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DEPARTMENT POLICY AND PROCEDURE

02-006, Use of Small Unmanned Aircraft Systems

Original Effective Date: 8/20/2018
Last Reviewed Date: XX/XX/2020
Distribution: EGLE Employees

ISSUE-revised

This Department of Environment, Great Lakes, and Energy (EGLE) policy and procedure is to establish requirements for the legal and safe use of Small Unmanned Aircraft Systems (sUAS), commonly referred to as drones, by Divisions/Offices and their staff within the Department.

AUTHORITY-revised

FEDERAL

Title 14 of the Code of Federal Regulations (CFR), Part 107, Small Unmanned Aircraft Systems (Unmanned Aircraft Systems Act, MCL 259.301 – 259.331)

STATE

Unmanned Aircraft Systems Public Act 436 of 2016 as amended (MCL 259.301 – 259.331)

DEFINITIONS-revised

Accident: The unexpected and unintentional collision of a Unmanned Aerial Vehicle with another object. Addressed by the EGLE incident response protocol.

Aerial Reconnaissance Technology (ART) Drone Technical and Program Support (TAPS)

Team: The A.R.T. Drone TAPS Team is a group of representatives from each EGLE division that advise and coordinate the use of sUAS drone technology within EGLE.

Air Traffic Control (ATC): The ground-based personnel and equipment concerned with monitoring and controlling air traffic within a particular area.

Contractor: A person or business hired by way of contract to conduct UAS activities on behalf of EGLE. EGLE UAS Contractors must follow all Federal and State statutes that pertain to the Department.

Division: An EGLE Division or Office.

Division UAS Representative: Appointed by Division Chief, responsible for Division UAS operations, Division Pilots, and coordination with the EGLE UAS Coordinator.

Commented [SD(1)]: This is a suggestion to add as it does have more regulations for commercial drones as well as the FAA. Feel free to remove it if it does not apply.

Commented [OA(2R1)]: Keep, this is correct, State Law. Act 436 of 2016 as amended.

Drone: Generic term for Unmanned Aerial Vehicle or System. All EGLE UAS Drone aircraft purchases, including those directly by EGLE Divisions, must be approved in advance by the Information Management Division Director and identified to the EGLE UAS Coordinator for inventory purposes.

EGLE-Remote Pilot in Command (EGLE-RPIC): An EGLE employee designation required to fly sUAS drones for EGLE. Designation is achieved when the following are completed:

- a) Current certification by the Federal Aviation Administration (FAA) in 14 CFR [Part 107, Small Unmanned Aircraft Systems](#)
- b) Has demonstrated flying proficiency with EGLE trainer and field sUAS drone models.
- c) Has been mentored in EGLE mission planning and appropriate mission conduct by a EGLE-RPIC.
- d) Has demonstrated the ability to develop and conduct missions and submit pilot log reports.
- e) Status of an EGLE RPIC can be Current (active) or Non-Current (inactive)

EGLE UAS Coordinator: Appointed by Director, works with Division UAS Representatives to coordinate UAS drone training, use, and reporting at the Department Level. Administers the UAS ITEC budget, EGLE UAS inventory, A.R.T. TAPS Team and EGLE Pilot meetings, and is the point person for the EGLE UAS Program and Contact with other Departments and Agencies. Reports to Director of IMD.

FAA: Federal Aviation Administration an office of the US Department of Transportation, which oversees the entire National Airspace System (NAS).

FAA Part 107: Title 14 of the Code of Federal Regulations (CFR), Part 107, Small Unmanned Aircraft Systems. These are regulations promulgated by the FAA for the commercial use of sUAS drones.

FARs: Federal Aviation Regulations, those parts of the US CFRs that specifically regulate the National Airspace System

FAR Part 107: Small Unmanned Aircraft Rule, the specific CFR that regulates civil UAS operations within the NAS

Fit for Service: A monthly stand-alone inspection designation by an RPIC that an EGLE UAS has met minimum operating standards to be used.

Flight: The stable operation of a vehicle in the air from take-off to landing.

IFR: Instrument Flight Rules, a set of rules as defined by the FAA for operating aircraft based on onboard or internally referenced data, typically from aircraft instrumentation and ground-based or space-based navigational equipment

Incident: any type of errant behavior in a UAS Operation (Minor, Major, Catastrophic categories).

Incident Response Protocol (EGLE UAS): a required safety reporting mechanism for EGLE Pilots to disclose minor, major, and catastrophic incidents when flying EGLE UAS to Division Management, EGLEs Emergency Manager, and EGLEs UAS Department Coordinator.

Low Altitude Authorization and Notification Capability (LAANC): LAANC is an industry developed application that provides sUAS drone operators with near, real-time processing of airspace notifications. It also provides automatic approval of requests that are below approved altitude in controlled airspace. To view a map of controlled airspace, go to [FAA's Visualize It Web site](#).

Mission: A sUAS drone flight conducted for a specific environmental purpose, objective, or regulated safety concern. A mission can be time-critical or planned. A mission can, but generally does not, include flights for equipment firmware updating or software application testing.

Mission Planning Template: A detailed plan outlining mission objectives, contacts, supervisor approval, landowner consent, airspace determinations, flight lines and battery usage, National Weather Service weather outlook, EGLE-PIC signoff, pre-mission checklist, onsite safety briefing, pre-flight checklist, post processing checklist, and archive-pilots log deliverable. For time-critical missions, a subset of the full mission planning template is used, as appropriate. An [example template](#) is located with this policy and procedure in the EGLE SharePoint Intranet.

NAS: National Airspace System, the system of airspace, vehicles, persons, and such that comprise the entire world of aviation in the United States .

Notice to Airmen (NOTAM): Notice to Airmen, a published notice from a regulatory agency (typically the FAA) that informs the aviating public of certain outages, alerts, and other potential hazards associated with a particular portion of flight or location

Privacy Measures : EGLE Best Practices for UAS Operations over private property and Imagery archive storage.

Remote Pilot in Command (Remote PIC or Remote Pilot): A person who holds a remote pilot certificate with an sUAS rating and has the final authority and responsibility for the operation and safety of an sUAS drone operation conducted under 14 CFR Part 107.

Security Measures: EGLE Best Practices for UAS Operations to insure no transmission of location or imagery occurs when in flight, and UAS do not connect to the state network.

Small Unmanned Aircraft: An unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

Small Unmanned Aircraft System (sUAS) Drone: A small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation of the small unmanned aircraft in the national airspace system, also known as a drone.

Temporary Flight Restriction (TFR): A type of NoTAM. A TFR defines an area restricted to air travel due to a hazardous condition, a special event, or a general warning for the entire FAA airspace.

UAS Annual Report: an annual (Jan-Dec) summary of current EGLE UAS Inventory, Pilot Status, Missions conducted, Incidents, and Return on Innovation/Investment analysis.

UASPO: Unmanned Aircraft Systems Program Office, the office charged by the Michigan Department of Transportation to oversee and implement UAS statewide.

Unmanned Aircraft: An aircraft operated without the possibility of direct human intervention from within or on the aircraft.

Unmanned Aircraft System/Vehicle (UAS/UAV): An aircraft without a human pilot, flown by a pilot via ground control system, or autonomously through use of an onboard computer, communication links, and any additional equipment that is necessary for the UAS to operate safely.

Visual Flight Rules (VFR): All flights of the UAS shall be conducted under VFR conditions, at an altitude below 400 feet above ground level, and at a proper distance from any nearby airport as defined by FAA regulations for public operations.

Visual Observer: A person who is designated by the Remote PIC to assist him/her in the mission (e.g., to see and avoid other air traffic or objects aloft or on the ground).

POLICY-revised

1) EGLE Pilot Requirements

An EGLE-PIC must do the following to fly for EGLE:

- a) Obtain and be current in their 14 CFR Part 107 certification.
- b) Follow FAA regulations at all times, including contacting ATC or LAANC as required.
- c) Adhere to EGLE sUAS drone procedures, as amended (including mission planning, supervisor mission approval, facility consent, privacy measures, security measures, etc.).
- d) Demonstrate to UAS Coordinator and Division Representative the ability to determine airspace and LAANC requirements, as well as flight proficiency with trainer and field sUAS drones prior to conducting missions for EGLE.
- e) Use Visual Observers as part of mission personnel, when appropriate.
- f) Remain current in use of EGLE UAS
- g) Conduct Fit for Service Inspections of assigned EGLE UAS on a monthly basis

2) EGLE sUAS Drone Equipment Requirements

- a) EGLE sUAS drones must be properly registered under 14 CFR Part 107.
- b) Only an EGLE-PIC may operate an EGLE sUAS drone.
- c) EGLE sUAS drones must pass pre-flight and post-flight checklist procedures that are signed off by the EGLE-PIC.

- d) EGLE sUAS drone hardware, software, equipment, and necessary accessory purchase requests will be coordinated with the ART Drone TAPS Team and EGLE UAS Coordinator.

3) EGLE sUAS Drone Missions and FAA Coordination

- a) A detailed mission planning template will be developed prior to flight for non-emergency missions as appropriate by Division Program.
- b) In accordance with Public Act 436 of 2017 Section 7 (MCL 259.307) Aerial consent will be sought from the landowner or facility authorized representative prior to operating an EGLE sUAS drone over private property or a facility. Consent is not required in emergency situations (e.g., Pollution Emergency Alerting System (PEAS) response), where authorized by law, license, permit, or other legal mechanisms, or over public property. Private property consent can be sought verbally, as applicable in time-critical situations.
- c) All FAA program contact, such as 14 CFR Part 107 and Airspace Waiver Requests, are to be coordinated through the EGLE Emergency Manager and the UAS Coordinator prior to submittal to the FAA.

4) EGLE Use of Collected Incidental Data

Incidental aerial imagery collected during the course of EGLE sUAS drone operations, meaning outside of the mission objectives (such as adjacent property), will only be evaluated when reasonably believed to constitute a threat to public health and safety or the environment.

PROCEDURE-revised

General Mission Procedure

Step	Who	Does What
Preflight		
1.	RPIC/Division	Receives aerial mission inquiry.
2.	RPIC/Division	Reviews aerial mission for airspace classification, facility consent, privacy and security measures, objectives.
3.	RPIC	Requests approval from Division Management/UAS Representative to plan and conduct mission.
4.	Supervisor/ UAS Rep	Approves or disapproves mission (May require mission plan review and sign-off).
Flight		
5.	RPIC	Coordinates and conducts aerial mission (preflight check, privacy, security, safety measures, postflight check).
Postflight		
6.	RPIC	Conducts postprocessing and deliverables per mission objectives.
7.	RPIC	Sends mission logs, incidents, to Division Representative and EGLE UAS Coordinator on a monthly basis.
8.	RPIC	Archives mission imagery and deliverables off the State Network and in accordance with specific program documentation / retention schedules.

EGLE-RPIC Designation and Proficiency Procedure

Prior to achieving EGLE-PIC status and being allowed to conduct/fly sUAS Drone missions for EGLE, staff are required to meet all of the following:

- a) Have supervisor's and Division Management approval to train for and become an EGLE-PIC.
- b) Hold an FAA Part 107 certification.
- c) Pass a practical flying proficiency with trainer and field models.
- d) Develop a mission planning template (understanding FAA Airspace, LAANC requirements, and State Law concerning consent, surveillance, and imagery collection)
- e) Conduct a demonstration/evaluation mission under the supervision of the EGLE UAS Coordinator and/or Division UAS Representative.

EGLE sUAS Drone Proficiency Demonstration

EGLE staff must demonstrate proficiency flying with EGLE training designated sUAS drones (or personal equivalent), prior to demonstrating proficiency with field designated sUAS drone models. The EGLE sUAS indoor training and outdoor field models are summarized in the table below:

Type	Characteristics	Models ¹		
Indoor Training	Lightweight, Plastic	Eachine E-8	JJRC-H31	Potensic A20
Outdoor Field	Composite, GPS enabled, Sensors	DJI Spark	DJI Mavic Air	Parrot Anafi

The practical demonstration includes flying the following, under manual control and directional facing:



Proficiency must FIRST be demonstrated with an indoor training model, then with an outdoor field model, in the presence of the EGLE UAS Coordinator and/or the Divisions UAS Representative.

Outdoor Field Evaluations must include

- a) Preflight check (onsite NOTAM, TFR, Visibility, Cloud Ceiling, temp, windspeed, forecast, airspace designation, LAANC if required, ect.)
- b) Demonstrated knowledge of EGLE Privacy, Security, Safety, Contingency measures, as well as aircraft hardware and software operations to include compass calibration, Return to Home (RTH) settings, altitude and radius (geofence) limit setting to prevent flyaway, Battery level status, Collision Avoidance settings, ect.

¹ Models listed are examples. Other models may be substituted

c) Flight is conducted under control for a minimum of 5 minutes and collects picture and video as identified in the Mission Plan. Pilot must demonstrate the use of RTH and manual flight with display blanking.

EGLE-RPIC Status, Requirements, and Timeframes

Division Approval to FAA Certification (Timeframe to complete = 6 months)

If Staff approved for FAA Part 107 training do NOT complete FAA certification within 6 months, they are no longer counted as a potential "pilot" in the EGLE UAS program. They may restart and complete the FAA Certification process at any time.

FAA Certification to EGLE RPIC Demonstration (Timeframe to complete = 6 months)

If Staff pass their FAA Part 107 Certification, but fail to complete their EGLE Proficiency Evaluation (Trainer demo, EGLE Mission Planning, and Field Evaluation) adequately within 6 months they are no longer considered a potential pilot in the EGLE UAS Program.

Any UAS assigned to the Staff will be returned to the UAS Coordinator or their Division Rep. They may restart the EGLE Proficiency Evaluation process at any time if holding a current FAA Part 107 Certification.

EGLE RPIC CURRENT vs INACTIVE Status

Monthly: If an RPIC does not fly and report at least one Mission or Test Flight (takeoff and landing / Indoor-outdoor) every calendar month, that pilot is considered INACTIVE and non-current.

To regain CURRENT RPIC status, INACTIVE EGLE RPICS shall conduct a:

- a) Self Certification Test Flight (within 60 total days of last flight, using an EGLE or Personal Field UAS (DJI Spark or comparable)
- b) Fit for Service Flight with their EGLE UAS
- c) Flight with an EGLE Visual Observer that is a CURRENT EGLE RPIC (if INACTIVE between 60-180 days of last flight)

An Inactive EGLE Pilot regaining Current status shall report the recertification test flight (Self Certification, Fit For Service Flight, or With Current RPIC) to their Division Rep and UAS Coordinator in writing (email), including a Flight Record File (attachment). Additional training may be requested by the Division Rep or UAS Coordinator prior to Pilot leading an EGLE mission solo, (such as demonstrating LAANC flight approval, Preflight review and settings).

6 months: If an RPIC carries an INACTIVE Status for over 6 months, they are no longer counted as a pilot in the EGLE UAS Program and must redo their EGLE Proficiency Evaluation with the EGLE UAS Coordinator or Division UAS Rep to regain RPIC status.

2 years: If an EGLE RPIC allows their FAA Part 107 Certification to expire, they are no longer counted as a pilot in the EGLE UAS Program.

If an RPIC fails to conduct and submit a monthly Fit for Service inspection on an assigned EGLE UAS, the Division Rep or UAS Coordinator may reassign that UAS to another RPIC.

*ALL USE-EVERY FLIGHT, incl test and training flights with an EGLE/Division UAS are to **authorized** by Division Rep and/or UAS Coordinator. The Pilot shall provide Flight Logs for ANY flight of an EGLE/Divisional UAS when requested by the Division Rep or UAS Coordinator.*

While EGLE encourages Pilots remain current and proficient in the use of EGLE/Divisional UAS. EGLE Pilots must be authorized by their Division Rep/UAS Coordinator when using EGLE/Division UAS (State Equipment) on personal time. EGLE UAS DRONE use on personal Time is permitted and shall be done for Training only, and not for Recreational purposes in any way. Recreational/Personal use of EGLE/Divisional UAS is strictly prohibited.

EGLE UAS Drone Fit For Service Inspection Requirement

All EGLE or Divisional UAS Drones are assigned to a pilot. Pilots in possession of a UAS will subject the Aircraft to a specific **Fit for Service** inspection. The Pilot will verify that the UAS meets Fit For Service requirements, e.g.:

Visual UAS inspection of:

props, arms, landing gear, power-on initialization of gimbal, imu, software, and accessories including cables, extra props, batteries, visual aircraft inspection. "Fit For Service" means Ready to Deploy.

Software Inspection of:

Connectivity to main app/mapping app, firmware, geofencing, power on – no errors (pilot does not need to take off, but a full flight is encouraged if the UAS has not been flown in 30 days).

This inspection and reporting to the Division Rep and UAS Coordinator will occur Monthly. The inspection may be done in conjunction with a mission for that month, but must be reported as meeting "Fit for Service" by the Pilot.

All EGLE/Divisional UAS will meet Fit for Service designation or be taken out of service. The EGLE UAS Coordinator will keep a Fit for Service record of all UAS Drones in EGLE
Failure to Adhere to EGLE Policy and Procedure No. 02-006

The operation of an sUAS drone to conduct EGLE field activities without following the FAA Part 107, State Law, EGLE RPIC requirements, and this EGLE Policy, will be reported to the EGLE employee's immediate supervisor, UAS Division Representative, and the EGLE UAS Coordinator for appropriate response.

EGLE Incident Response Protocol

As part of sharing information on operations in EGLE UAS Aviation, EGLE RPICS must report all incidents in their monthly operating reports. EGLE Aviation Incidents are ranked by levels of severity: Minor, Major, and Catastrophic.

Minor Incidents (Propeller damage, undetermined flying errors with safe recovery and landing) are reported monthly to the Division UAS Representative and EGLE UAS Coordinator.

Major Incidents (Equipment damage, flying errors resulting in crash or injury below FAA thresholds and include UAS recovery) are reported within 24 hours to the EGLE Emergency Manager as well as UAS Coordinator and require an After Action followup and Report.

Catastrophic Incidents (Lost of UAS, flying errors resulting in crash or injury above FAA thresholds) are reported as soon as possible to the EGLE Emergency Manager and UAS Coordinator, who will make the required proper reporting FAA and NTSB as necessary.

Divisions or EGLE RPICS shall not directly report any EGLE incident to the FAA or NTSB directly. Only the EGLE Emergency Manager is authorized to make catastrophic incident reports to the FAA or NTSB on behalf of the Department.

An UAS Incident Form and subsequent Flight Record may be required by the Division Representative or EGLE UAS Coordinator.

EGLE UAS Privacy Measures

EGLE RPICS will use best practices to insure that aerial missions are conducted in accordance with State Law (Act 436 of 2016 as amended) with regards to privacy. These can include but are not limited to:

- Seeking consent for surveillance
- Planning flight lines to minimize extraneous imagery
- Denoting business confidential imagery when appropriate
- Determining expectations of privacy for a Mission

As a general guide in determining expectations of privacy for a given location, the use of existing Internet source imagery shall be used (ESRI ArcGIS Imagery, Microsoft Bing Maps, FAA Vizualize-It Base Imagery, Google Maps Satellite View, Google Earth, ect.).

EGLE UAS Drone Imagery from Regulated Facilities

The direct imagery from an EGLE UAS Drone of a regulated facility under surveillance, in accordance with Section 7 of Act 436, is subject to subsection 5 (presumed not subject to FOIA). This pertains directly to the images on the SD card or internal storage, only.

The use of Facility Imagery in subsequent State or Federal correspondence/reports/documentation is considered legal and fair use, and thus exempt from Section 7(5) of Act 436.

EGLE Pilots may share imagery taken at regulated facilities with internal project staff, but must check with the Division Representative before sharing regulated facility imagery directly with the Public.

Only the Division Representative or EGLE UAS Coordinator may directly release Imagery taken by a Division Pilot at Regulated Facilities (as defined under Section 7 of Act 436) to public entities outside EGLE not directly involved with the Site/Project.

EGLE UAS Security Measures

Depending on UAS Controller and Display hardware EGLE RPICS shall use best practices during flight and post flight to insure telemetry positioning and imagery are not transmitted beyond the immediate UAS Operations.

The following Security best practices can be implemented standalone or in combination to achieve security objectives during mission flight:

- Avoidance of UAS surveillance of sensitive or critical infrastructure
- Disabling Wifi
- Disabling Location
- Conducting Mission in Airplane Mode
- Removal of Sim Card
- Conducting Mission in Local Mode if available
- Disabling automatic uploading of user/ location/or flight information
- Use of a Network Blocker app
- Use of known specific Mission apps for UAS flight (e.g. Pix4D Capture, Drone Amplified, Lichi)

With regards to collected telemetry and imagery on the SD Card, an EGLE RPIC will apply appropriate security measures to the archived UAS flight imagery and metadata, insuring compliance with Section 7(5) of Act 436 of 2016 that includes but is not limited to:

- Aerial imagery is not archived on the State Network for over 30 days.
- Aerial Imagery collected by UAS of a facility (i.e. on SD card) is reputedly not subject to FOIA
- Aerial Imagery of facilities may be subject to Business Confidential / Deliberative-Enforcement procedures (Check with facility and your Divisions C&E section).

As a point of clarification, EGLE determines that the imagery and metadata on the SD card itself collected by the UAS-drone is subject to Section 7(5) of Act 436 of 2016 (i.e. reputability not subject to FOIA). UAS Aerial Imagery of a facility that is subsequently part of a deliverable, report, document, or any other correspondence, including email, is not subject to Section 7(5) of Act 436 of 2016 and follows the FOIA determination of the subsequent report/correspondence.

EGLE UAS Organizational Structure

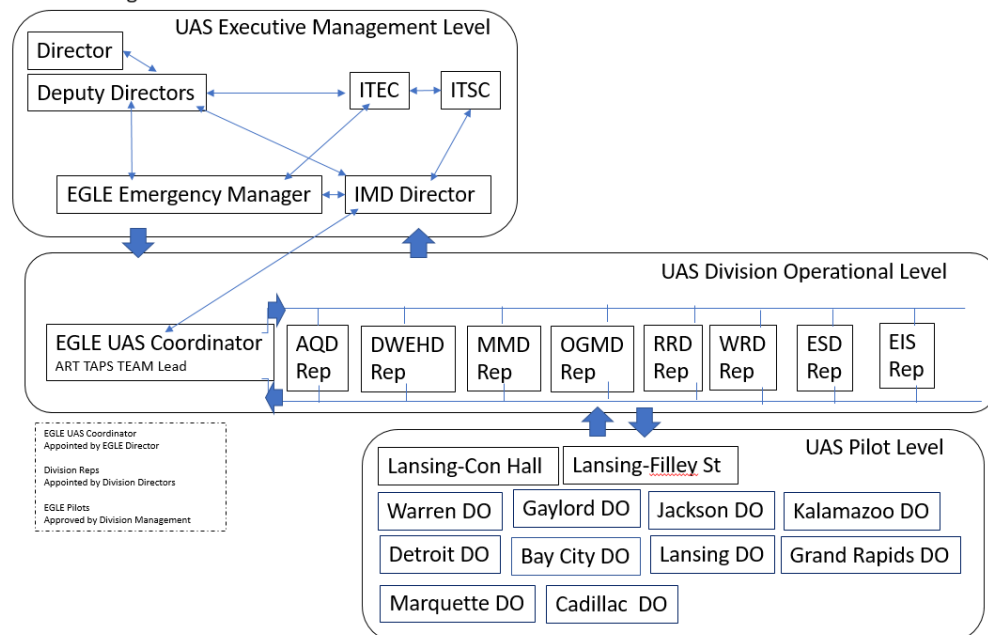
The EGLE UAS Organization Structure is comprised of three levels.

Executive Management Level: led by the IMD Director and includes the Emergency Manager.

Division Operational Level: led by the UAS Coordinator and Division Representatives

Pilot Level: the individual pilots that operate for Divisions out of various office and field locations.

EGLE UAS Organizational Structure



LINKS TO ADDITIONAL INFORMATION

- [Example Template](#)
- [Federal Register Notice, Operation and Certification of Small Unmanned Aircraft Systems](#)
- [14 CFR Part 107, Small Unmanned Aircraft Systems](#)
- <https://www.faa.gov/uas/>

- [DNR UAS Policy:](#)
- [MDOT UAS Policy:](#)
- [MSP UAS Policy:](#)
- [UASPO Authority:](#)

State UAS Laws MCL:

APPROVING AUTHORITY

Liesl Eichler Clark, Director

HISTORY

Policy No.	Action	Date	Title
02-006	Original	8/20/2018	Use of Small Unmanned Aircraft Systems
02-006	Review	1/3/2020	Same as above
02-006	Draft Final	10/29/2020	Same as above

CONTACT / UPDATE RESPONSIBILITY

Any questions or concerns regarding this policy and procedure should be directed to Art Ostaszewski, EGLE UAS Drone Coordinator, at 517-936-7991 or ostaszewskia@michigan.gov.

An EGLE policy and procedure cannot establish regulatory requirements for parties outside of EGLE. This document provides direction to EGLE staff regarding the implementation of rules and laws administered by EGLE. It is merely explanatory, does not affect the rights of or procedures and practices available to the public, and does not have the force and effect of law. EGLE staff shall follow the directions contained in this document.