



COUNTY OF HUMBOLDT

For the meeting of: 1/15/2019

File #: 18-1563

To: Board of Supervisors

From: Planning and Building Department

Agenda Section: Consent

SUBJECT:

First Amendment to the Professional Services Agreement with Planet Labs Inc. for High Resolution Satellite Imagery

RECOMMENDATION(S):

That the Board of Supervisors:

1. Approve the First Amendment to the Professional Services Agreement with Planet Labs Inc. for high resolution imagery and authorize the Director of the Planning and Building Department to sign the first amendment.

SOURCE OF FUNDING:

Applicant inspection fees and general fund

DISCUSSION:

The Planning and Building Department is requesting authority to amend the existing satellite data contract with Planet Labs Inc. (Planet Labs) to continue efforts to streamline inspections for building, cannabis planning, and code enforcement operations. This action extends the existing service, conditions and price through December 31, 2020.

Last fiscal year the department entered into an agreement for the provision of regularly updated high resolution satellite data in order to increase efficiencies by reducing the number of on-site inspections and by reducing the time required for each site inspection. The original request for proposals discussed ongoing collections in subsequent years and this amendment facilitates those future collections of satellite imagery and data for use by the Planning and Building Department and will also make this information available to members of the community through the county's Geospatial Information System (GIS).

The ability to access a temporally and spatially consistent high-resolution satellite data set in the correct spectral bands, collected at the same time of day at a regular cadence throughout the year has provided significant gains in efficiency and effectiveness. To date, the department's Code Enforcement team has been the primary users of this data and developed a keen understanding and applications with

this new resource. While the efficiencies in monitoring and enforcement have been exceptional, other Department programs have benefitted less than originally anticipated as integrating the data into the GIS for general users has taken longer than anticipated. Additionally, while the .70cm resolution imagery provides sufficient confidence for assessing many criteria, it provides less than the confidence needed for other details vital to some approval decisions. This has resulted in improved inspection preparation and performance monitoring, but has not reduced the initial onsite inspections to the degree we expected.

The visual imagery, and the underlying data which it is built on, has enabled the department to better assess both permitted and unauthorized changes on properties with approved or pending permits, and is particularly well suited to cannabis cultivation permits. It is useful in determining the accuracy of plot plans, size and location of structures, and other information useful in pre-inspection preparation and analysis. This access has assisted the department in determining compliance, assessing false starts, unpermitted expansions, water diversions, tree removal, grading and other activities that have environmental impacts. It has played an important role in addressing over 300 problem cannabis cultivation permit applications, and is foundational to the abatement notices that have been issued on nearly 700 properties with unpermitted cannabis cultivation.

The contract provides for both access to the post-processed visual imagery, which is what most people see when they pull up a “satellite picture”, as well as the underlying multi-spectral band image and meta-data, which can be used in numerous computerized applications and processes. Code Enforcement is currently the only one of the department users currently utilizing the more complex data, which is foundational to ongoing cannabis monitoring, targeting, and enforcement operations. This contract delivers all rights and ownership of that imagery and data so it can be used for future analysis, environmental studies, change detection, vegetation coverage studies, and a variety of other topics for many years to come.

The Planet Labs contract allows Planning and Building to access and download recent satellite imagery/data (within a month of the current date for a given location within our contract's region of interest) at 0.8 meters (m) resolution on a predictable and consistent temporal or spatial scale over 7,000 square kilometers of the county. Because the data is downloadable and the county owns the data rights, a Code Enforcement team is able to dynamically use and manipulate recent imagery data as a base map within a GIS environment. For example, imagery is overlaid with other GIS data layers such as parcel numbers and boundaries, streamside management areas, topography, etc. to find, digitize, and determine key attributes relating to violation activity when developing new enforcement analyses and action plans. This enables a team to analyze the imagery data and spectral bands to help find or isolate various features, and make these tailored data sets available to other internal Planning and Building Department users. These tailored data sets can, and have been, provided to external agencies for uses such as vegetation or structure change detection or site condition verification, which benefit all our programs.

Because the data is frequently updated, teams are able to use Planet Labs imagery and underlying data to monitor abatement progress and seasonal site development across time horizons. In many cases, Planet Labs multiple satellite images collected over a small period of time are used to substantiate or

deny time-sensitive compliance or abatement claims (e.g. 10 day abatement claims). Short-interval image collections are also used to monitor activities over a single cultivation season in order to better assess claims of whether an operation was active, expanded or started early during a current cultivation season. While suitable for, and vital to, ongoing Code Enforcement efforts, which now focus on grading, hoophouses/greenhouses, outdoor gardens and other operation attributes, 0.7m resolution imagery does not provide for all of the departments remote sensing needs. The 0.7m resolution images are considered high resolution imagery, but higher resolution static images are commercially available, such as 0.5m or 0.3m images (the smaller the number, the better the resolution and 0.3m is the highest resolution commercially available) and can be found from open source or other vendors such as Google Earth, Digital Globe, or Terra Server. While these images offer higher spatial resolution pictures for viewing, their temporal resolution, large data sets, and even larger expense make them an order of magnitude more expensive to obtain and use the same way as their 0.7m counterparts. These images are used when available to supplement the 0.7m satellite imagery data to form a more complete analysis and timeline of activity when and where it is available.

Terra Server imagery access is also purchased and used by the Planning and Building Department. This subscription gives the department viewing access only to a curated selection of the company's global satellite library. These images are a higher resolution, from 0.3m to 0.5m, but are only static images, not satellite data. These are not downloadable as geo-rectified products that can be integrated or incorporated into a GIS environment. Also, these images are not consistently or reliably updated throughout the county on a predictable and consistent temporal or spatial scale. So while one region of the county may have a single or series of images at a certain resolution available, other regions will not. Crucially, Terra Server's imagery also does not allow for dynamic panning and zooming; instead each new zoom or pan reloads the static image. Pan and zoom functionality is essential for the ongoing active monitoring and enforcement activities, as is integrating the underlying satellite data with other GIS overlays to perform targeted analyses. However, with these limitations aside, Terra Server is a crucial supplement to the work being done with the Planet Labs data. While Terra Server does not have a reliable timeline of imagery, it has some higher resolution segments of imagery and some historic imagery dating back to 2009/2010 that allows users to assess changes within one or two year intervals pertinent to assessing certain violations like grading without permits. Using Terra Server's higher resolution products (0.3m or 0.5m vs. Planet Labs 0.7m) can often help better identify and quantify what is seen in the most recent Planet Labs imagery.

Extending the existing Planet Labs contract ensures reliable access to recent and dynamic satellite imagery and data critical for the current capacity of ongoing and planned active monitoring and enforcement programs, and allows staff to efficiently conduct critical code violations at a much higher volume than is possible using only static images. As integrated into the GIS environment, Planet Labs data allows all with access to GIS fields to find, analyze, and determine conditions using one software system that supports geoprocessing, advanced database queries, and automation tools, all of which save time and allow higher volume of activity. Moreover, the planned cadence of new data supplied by Planet Labs at a predictable and consistent temporal and spatial resolution is critical to ongoing active enforcement and maintaining current capacity for flexible active enforcement options and numerous types of permit compliance assessments.

Terminating the contract with Planet Labs and attempting to rely solely on Terra Server, in conjunction with other free options (such as Google Earth Pro and NAIP imagery), for imagery needs would severely degrade compliance monitoring and code enforcement capabilities. Without the current data from Planet Labs, the ability to use satellite data to enforce on recent and unpermitted developments would be geographically inconsistent, and revert to assessments based on imagery potentially years old and reliant on site inspections. Additionally, the ability to build in efficiencies and automation across the aerial investigation process would be severely handicapped. Not renewing Planet Labs data would force code enforcement to abandon current gains and procedures and regress to using randomly available satellite images and corresponding inspection warrants for active cannabis enforcement. This would reduce present capacity from approximately 65 per month and improving, to approximately 100 over the entire cultivation season at roughly the same cost.

In order to continue to benefit the community and the department, staff is asking the Board to authorize the Director of the Planning and Building Department to sign the first amendment to the original contract.

FINANCIAL IMPACT:

The department budgeted \$199,500 in the current fiscal year for satellite imagery services. All four budget units that do inspections (262 Building Inspection, 268 Cannabis Planning, 269 Code Enforcement, and 277 Current Planning) included a budgeted line item for this expense. If this item is approved the department will budget \$199,500 in fiscal year 2019-20.

This request meets the Board's Strategic Framework of Priorities for New Initiatives by providing the community appropriate levels of service and managing resources to ensure sustainability of services.

OTHER AGENCY INVOLVEMENT:

None.

ALTERNATIVES TO STAFF RECOMMENDATIONS:

The Board could not authorize the Director to sign the First Amendment to the Professional Services Agreement with Planet Labs Inc. This is not recommended as access to Planet Labs Inc. imagery has provided a cost-effective means to engage in site analyses and supports the inspections necessary to fulfill the requirements of the permitting and regulatory functions of the department.

ATTACHMENTS:

1. First Amendment to the Professional Services Agreement between the County of Humboldt and Planet Labs Inc.

PREVIOUS ACTION/REFERRAL:

Board Order No.: C-13

Meeting of: April 17, 2018.