

Kaha Palapala 'Āina GPS

'Ōwehe Laulā:

Ho'ohana nā kānaka 'epekema i Global Positioning System (GPS) pa'alima e kaha palapala 'āina i nā lua'i pele i 'ohi 'ia e kekahi polokalamu kamepiula, 'o ia ho'i 'o Geographic Information System (GIS) a ho'ololi 'ia i kekahi palapala 'āina kikoho'e. Kōkua ka palapala 'āina kikoho'e i ka 'ike o ke kahe 'ana o ka lua pele. Ma kēia ha'awina, e ho'ohana ana nā haumāna i ka GPS e palapala i ke anapuni o ke kula. E ho'okumu ana nā haumāna i kekahi palapala 'āina pepa o ke kula me ka 'ikepili GPS.

Nā Pahuhopu:

E a'o ana ka haumana:

- ho'ohana nā kānaka 'epekema i ka GPS pa'alima e palapala i nā lua'i pele;
- e ho'ohana ka GPS pa'alima e māka i nā wahi huli puni o kahi anapuni; a me
- e ho'okumu i kekahi palapala 'āina pepa me ka 'ikepili GPS.

Nā Pono Ha'awina:

- Ke GPS pa'alima
- Nā lula
- Ka Pepa Ha'awina Haumana: "Ka Ho'ohana 'Ana I Ka GPS"
- Ka Pepa Ha'awina Haumana: "Kaha Palapala 'Āina GPS"

He Mana'o No Nā Kumu: 'O ka 'ōnaehana palapala 'āina maka'aha (grid mapping system) ka Universal Transverse Mercator (UTM). He 'ōnaehana palapala 'āina maka'aha i ho'okumu 'ia e ka 'ōnaehana metric. Ho'ohana ka UTM i Eastings a me Northings i ho'okahi-mika'āpanakahi ma kahi o latitude a me longitude i nā 'āpanakahi o ke kēkelē, minuke, a me kekona. Ho'omahale ka UTM i ka Honua i mau huinahā loa kā'ei. Aia nā mokupuni 'o Hawai'i i ka UTM Kā'ei 4 Q a me 5 Q. Ho'ohana nā kānaka 'epekema i ka UTM ma kahi o latitude a me longitude i kaha palapala 'āina i nā 'ā pele no ka mea ma'alaha ka ho'ololi 'ana o ke anakahi a i ka mamao. Like ke anakahi UTM pākahi i ho'okahi mika.

Nā Pane I Ka Pepa Ha'awina Haumana:

Ka Ho'ohana 'Ana I Ka GPS:

E 'oko'a ana nā pane ma ka pakuhi 'ikepili GPS.

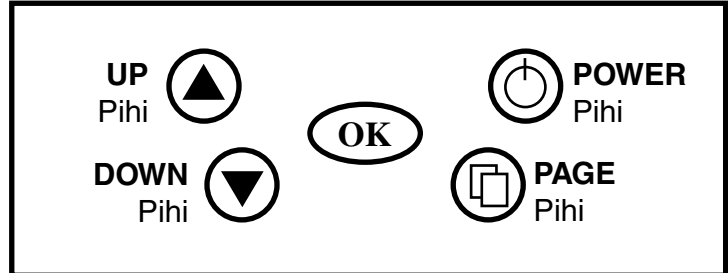
Kaha Palapala 'Āina GPS:

1. b) Global Positioning System (GPS) pa'alima
2. E 'oko'a ana nā palapala 'āina ma muli o ka wahi.

Kaha Palapala 'Āina GPS

Ka Ho'omākaukau Ha'awina:

1. E koho i kekahi wahi i hiki ke ho'ohana e like me ke kahua pōpeku a i 'ole ke kahua pā'ani. Pono i 200 mau mika ma nā 'ao'ao 'elua. He wahi me nā mea kanu 'ole a me nā hale 'ole no ka mea pono ke anakahi GPS i ka 'ikena mōakāka o ka lani i hiki ke loa'a nā hō'ailona mai nā ukali. E koho i kekahi wahi ho'omaka no nā haumāna i hiki iā lākou ke hele wāwae i ke anapuni o ia wahi a māka i nā wahi huli me ka GPS pa'alima. Pono e māka i nā wahi huli pākahi i nā manawa a pau i ka loli 'ana i nā 'ao'ao.
2. E ho'omākaukau i nā GPS pa'alima no nā haumāna. E ho'omākaukau i nā iho (batteries), e ho'opa'a i nā 'ao'ao, ka 'īkepili palapala 'āina, a me ka 'ōnaehana anakahi (e nānā i nā 'anu'u 3 a i 12).
3. E kaomi a pa'a ke pihi POWER e ho'ā ka GPS pa'alima.
4. E kaomi ke pihi PAGE a hō'ike ka 'ao'ao Menu ma ka papakaumaka.
5. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i nā Units. E Kaomi i ke pihi OK.
6. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i Position Format. E Kaomi i ke pihi OK.
7. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i UTM/UPS. E Kaomi i ke pihi OK.
8. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i Map Datum. E Kaomi i ke pihi OK.
9. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i WGS 84. E Kaomi i ke pihi OK.
10. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i Units bar. E Kaomi i ke pihi OK.
11. E ho'ohana i ke pihi UP/DOWN no ke kahiāuli i Statute. E Kaomi i ke pihi OK.
12. E kaomi a pa'a ke pihi POWER no ka ho'opio 'ana o ka GPS pa'alima. E hana hou i nā helu 3-8 no nā pa'alima pākahi.
13. Hiki paha iā 'oe ke hō'ike i kekahi o nā haumāna i hiki iā lākou ke hō'ike i nā haumāna 'ē a'e, 'o ia paha ka "GPS Expert Crew" no kēia papa ha'awina.



Ke Mana'o Hou A'e: 1) *3-D Topo Maps*: E ho'omaka me ka palapala hi'ona 'āina o kou mokupuni. E kōkua i nā haumāna e ho'okumu i kekahi palapala hi'ona 'āina. E 'oki i foamcore ma nā laina topo a laila tuko i nā papa a pa'a. 2) *GPS Scavenger Hunt*: E hūnā i kekahi mau mea ma ke pā kula. E huli i nā wahi huli no nā mea i hūnā 'ia ma ka ho'ohana 'ana o ka GPS pa'alima, a laila ha'i i nā haumāna i nā wahi huli i hiki iā lākou ke huli i nā mea i hūnā 'ia.

Kaha Palapala 'Āina GPS

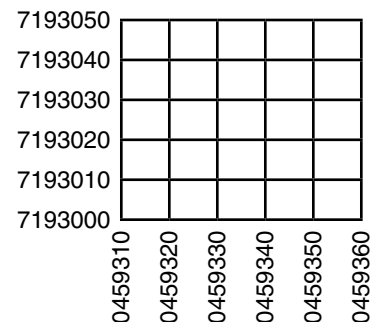
Ke Ka'ina Hana Ha'awina:

1. Ho'ohana nā kānaka 'epekema i Global Positioning System (GPS) pa'alima e kaha palapala 'āina i nā lua'i pele i 'ohi 'ia e kekahi polokalamu kamepiula, 'o ia ho'i 'o Geographic Information System (GIS) a ho'ololi 'ia i kekahi palapala 'āina kikoho'e. Kōkua ka palapala 'āina kikoho'e i ka 'ike o ke kahe 'ana o ka lua pele. Ma kēia ha'awina, e ho'ohana ana nā haumāna i ka GPS e palapala i ke anapuni o ke kula.
2. E hā'awi i nā haumāna pākahi i ka Pepa Ha'awina Haumana: "Ka Ho'ohana 'Ana I Ka GPS," a ho'oma'ama'a hou i nā kuhikuhi, a laila e ho'oka'awale nā haumāna i nā hui a hā'awi i nā hui pākahi i ho'okahi GPS pa'alima.
3. E hō'ike i ka ho'ā a me ka ho'opio 'ana o ka GPS pa'alima. E ho'oma'ama'a i ka 'ao'ao "Mark a Waypoint" e kaomi a pa'a i 'elua kekona i ke pihi OK. Wehewehe i nā haumāna i nā helu ma lalo o ka papakaumaka. 'O kēia mau helu nā wahi huli Easting a me Northing. Pono nā haumāna e palapala i nā wahi huli pākahi no Easting a me Northing ma "Ka Pakuhi 'Ikepili GPS" ma ka lalo o ka Pepa Ha'awina Haumana "Ka Ho'ohana 'Ana I Ka GPS."
4. E lawe i nā haumāna i waho e hō'ike i kahi no kēia ha'awina. E hele wāwae i nā haumāna i ka wahi ho'omaka. E noi iā lākou e hahai i nā kuhikuhi ma ka Pepa Ha'awina Haumana "Ka Ho'ohana 'Ana I Ka GPS," e palapala i ke anapuni o ka wahi. No ka ho'okumu i kekahi palapala 'āina pololei, pono nā haumāna e māka i ka wahi huli i nā manawa a pau ke loli nā 'ao'ao.
5. Ma hope o ka māka maika'i i nā wahi huli puni o kēia wahi, e ho'i i ka papa e wehewehe e ho'ohana ana nā haumāna i ka 'ikepili i 'ohi 'ia no ka ho'okumu 'ana i kekahi palapala 'āina. E kāka'ahi i ka Pepa Ha'awina Haumana: "Kaha Palapala 'Āina GPS." E hō'ike i ka lepili 'ana o nā axes x a me y me ka 'ikepili Easting a me Northing i palapala 'ia ma "Ka Pakuhi 'Ikepili." Eia ka la'ana ma lalo nei.
6. E ho'ohālikelike ka 'ikepili a kūkākūkā i nā palapala 'āina o nā haumāna.

He La'ana Pakuhi 'Ikepili GPS

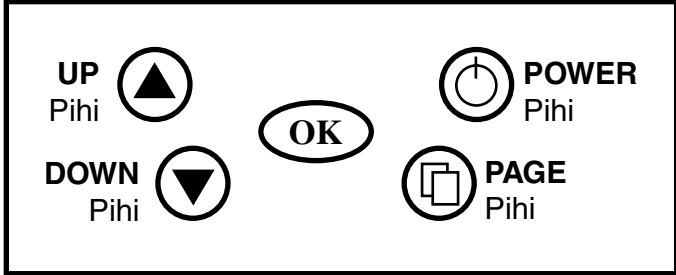
Wahi huli	He Wehewehe	Easting	Northing
001	Ka wahi ho'omaka	0459582	7193172
002	Pākaukau	0459311	7193187
003	Lina Pōhina'i	0459321	7193007
004	Pahu 'Ōpala	0459570	7193028

7. E huli i ka ha'aha'a Easting (0459311) ma ka pakuhi 'ikepili GPS. E kolikoli ha'alalo i 10 (0459310). E kākau i kēia helu ma ka axis x a lepili i ka axis x i 10 'āpanakahi mau mika.
8. E huli i ka ha'aha'a Northing (7193007) ma ka pakuhi 'ikepili GPS. E kolikoli ha'alalo i 10 (7193000). E kākau i kēia helu ma ka axis y a lepili i ka axis y i 10 'āpanakahi mau mika.



Ka Ho'ohana 'Ana I Ka GPS

Ka Ha'awina Ho'olauna: Ho'ohana nā kānaka 'epekema i Global Positioning System (GPS) pa'alima e kaha palapala 'āina i nā lua'i pele i 'ohi 'ia e kekahi polokalamu kamepiula, 'o ia ho'i 'o Geographic Information System (GIS) a ho'ololi 'ia i kekahi palapala 'āina kikoho'e. Kōkua ka palapala 'āina kikoho'e i ka 'ike o ke kahe 'ana o ka lua pele. Ma kēia ha'awina, e ho'ohana ana 'oe i ka GPS e palapala i ke anapuni o ke kula. E hāhai i nā 'anu'u e kaha palapala i kou wahi.



1. E kaomi a pa'a ke pihi POWER e ho'ā i ka GPS pa'alima.
2. E kali a hiki i ka huli 'ana i nā ukali i ka GPS pa'alima. Pono paha 'oe e ne'e ma kahi 'ē o kekahi hale a i 'ole nā kumu lā'au e loa'a nā hō'ailona ukali maika'i. Pono ka GPS pa'alima e loa'a ka 'ike mai 'ehā mau ukali no ka ho'onoho 'ana i kou wahi. Ke huli ka pa'alima i 'ehā mau ukali e ho'omau me ka 'anu'u 3.
3. E ho'omaka ma kahi i koho 'ia e ke kumu a māka kēia wahi ma ke 'ano he wahi huli ma ka GPS. 'O ka wahi huli ka wahi ma ke ala hele. No ka māka 'ana i kekahi wahi huli, e kaomi a pa'a ke pihi OK no 'elua kekona. Ke 'ō'ili mai kekahi kanaka me ka hae, e ho'oku'u ke pihi OK.
4. E palapala i ka helu ma ka hae, ka wehewehe wahi huli, a me ka Easting a me Northing ma "Ka Pakuhi 'Ikepili GPS" ma lalo, a laila e kaomi hou OK e 'āpono ka wahi. He Mana'o: Aia 'ehiku helu ma ka papakaumaka no ka Easting a me Northing. Aia ka Easting ma luna o ka Northing.
5. E hele wāwae i ke anapuni (ma ka lihi o waho) o ka wahi. E māka i ka wahi huli i nā manawa a pau ke ho'ololi nā 'ao'ao. E palapala i ka helu wahi huli, ka wehewehe, a me ka Easting a me Northing ma ka pakuhi ma lalo nei.

Ka Pakuhi 'Ikepili GPS

Wahi Huli #	Ka Wehewehe	Easting	Northing
<i>La'ana</i>	<i>Ke pākaukau</i>	<i>0459582</i>	<i>7193172</i>

Ka Palapala 'Āina GPS

1. 'O ka mauha'a pa'alima hea e loa'a nā hō'ailona mai nā ukali e ho'ohana 'ia e nā kānaka 'epekema e kaha palapala nā 'a pele?
 - a) Ka mikahiō
 - b) Global Positioning System (GPS) pa'alima
 - c) Ke ana 'ōla'i (Seismometer)
 - d) Correlation Spectrometer (COSPEC)

2. E ho'ohana i ka lula a me Ka Pakuhi 'Ikepili GPS ma ka Pepa Ha'awina Haumana "E Ho'ohana I Ka GPS" e kahaki'i i kekahi palapala 'āina.

E ho'ohana i ka 'ikepili GPS i 'ohi 'ia e ho'okumu i kekahi palapala 'āina ma ka maka'aha ma lalo nei. E ho'omaka me ka Easting ha'aha'a i palapala 'ia ('o ia ka helu li'ili'i) i ka pakuhi. E kolikoli ha'alalo i kēia helu kokoke i 10 mau mika a laila kākau i kēia helu ma ka ho'omaka o ka axis x. 'O ka mamao i waena o nā laina maka'aha pākahi, he 10 mika, no laila e lepili ka axis x i 10 mika 'āpanakahi ke pi'i ki'eki'e loa. E ho'omaka me Easting, ka mea i kākau 'ia ma ka ho'omaka 'ana. E huli i ka Northing ha'aha'a i palapala 'ia. E kolikoli ha'alalo i kēia helu kokoke i 10 mau mika kākau i kēia helu ma ka ho'omaka o ka axis y. 'O ka mamao i waena o nā laina maka'aha pākahi, he 10 mika, no laila e lepili ka axis y i 10 mika 'āpanakahi ke pi'i ki'eki'e loa. E kākahi a lepili i nā wahi huli, a laila e kahaki'i i kekahi laina e ho'ohui i ka wahi huli pākahi.

