



# Santa Clara Valley Water District

**File No.:** 18-0960

**Agenda Date:** 11/27/2018

**Item No.:** 6.1.

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## BOARD AGENDA MEMORANDUM

### **SUBJECT:**

Proposed Pilot Project for Using Unmanned Aerial Vehicles in Land Surveying and Mapping Activities (County-wide).

### **RECOMMENDATION:**

Authorize staff to implement a 6-month pilot project for using Unmanned Aerial Vehicles in land surveying and mapping activities.

### **SUMMARY:**

At the Board meeting on December 19, 2017, the Board directed staff to develop a pilot project for using UAV in land surveying and mapping activities for the Board consideration. In developing the pilot project, staff outreached to the community and other agencies regarding the use of UAV in land surveying and mapping activities.

The technology of UAV (Unmanned Aerial Vehicles) has advanced to the point that UAVs can provide cost effective survey grade data along with many other less precise and less accurate uses. UAVs can provide high resolution photographic and video documentation for various District needs such as locating trash accumulations in creeks, assisting inspection of building rooftops, collecting information for facility inspection and construction site inspection, collecting field information for documentation or reporting, assisting in post-event monitoring of facilities, and providing survey grade mapping and photogrammetry.

There are three key issues concerning UAV use at the District. First, the use of UAVs is regulated by the Federal Aviation Administration (FAA), and the State of California, county, special districts, or cities may also have restrictions on the use of UAVs. Second, there are community concerns about invasion of privacy related to the use of UAVs. And last, is how the use of UAVs can be established and managed effectively at the District.

### **Scope of UAV Pilot Program**

The pilot project will be administered and implemented by the Land Surveying and Mapping Unit (LSMU) for District land surveying and mapping activities. This will allow complete control of all UAV and their assigned uses, while monitoring the activities and benefits/impacts of use to the District and public. This will also ensure that only staff authorized to pilot UAV are overseeing the activities.

The pilot project will follow all rules and regulations of the FAA Part 107 Commercial. This regulation is for all UAV under 55 pounds and requires:

1. All Remote Pilots to be licensed by the FAA. LSMU currently has 4 licensed pilots on staff; and
2. Insurance - Coverage under our current provider for each registered aircraft. The District will obtain the necessary liability coverage to protect the district, public and aircraft.

District staff has reached out to the public by placing advertisements in the San Jose Mercury News (on August 21, 2018) and the Metro Silicon Valley publications (on August 22, 2018) (Attachment 1) to solicit feedback concerning the proposed use of UAV for district work. Staff received 6 responses concerning the program. There were not any concerns for use of the program. The only feedback was from people asking to be considered for contract work or employment opportunities in the UAV program. District staff also reached out to the San Mateo County Sheriff's Department to discuss their successful UAV program. Other agencies were also consulted, such as the Department of Water Resources, United States Geological Survey, Metropolitan Water District, City of Los Angeles Bureau of Engineering, Oak Ridge National Laboratory, and Brown and Caldwell Infrastructure Monitoring and Assessment. Staff learned that with the proper protocols in safety, monitoring and outreach that UAV are becoming a valuable and crucial tool for providing information to agencies.

UAV operators and observers, by following FAA Part 107, ensure the protection of private individuals' expectations of privacy before and during deployment of the UAV. UAV operators and observers ensure that operations of the UAV intrude to a minimal extent upon the private property, persons and businesses. This will be accomplished by thorough documentation of all UAV deployments, including location and time of flight, pre-and post-flight evaluation, maintenance logs, and public interaction logs.

Staff has developed a Flight Operations Manual that clearly defines all aspects of the pilot project. This manual has been prepared primarily following the manual of the City of Los Angeles, Bureau of Engineering, with many procedures adopted from Oak Ridge National Laboratory "Best Practices for Unmanned Aerial Systems" February 2017, American Civil Liberties Union (ACLU) "Protecting Privacy from Aerial Surveillance (recommendations for Government Use of Drone Aircraft) December 2011", National Telecommunications and Information Administration (NTIA) "Voluntary Best Practices for UAS Privacy, Transparency and Accountability" and the Oak Ridge National Laboratory "Best Practices for the Use of Unmanned Aerial Systems... February 2015", FAA Remote Pilot - Small Unmanned Aircraft Systems Study Guide" August 2016, Ruppert Law P.A. "Part 107 Study Guide" December 2016 as well as many other sources. (See reference index Section 12).

The pilot project will be managed by LSMU and track various aspects for evaluation.

LSMU will offer services using UAV for the following:

1. Survey / Mapping

- a. Land Surveying and Mapping
- b. Engineering and Design
- c. Construction and O&M Inspection
- d. Vegetation Management
- e. Community Projects Review

2. Photographic

- a. Health and Safety
- b. Security
- c. Facilities Maintenance
- d. Utility Maintenance Pipelines
- e. Dam Safety
- f. Public Information Office
- g. Water Revenue
- h. District events

**Schedule**

- 1. Pilot project can start within 2 weeks from approval with purchase of 2 UAVs at a cost of \$1,500 each.
- 2. Pilot project will be implemented for 6 months for evaluation
  - a. Cost benefit of UAVs versus conventional photogrammetry
  - b. Time savings analysis
  - c. Policy and Procedure development
    - i. Site Assessment Document
    - ii. Pre- and Post-Flight Checklist

- iii. Maintenance Log
  - iv. Flight Log for District/Public responsibility questions
3. A report of the pilot project evaluation to completed within 60 days of completion of pilot project and submitted to the Board for review with staff recommendations on next steps.

**Estimated Cost**

Startup costs will be less than \$5,000 for the purchase of two UAV and accessories. LSMU already owns the software for processing data into deliverables. Insurance coverage is estimated to cost approximately \$7,000 per 6 months. There will be no costs for training staff because LSMU has 4 licensed Remote Pilots on staff.

**FINANCIAL IMPACT:**

There is adequate funding in Project No. 00074036 Survey Management and Technical Support for the development of the pilot project to fund the estimated cost of \$12,000 to implement the pilot project.

**CEQA:**

The recommended action is a ministerial action and thus is not subject to the requirements of CEQA.

**ATTACHMENTS:**

Attachment 1: Public Notice  
Attachment 2: PowerPoint

**UNCLASSIFIED MANAGER:**

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