopes. In addition, the bowl of the Puu, in the 700 foot to 800 foot elevation, will be restored to its pre-golf, gullied appearance.

The quarry sides and mauka face will consist of slopes of averaging greater than a 1.5 to 1 horizontal to vertical proportion to reach the desired depths of approximately 200 feet below the existing ground surface. Quarrying to such slopes arguably leaves good material in the ground, but success in achieving visual mitigation in the land forming and revegetation processes is deemed a greater benefit. Over-excavation on the quarry floor will be necessary in some areas to follow rock deposits. Such over-excavation will be filled and compacted to achieve the desired final grades. See Figures 4, 5a and 5b of Appendix B for a detailed look at the slopes along the sides and mauka face of the proposed quarry area.

2.2 ALTERNATIVE FLOOR RECLAMATION

If post-closure development plans deem it desirable, the quarry can be indirectly reclaimed to increase infiltration. After the quarry has been shaped to match the grading plan, the pit floor can be regraded to produce a rough, irregular surface. This method will increase water infiltration and slow erosion by keying the replaced soil into the substrate. This can be achieved by either blasting or ripping the pit floor. Since this quarry is hard rock quarry, blasting is the appropriate method to fracture the pit floor so that water can drain slowly and roots can penetrate. A good technique is to blast an extra 10 feet during the last production round and leave some of the fractured material in place.

2.3 BENCH RECLAMATION

Under the May 2008 Revised Grading Plan several areas of the existing quarry will be left with traditional 25 foot wide benches and 50 foot high faces. In these cases, the benches will be sloped toward the high wall to help trap moisture and soil. Topsoil will be placed on the benches and planted. Other methods may be used to break up the linear features including performing post-production blasting to form staggered benches. Strategic blasting can create chutes, spurs, and rough vertical cliff faces can be created. The desired effect depends on the rock type, structural geology, and blasting agent from a choice of blast patterns, delays, and stemming depths. The appropriate methods will be chosen only when final quarry grades are achieved and rock faces can be evaluated. Appendix E presents the current revegetation plan for screening and restoration of the quarry.

3. DRAINAGE PLAN

3.1 DRAINAGE PLAN

3.1.1 METHOD

The intent of the Makakilo Quarry drainage plan is to reduce the amount of stormwater run-on and minimize the impacts of run-off on the quarry as well as downstream. Elements of the drainage plan are detailed in Appendix C.

The method used in this report to calculate required storage uses the total rainfall depth from the design storm. This number is multiplied by the drainage area to yield the total required storage. See Appendices C-1 through C-4 for rainfall storage calculations.

The depth of recorded rainfall for a 100-year storm with a 24-hour duration was extracted from the State Hawaii Department of Land and Natural Resources, Division of Water Land Development, "Rainfall Frequency Study for Oahu, Report R-73", 1984. The applicable page from this reference is included in Appendix B, as figure 1.

3.1.2 EXISTING DRAINAGE

The existing upper quarry covers 94 acres of the Makakilo Pu'u. The slopes of Pu'u Makakilo generate approximately 148 acres of rainfall into the existing quarry area. Figure 2 of Appendix B shows the extent of the existing drainage area.

Two existing drainage basins located near the bottom elevation of the quarry create the necessary storage capacity for a design 100-year 24-hour storm. They are DB#1 and DB#2. The required storage was calculated to be 151.9 ac-ft. See Appendix C-1 for required storage calculations. The volume capacity of the three drain basins is 175 ac-ft.

3.1.3 QUARRY DRAINAGE WITH RELOCATION OF QUARRY

The relocated quarry extends mauka within the northeast and southwest trending ridges of Pu'u Makakilo. See Figure 4 of Appendix B for the proposed relocation of quarrying activities. The total proposed area plus the offsite area contribution totals 170.0 acres. This includes the rainfall from the southwestern face of the new berm. See Figure 3 of Appendix B for the developed drainage arising from the proposed relocation of the quarry. On-site storage capacity of 174.3 ac-ft is needed for the increased runoff surface. Free board at this rainfall capacity will be 2 feet. See Appendix C-2 for calculations.

The limit of grading runs along the outer ridge of the Pu'u on the southwest side of the quarry. Runoff generated outside the limit of grade will fall away naturally from the quarry. On the northeast, a new berm will be constructed. As a result, no measures are necessary to divert offsite runoff from the northeast and southwest limits of the relocated quarry. Subsequently, run-on generated from the northwestern edge of the relocated quarry will be handled by the three drainage basins.

The flow off of the northeastern berm face is 18.33 cfs and will continue to flow along the existing flow patterns.

3.1.4 CONCLUSION

The intent of the Makakilo quarry drainage plan is to reduce the amount of storm water entering the site and fully retain all the storm water runoff within the upper quarry.

The two existing basins (DB#1 and DB#2) with capacity of 175 ac-ft sufficiently store the 174.3 ac-ft (100-yr storm) of required by the expansion. A 100-yr storm at 174.3 ac-ft of rainfall will reach hydrological water levels of 253 ft. The surrounding berm height at the 96" culvert is at elevation 255 ft. This results in 2' of freeboard. The existing slopes along the southwestern edge of the quarry will convey runoff away along its natural existing flow pattern preventing offsite runoff from entering the site.

The berm on the northeastern edge of the proposed quarry will serve as an offsite runoff diversion. The southwestern face of the berm will produce approximately 18.33 cfs of runoff and will follow existing flow patterns. The existing area (under the site of the proposed berm) generates approximately 18.33 cfs, therefore there is no net increase in runoff generated by the construction of the berm. The direction of flow of this 18.33 cfs of runoff will continue along the same direction as the existing flows.

Overall, no additional flows will be added to outside drainage patterns. Runoff will be contained within the quarry limits. The quarry relocation project will have no adverse impact on adjacent properties or existing downstream drainage systems.

3.2. EROSION CONTROL PLAN

Minimizing or eliminating water-quality problems by mechanical or operational means is generally described as a *best management practice* (BMP). BMPs can be classified as either short- or long-term with considerable overlap existing between the two. Also, erosion controls at a site will likely change over time as the configuration of the site changes. The best strategy for stormwater control is to divert stormwater around the quarry and into an existing drainage. However, in the absence of such diversion, once stormwater has entered a quarry, a very effective control technique during ongoing operations is to develop numerous sumps or low areas to disperse stormwater. These low areas collect sediments and allow stormwater to infiltrate into the ground.

The runoff created within the Makakilo quarry expansion will be retained, therefore no soil loss is expected within the quarry expansion.

Proper erosion control measures will be implemented during the construction of the new berm. The northeastern face of the berm measures to be approximately 5.7 acres. Flow generated during a 10-year storm for this area would be 18.33 cfs.

Silt fences will be installed along the toe of the berm slope down stream of drainage pattern flow. Geotextile fabrics will be installed along the berm slopes, in order to stabilize the bare slopes while the grassing is being established. Other methods include mulching, straw bales, silt fences, jute matting, and plastic coverings. Mulching, matting, and plastic covering are good methods to reduce rain drop erosion especially on slopes; while straw bales and silt fences are designed to prevent fully or rill erosion of long overland areas such as swales.

The quarry is exempted from complying with the *City and County of Honolulu, Soil Erosion Standards and Guidelines, November 1975. (Chapter 23. Grading, Soil Erosion and Sediment Control)*. However, Grace Pacific, will use the guidelines, as appropriate, in its erosion control activities at the site.

3.3. WATER QUALITY

No discharge is expected from the quarry. The site has been designed to fully contain runoff for a 100-year storm event.

The newly constructed berm will produce runoff that will flow towards Kalo Gulch but the quantity of flow will not be in excess of what was already conveyed in the same area. Industrial activity will not take place within the berm area.

4. 2007 REVEGETATION PLAN

4.1 PURPOSE OF THE PLAN

The purpose of the Plan is to address the visual mitigation and revegetation of the areas affected by the proposed relocated quarry while operating (2007-2032), and the post-closure revegetation efforts beginning in 2032.

The Plan assumes the final landforms described in the Grading Plan section of this report. See Figures 4, 5a, 5b, and 6 of Appendix B.

The tools of the Plan are landforms and re-naturalization (or "revegetation"). The key elements of the Plan are:

- 1) the use of the existing ridges and man-made berms as effective visual screens of quarry activities and quarry faces;
- 2) for quarried faces not able to be screened, minimizing the man-made appearance of the final contours is preferable from a visual standpoint; and
- 3) the re-naturalization of man-made berms and quarried faces with drought tolerant vegetation, mixed and placed to blend with that existing on the Puu, is the most water-efficient and effective approach to long term landscape management.

The Proposed Use affords an opportunity an opportunity to improve upon several aspects of the 2004 Revegetation Plan. The existing excavation area is completely screened from view from the Kapolei Regional Park towards Ko Olina by a ridge on the southwest boundary. This aspect will be retained. A ridge and berm along the H-1 freeway at the 275 foot elevation screens the close-in views from Farrington Highway in the vicinity of Kapolei Knolls around to Palehua Road. This aspect will also be retained.

The intermediate and distant views from the Villages of Kapolei and Kalaeloa (formerly BPNAS) presently are that of a 2,400 foot wide active quarry face with a visible height of 250 feet (from elevation at 275 feet to 525 feet). The proposed excavation activity will quarry upslope through this quarry face and leave a bowl-shaped landform 700 feet further mauka, complementing the existing bowl of the Puu. The exposed face of the bowl (prior to revegetation) will be 200 feet in height (from elevation at 500 feet to 700 feet). The top of the Pu'u is at an elevation of 980 feet. What is presently the quarry face will become the quarry floor (from elevation at 275 feet to 500 feet), which as a landform, will be readily revegetated.

The intermediate and distant views from Ewa and Waipahu, while not viewing the existing active face head-on, will benefit from the move mauka and the bowl-shaped final landform.

The weak ridge on the northeast boundary of the proposed excavation area will expose the southwest quarry face on the approach to Kapolei on the H-1 Freeway from Kunia Road to the vicinity of the proposed North South Road Interchange. To mitigate this visual impact, Grace Pacific is proposing to lower the southwest ridgeline by approximately 50 feet

in elevation and to build a berm on the northeast ridgeline of approximately 75 feet in height. The net effect of these actions will be to leave no more than 100 feet of the southwest face unscreened. Further, it is planned to grade the unscreened face with slopes averaging flatter than 1.5 to 1 (horizontal to vertical slope) to facilitate the revegetation effort.

4.2 GOALS AND OBJECTIVES

Minimize or eliminate the visual recognition of the quarry from off-site locations. Through the re-establishment of plant material and careful excavation of exposed rock areas, it is the intent of this Plan to either screen or "visually blend" wherever possible exposed areas of the site. "Visual blending" is based on the use of appropriate plant material and grow-in procedures.

Screen the quarry machinery and equipment from public view. Placing the quarry machinery and equipment on the Quarry floor effectively screens it from the public view. The quarry floor will be at a 245-foot elevation, which will be at least 70 feet below the quarry rim.

Minimize the long-term use of irrigation water. Although all plant materials require water for establishment and to survive, this plan recommends a minimum of water consumption through the use of drought-tolerant species and growth in procedures that are designed to acclimate plants to dry conditions.

Minimize long-term maintenance in the re-naturalized areas. On the same basis in which irrigation water use is being minimized, recommendations are geared towards the long term, low maintenance requirements of the quarry environment. Plant materials will be selected based on ability to survive with minimal maintenance for the two-year establishment period. These plants ultimately will naturalize into the existing vegetation and survive without regular maintenance. See Exhibits 3 of Appendix E for the Recommended Plant Palette. See Exhibits 4 and 5 of Appendix E for the Revegetation Matrix and Revegetation Phasing Plan arising from the Proposed Use.

Avoid an "engineered appearance" to the completed project. In regards to the arrangement and appearance of the plant materials and rock walls, it is the intent of this plan to convey the importance of using irregular forms wherever possible. No straight row plantings will occur anywhere within the site or at the site boundary, including the benches. Clusters of plant materials and benches of varying shapes, orientation and dimension will be used to create a more natural appearance.

Quickly establish a re-naturalized appearance. Plant materials that are currently surviving on the site without irrigation provide a guide to those plants that will survive in the hot, windy and dry climate of the site and should be considered for use. Plant materials with a fast growth rate and hardy nature will be used so that screening and slope stabilization can occur as quickly and effectively as possible. Plant materials that have strong colors and textures and would not visually blend in with the

naturally occurring grasses and lightly textured and colored trees found in neighboring areas will not be used. See Exhibit 3 of Appendix E for recommended Plant Palette.

Activities will not disturb protected areas of the site. All areas, which are not intended for quarry development, will be left undisturbed. These areas will serve as the benchmark and guide for the appearance of the quarry re-naturalized areas when that work is done. See Exhibit 1 of Appendix E for photos of undisturbed lands on the surrounding Puu Makakilo slopes.

Minimize costs associated with the re-naturalization efforts. The plan strives to minimize short and long-term costs associated with the re-naturalization. Seed or seedlings of many of the plant materials recommended can be propagated directly on-site and most are considered easy to grow. Many of the plant materials used will reseed themselves and spread on their own eliminating the potential need for periodic follow-up plantings. Typically smaller container size trees will be planted because they more readily adapt to site conditions and because they are available at a relatively low cost. The irrigation system contemplated for use will require an initial cost and some on-going costs for maintenance but will lower the potential long-term costs of replanting during extremely dry periods. Test plots will be used on-site to test varying seed mixes and maintenance practices to improve the chances of success and to fine tune a cost effective planting and low maintenance approach.

4.3 SITE OPPORTUNITIES AND CONSTRAINTS

Site opportunities and constraints are summarized below:

Natural ridgelines screen views. The ridge on the Makakilo side of the quarry completely screens distant, intermediate and close-up views of the quarry from the Makakilo residential neighborhood (Exhibits 2-1 and 2-2 of Appendix E) to the Kapolei Regional Park; The ridge on the Waipahu side of the quarry screens intermediate and close-up views of the quarry face, as seen from the intersection of Farrington Hwy and the old Palehua Road (Exhibit 2-3 of Appendix E). The western quarry face is visible from the distant view at the H-1/Kunia intersection (Exhibit 2-4 of Appendix E). The lowering of the elevation of the southwest ridge and construction of a berm on the northeast ridge will mitigate the effects of the proposed excavation area on this distant view. See Exhibit 2-0 of Appendix E for a map of screening zones and photograph vantage points.

Berm above H-1 freeway screens views into Upper Quarry. The existing H-1 freeway cut faces and the intervening gullies of Puu Makakilo serve to screen close-up views of the quarry from the H-1 and Farrington Hwy (Exhibit 2-5 of Appendix E). The quarry face is visible from intermediate views such as Kapolei Golf Course (Exhibit 2-6 of Appendix E) and the Villages of Kapolei (Exhibit 2-7 of Appendix E) and from distant views, such as the Ewa Golf Course (Exhibit 2-8 of Appendix E). See Exhibit 2-0 of Appendix E for a map of screening zones and photograph vantage points.

Puu Makakilo screens views from Upper Makakilo. Puu Makakilo completely screens views of the quarry from the residents of upper Makakilo (Exhibit 2-9 of Appendix E).

The variation of colors of the quarry face rock and surrounding natural vegetation. Distant views of the quarry are indistinct due to moving cloud shadows and the mottled appearance of the quarry rock and cinder. Much of the existing quarry face rock and surrounding vegetation has an uneven gray-brown to blue color from a distance. This unevenness helps to break up the line of the quarry faces and benches.

Color/Texture. During the dry season, the surrounding area vegetation is brown to yellow in color. During the rainy season, the plants are grayish-green with occasion splashes of yellow. Textures vary among the vegetation found on site, but generally smaller, finer textured plants appear to predominate visually rather than broad-leaved ones. Brightly colored plants, such as Bougainvillea, should be avoided, as they attract attention, rather than diffuse it.

Types of plants. The plants existing on site have volunteered naturally. These plants include a wide variety of shrubs, groundcovers, and grasses. None of the established plants on site receive any permanent irrigation. Therefore, only the hardiest and drought tolerant plants tend to survive. All proposed plants should be extremely drought-tolerant, and require minimal water after establishment. See Plant Palette, Exhibit 3 of Appendix E.

Volunteer/Natives. Many volunteered or native plants are very drought tolerant and hardy. Many are considered "weeds" in ornamental landscapes, but on this site they cover the ground and minimize erosion. However, there are a few noxious weeds and toxic plants that should be eliminated. An example of this is the Tree Tobacco (*Nicotiana glauca*), which is poisonous to man and to livestock.

Source of irrigation water. Grace Pacific Corporation has a well at its Processing Site with an allocation of 168,000 GPD. Water from this well is pumped to the Upper Quarry and stored in tanks near the primary crusher. Portable water tanks may be located on the upper benches and supplied by water wagons.

The Revegetation Matrix and Revegetation Phasing Plan (Exhibits 4 and 5 of Appendix E) assume the availability of approximately .200 mgd of water for all quarry purposes (Processing Site well plus Board of Water Farrington Hwy meters). Of this amount, the Revegetation Plan targets .050 mgd or less for revegetation purposes. This limitation on supply serves as a constraint on the speed by which quarried land and land graded for visual mitigation purposes may be revegetated.

Climate. Rainfall is historically less than 20 inches per year, and usually occurs between the months of December and February. Prevailing trade winds are from the northeast and can be quite strong. Temperatures are very high, with summer

average highs in the mid to high 90's and winter average highs in the lower 80's. The average annual humidity ranges from 65% in the summer to 75% in the winter.

Agricultural soils analysis. Soil tests on quarry benches and the slopes surrounding the quarry suggest that existing site soils are high in sodium and magnesium, and low in calcium, phosphorous, iron and zinc. With proper amendments re-naturalization can occur readily given the soils present on-site. Toxic concentrations of boron and magnesium have been found in certain areas of the site. These areas will require the addition of Gypsum to bind the toxic materials in the soil.

4.4 LANDSCAPE DEVELOPMENT PLAN

Quarry Floor. The quarry floor will encompass an area of approximately 107 acres. This area makes up the lower ground plane or base of the quarry. It is understood that this base area of the quarry may be developed in the future, however until the specific development plan has been determined, the area will be planted with grasses and ground covers to control dust and erosion. The floor of the quarry with elevations below 300 feet will be hidden from view and will have no visual impact from off-site locations.

Upon removal of Grace Pacific's plant and equipment in 2032, the first priority will be to establish a natural appearing grass/ground cover mix. The species already growing on site provide a good indication of species that will tolerate the harsh site conditions occurring in Makakilo. A carefully selected combination of grass/ground cover species that are fast growing, drought tolerant and will reseed or otherwise spread is recommended. Species will be combined to ensure that plants will establish within all of varying microclimates present on-site. The quarry floor soil materials may also need to be amended to provide nutrients and drainage. The ultimate planting plan for the quarry floor will depend upon the final land use determined by the James Campbell Company and Grace Pacific. For this reason no large landscape materials will be introduced within the quarry floor area.

Irrigation will be required to establish grasses and ground covers in the quarry floor area. Rotary impact heads will be used to establish the plantings for a period of approximately two years. Irrigation lines will be buried in shallow 4" trenches to protect them from UV and other damage and lengthen the usable life of the system. The irrigation system will be turned on periodically in times of drought to minimize potential fire hazards.

Mauka Quarry Faces. The most visible aspect of the quarry at its completion will be the faces above the 400 foot elevation up to the mauka perimeter. To mitigate the appearance of these faces, an undulating landform and a slope averaging flatter than 1.5 to 1 but allowing for significant variation will be created to render a more natural appearance than straight benches and slopes..

Because of the high exposed elevations that will be exposed, it not the intent of the revegetation plan to screen the entire face with trees but rather to soften the

exposed surfaces with grasses and shrubs. This treatment will create the illusion that these faces are naturally formed and aged. The excavation pattern for the quarry will emphasize the uppermost benches first. It will be very important to complete landscape work in conjunction with the quarrying process to ensure the landscape installation is not hindered due to conflicts with mining procedures. Soil and amendments will be added to the surfaces immediately after completion, as it may be difficult to add any soil later. Soils used in the work will come from on-site stockpiles where possible. If imported soils are used, they will be matched with the structure and characteristics of on-site soils and will be inspected to prevent the introduction of noxious weeds and insects.

The plant materials used would be fast growing, drought tolerant and self-spreading varieties. Random placement of tree and shrub groupings will be under the direction of a Landscape Architect to select appropriate variation and density of clusters. Clusters of larger plants such as Kiawe and Opiuma will be planted in specific areas. Large tree or shrub plantings will not be planted along the entire length of benches to avoid reinforcing unnatural horizontal lines.

Irrigation is required to establish plant material on the faces. It will be particularly critical that a sturdy system is in place (even though considered of temporary quality) because of the potential future access problems. A PVC line system is recommended with lower trajectory and narrower coverage area impact heads due to the strong prevailing winds. Where adjacent benches occur within 25' of elevation change of each other, it is possible that one row on the upper bench could irrigate both levels. This would be determined on a case-by-case analysis in the field. Irrigation will be implemented for a two-year grow-in period. Irrigation mainlines will be buried in shallow 4" trenches to protect from UV and lengthen the usable life of the system. The irrigation system will be turned on periodically in times of drought to minimize potential fire hazards. As field stock materials will be used on the benches, no drip irrigation will be required. See Exhibits 4 and 5 of Appendix E for the re-naturalization schedule.

Access Road. From the existing Quarry, the access road skirts the lower edge of the adjacent Puu Makakilo property, and then turns into Old Palehua Road, crossing under the H-1 and terminating at Farrington Highway. The visibility of the access road varies depending on where it is being viewed from and the particular segment of the road being viewed. Wherever possible undulating re-naturalized berms of 6 feet in height planted with grasses, groundcovers, trees and shrubs will be maintained to screen the access road from view. Earth mounds and rock material laid in natural patterns should be used in certain areas where highest visibility exists. A continuous landscape treatment along the road is not desirable (such as a row of trees or a long berm) and would serve to draw more attention to the roadway. A limited number of field stock trees are recommended to soften the most critical areas immediately. The irrigation system provided will consist of a rotor head system, which will remain in place for the duration of the use of the access road use to revitalize plant materials, which are affected, by heavy vehicle use. A temporary drip irrigation system will be used to establish the field stock materials for an approximate 12-month period.

Existing Buffer at H-1, the "Adjacent Area". The portions of the existing Quarry parcel flanking the quarry, but not used for quarrying, are termed the "Adjacent Area" in the license agreement with the James Campbell Company. The Adjacent Area for the most part is untouched and has a natural appearance with kiawe, hauole koa and naturally occurring grasses. It is the intent of this Plan to maintain this area in its entirety as it currently exists and to a substantial degree emulate this "look" as much as possible in the surrounding areas to be naturalized.

EXHIBIT 7—DPP EXHIBIT 24 COMMENTS



July 7, 2008
2004.33.8000 / 08P-244

Mr. Henry Eng, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

ATTN: Raymond Young

Dear Mr. Eng:

RECEIVED
08 JUL -7 P 3:41
DEPT OF PLANNING
AND PERMITTING
CITY & COUNTY OF HONOLULU

**Application to Amend Special Use Permit File No. 72/SUP-1
Makakilo Quarry – Response to Comments**

On behalf of Grace Pacific, we are providing the following items as discussed with Mr. Raymond Young on June 24 and June 27, 2008:

- 1) Recap of Recent Submittals. A brief recap of how the content of the recent submittals of April 21st, May 23rd, June 6th and June 20th differs from the original application.

The Application as accepted as complete on November 9, 2007, contemplated the following:

- New Excavation Area - Use of a total of 48 acres of Parcel 74 for two purposes: active quarrying (33 acres) and visual mitigation landscaping (15 acres).
- Expanded Buffer Zone - Set aside of a total of 393 acres as a buffer zone between active quarrying and the adjacent properties; (Parcel 82, 115 acres and Parcel 74, 278 acres). Existing buffer zone is 178 acres. Net increase in buffer area = 215 acres.
- No Change to Operations on Parcel 82 - Continued use of Parcel 82 for excavation, hauling and primary crushing; along with continued operation of concrete and asphalt recycling plant.
- No Change to Operations on Parcel 4 - Continued use of Parcel 4 for finish crushing, hot-mix asphalt production, ready-mix concrete production, scale house, maintenance shop and administrative office.
- Dump Truck Traffic - Parcel 4 = 80-85 round trips daily, accessing Farrington Highway at the entrance to Parcel 4. Parcels 82 and 74 = 80-85 round trips daily accessing Farrington Highway at Palehua Road. Upon completion of the North-South/H-1 Interchange, Parcels 82 and 74 would have direct freeway access.

Honolulu
Bangkok
Boulder
Guam
Hong Kong
Manila
Seattle
Shenzhen
Singapore

- Visual Mitigation - Balancing the ridges of the Pu'u by lowering the Makakilo ridge by 75 feet and constructing a 75-foot-high berm on the Kunia ridge. The quarry "face" on the Makakilo side would be gently sloped to appear non-man-made, while the mauka and Kunia quarry faces would be of the traditional bench and vertical face appearance of a quarry.
- Duration of Operations - The operations on Parcels 4, 82 and 74 would continue for 25 years, or to the year 2032. Thereafter, several years would be necessary for removal of plant and equipment and the renaturalization of those areas.

Subsequent to November 2007, Grace Pacific's discussions with DPP and Grace Pacific's residential neighbors focused on the impact to residential neighborhoods from the operations on Parcel 4 and the visual appearance of the final quarried landform. Grace Pacific and DPP have agreed that conditions be placed upon the approval of the Application to give effect to the following:

- New Excavation Area - Use of a total of 65 acres of Parcel 74 for active quarrying (21 acres of quarry floor, with a large portion of the difference from the 33 original acres now characterized as mitigation landscaping) and visual mitigation landscaping (44 acres).
- Expanded Buffer Zone - The area of the proposed buffer zone remains the same, a total of 393 acres.
- Operations on Parcel 82 - In addition to the continued use of Parcel 82 for excavation, hauling, primary crushing and aggregate recycling, within three years of approval, the following operations from Parcel 4 would be set up on Parcel 82: finish crushing, weekday operation of the hot mix asphalt plant, a maintenance shop for quarry equipment and an operations field office.

The hours of operation on Parcel 82 will remain the same after the relocation of the operations presently conducted on Parcel 4. Typically, excavation and crushing occurs from Monday through Saturday between the hours of 6 a.m. to 3:30 p.m. Blasting typically occurs four or five times a week between the hours of 8 a.m. and 12 noon. Sales from Parcel 82 will be limited to the hours of 7 a.m. to 4:30 p.m. Cleanup and maintenance will be scheduled from 3 p.m. to 6 p.m. Occasional night shift paving jobs will require incoming hauling (6 p.m. to 1 a.m.) for asphalt pavement rubble.

- Operations on Parcel 4 - Within three years of approval, all operations on Parcel 4 would cease. Both weekday and weekend/night operations of the hot-mix asphalt plant would shift to Campbell Industrial Park (CIP) for the first three years, and thereafter this plant would be used for night and weekend work. The weekday operation of the hot-mix asphalt plant would be re-established in the third year on Parcel 82. The ready-mix concrete plant and the maintenance shop for construction equipment would move

to CIP by the end of the third year. Following the shutdown of operations, an estimated three years would be necessary to dismantle, clean up, grade and establish ground cover on Parcel 4. It is estimated that Parcel 4 would be returned to the landowner, the James Campbell Company, by the year 2015.

- Operations on Parcel 74 - There is no change in the use of Parcel 74, the excavation of rock, under the recent submittals.
- Dump Truck Traffic - With the move of operations from Parcel 4 and the North South/H-1 Interchange being placed in service, within three years of approval, all truck traffic to and from Parcels 82 and 74 would have direct freeway access at the new interchange. Farrington Highway would no longer be used for access to any of the quarry or processing operations.

- Visual Mitigation - The balancing of the ridges of the Pu'u remains central to the visual mitigation plan. In addition, Grace proposes (1) to renaturalize the "bowl" of the Pu'u, an additional six-acre area that the former golf developer had mass graded in anticipation of becoming a driving range, and (2) to extend the berm on the Kunia side to the pad of the former golf clubhouse, an additional area of 9 acres.

The most notable change of the recent submittals is the Revised Grading Plan of June 2008, under which the quarry "face" on all three sides, the Makakilo side, mauka and Kunia, would be gently sloped and textured to appear non-man-made. The gentler slopes would also more readily accommodate renaturalization. The quarrying process will change, taking advantage of highly accurate GPS systems to create the final landform as part of the excavation process. Under the Revised Grading Plan approximately 1 million cubic yards of material is not being excavated, when compared to the original application.

- Duration of Operations - The operations on Parcel 4 would continue for three years, to the year 2011. Thereafter, several years would be necessary for removal of plant and equipment (approximately one year) and the renaturalization of those areas (approximately two years).

The operations on Parcels 82 and 74 would continue for 24 years, or to the year 2032. Thereafter, several years would be necessary for removal of plant and equipment and the renaturalization of those areas.

- 2) Kunia Berm Use and Extension. Clarification on the storage of explosives and the benefits of extending the berm further mauka.

The berm on the Kunia side, as proposed in the Application accepted November 9, 2007, extended mauka to the 625-foot elevation. Under the latest proposal, the berm continues up the ridgeline to the 725-foot elevation. This is done for visual purposes not related to quarrying; essentially repairing the break in the ridgeline created by the grading cuts for the placement of the former golf clubhouse.

Following a similar line of thinking, the current modifications envision creating landforms in the bowl of the Pu'u, in the elevations from 700 to 750 feet, mimicking the ridges and gullies that existed prior to the golf driving range grading done in the early 1990s.

As to the storage of explosives, the berm will not be used to store explosives. The magazines are being moved from the ridge on the western corner of the existing quarry (Parcel 82) to the floor on the northern corner for security reasons.

- 3) Truck Traffic Routing. The following describes the truck traffic routing to and from the Quarry Site, Lower Processing Site and Campbell Industrial Park, now, with the North South/H-1 Interchange under construction, and after the Interchange is completed:
- Upper Quarry to CIP (today and in the future) - The truck route from the Upper Quarry (Parcel 82) to Campbell Industrial Park (CIP) today and upon completion of the North South /H-1 Interchange (estimated to be December 2008), will follow Palehua Road to the interchange, then enter the H-1 westbound, exit H-1 at the Palailai (Exit #1) and follow Kalaeloa Boulevard south into CIP.
 - CIP to Upper Quarry (through December 2008) - The truck route from CIP to the Upper Quarry today is from Kalaeloa Boulevard onto the H-1 at the Palailai Interchange, then exiting the H-1 at the Kunia Interchange, turning left onto Kunia road, then turning left back onto the H-1 heading westbound, getting off at the North South/H-1 Interchange off ramp to Palehua Road and following Palehua Road to the quarry.
 - CIP to Upper Quarry (after December 2008) - The truck route from CIP to the Upper Quarry upon completion of the North South /H-1 Interchange will be from Kalaeloa Boulevard onto the H-1 at the Palailai Interchange, then exiting H-1 at the North South/H-1 Interchange Kunia Interchange, turning left onto Palehua Road, and following Palehua Road to the quarry.
 - Upper Quarry to Lower Processing Site (through December 2008) - The truck route from the Upper Quarry to the Lower Processing Site (Parcel 4) will be to take Palehua Road to the North South/H-1 Interchange, enter the H-1 westbound, exit at Makakilo Drive (Exit #2), turning left onto Makakilo Drive, then turning left onto Farrington Highway, then turning left into the Lower Processing Site.
 - Upper Quarry to Lower Processing Site (after December 2008) - The truck route from the Upper Quarry to the Processing Site, upon completion of the North South /H-1 Interchange, will be from Palehua Road through the North South/H-1 Interchange heading makai to Farrington Highway, right onto Farrington Highway then right again into the Lower Site. Note that traffic on this route will phase out with the move of operations from the Lower Site in three years.

- Lower Quarry to Upper Quarry (through December 2008) The truck route from the Lower Site to the Upper Quarry today is from Farrington Highway towards Waipahu, left onto Kunia Road, then left onto H-1 westbound, getting off at the North South/H-1 Interchange exit, onto Palehua Road to the Upper Quarry.
- Lower Quarry to Upper Quarry (after December 2008) - The truck route from the Lower Site to the Upper Quarry upon completion of the North South /H-1 Interchange, will be from Farrington Highway towards Waipahu, left onto the new North South road heading mauka, under the H-1 Freeway, following Palehua Road to the Upper Quarry. Note that traffic on this route will phase out with the move of operations from the Lower Site in three years.
- CIP to Lower Processing Site (through December 2008, and after December 2008) - The truck route from CIP to the Lower Processing Site today is from Kalaeloa Boulevard, turning right onto Kapolei Parkway, then left onto Kamokila Boulevard, through Kapolei City, following onto Farrington Highway then left into the Lower Site. Note that traffic on this route will phase out with the move of operations from the Lower Site in three years.

- 4) Description of the Benefits of the Revised Grading Plan. The Revised Final Grading Plan dated June 2008 ("Revised Grading Plan") has the following benefits when compared with the Final Grading Plan included in the Application as accepted in November of 2007 ("November 2007 Grading Plan"):
- Minimizing man-made appearance of final landform.
 - Ensuring structural stability of final landform slopes.
 - Greater likelihood of success in renaturalization.
 - Allows for increased excavation in certain areas of quarry floor areas without affecting integrity of final landform.
 - Retains early-on landscape grading and renaturalization efforts, given constraint of available irrigation water.
- 5) Revised Figures, Exhibits. A "Revised Excavation Phasing" plan, Figure 6 in Appendix B of the Engineering Report, a "Revised Renaturalization Matrix," Exhibit 4 in Appendix E, and a "Revised Renaturalization Phasing" Exhibit 5 in Appendix E of the Engineering Report, are attached, each reflecting changes arising from the Revised Grading Plan of June 5, 2008.

Mr. Henry Eng
July 7, 2008
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- 6) New Figure of Areas and Acreages. A new "Designation of Areas and Acreages" as Figure 7 for Appendix B of the Engineering Report is included to assist in reviewing this submittal. It is important to emphasize at this point that the acres, volumes and years depicted in the "Excavation and Landscaping Phasing" (Figure 6), the Renaturalization Matrix (Exhibit 4) and Renaturalization Phasing (Exhibit 5) are for illustrative purposes, and that actual market demand will largely drive the actual excavation phasing. While the initial landscape grading described by Areas 1A and 1B will be take place in the 2009-2012 and 2013-2017 periods due to the availability of irrigation water, thereafter the landscape grading will follow actual quarry excavation.
- 7) Revised Table of Contents. The Engineering Report Table of Contents "Appendices" page has been updated to reflect the new Figures 5g and 5h included with the June 20th submittal, and the items described in 5) and 6) above. "Red-line" and "clean" copies are attached.

Thank you for the opportunity to respond to your comments. Should you have any questions about the information provided herein, please call me at 521-5361 or Bob Creps at 674-5201.

Very truly yours,

BELT COLLINS HAWAII LTD.



Lee W. Sichter
Principal Planner

LWS:lf

Attachments

cc: Bob Creps