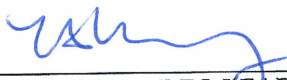
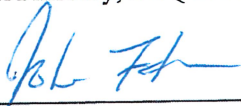
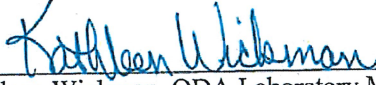
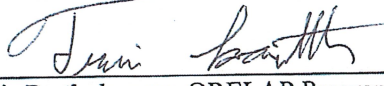
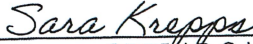


	<h1>Oregon</h1> <h2>Environmental Laboratory Accreditation Program</h2>	
<p>Department of Agriculture, Laboratory Services Division Department of Environmental Quality, Laboratory and Environmental Assessment Division Oregon Health Authority, Public Health Laboratory</p>	<p>Oregon State Public Health Laboratory 7202 NE Evergreen Pkwy, Suite 100 Hillsboro, OR 97124 (503) 693-4122 FAX (503) 693-5602 TTY (503) 731-4031</p>	

Protocol for Collecting Samples of Usable Marijuana

ORELAP-SOP-001 Rev. 4.1

ORELAP Executive Board and Program Approval Signatures:

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Acknowledgements

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Protocol for Collecting Samples of Usable Marijuana

I. Introduction and Scope

Obtaining a representative sample from a larger batch is one of the key elements of accurate laboratory analysis. Laboratories collect representative samples by consistently using standard sampling methods and equipment, preventing contamination of the sample, and maintaining the sample identity within the batch. The laboratory must consistently use documented standard sampling practices, tools, and methods. These practices, tools, and methods must be appropriate for the matrix. If proper protocols are in place and adhered to for sample collection, the laboratory analysis of the sample should reflect the composition of the batch as a whole at the time the sampling occurred, within recognized tolerances.

This protocol is for use by ORELAP-accredited laboratories performing cannabis sampling as defined in OAR 333-064-0025. For the purposes of this protocol, cannabis sampling also includes activities related to obtaining a representative sample of post-harvest cured hemp material but excludes activities related to pre-harvest sampling of hemp material. The protocol focuses on standard and correct sampling practices that should be reflected in a laboratory's own sampling policies and procedures.

II. Records and Documentation

ORELAP-accredited laboratories shall maintain standard operating procedures (SOP) that accurately reflect current sampling activities.

1. The laboratory's SOP shall be readily accessible to all pertinent personnel.
2. The laboratory's SOP shall clearly indicate the effective date of the document, the revision number, and the signature of the approving authority.
3. The laboratory's SOP should use this protocol as minimum requirements and must include additional detail specific to laboratory procedures. In cases where the published method (this protocol) has been modified or where the referenced method (this protocol) is ambiguous or provides insufficient detail, these changes or clarifications shall be clearly described in the laboratory's SOP. Any changes to the laboratory's protocol, including use of a selected option, shall be documented and included on the laboratory's sampling form.
4. All documents shall be controlled and retained in accordance with the TNI Environmental Laboratory standard as defined in 333-064-0025.

ORELAP-accredited laboratories shall maintain sampling plans.

1. The laboratory's sampling plans shall be made available at their location of use.
2. The laboratory's sampling plans shall be based on appropriate statistical methods and shall address factors to be controlled to ensure the subsequent laboratory test results accurately reflect the composition of the batch.
3. Any deviation from or addition to the laboratory's sampling plan must be documented in detail and shall be included in the final report. The standardized or generic sampling plans can be included in the SOP however specialized client requests or products may require additional information.
4. The laboratory's sampling plans shall document the date and time of sampling.

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III. Client Contracts; Client Sampling and Testing Requests

The laboratory must have a sampling contract with a client that includes at least the following:

1. A test order containing the information required by OAR 333-007-0315
2. A site-specific sampling plan or process specific sampling plan that uses statistical design for each project to provide representative sampling.

IV. Planning

Prior to beginning the sampling procedure, the sampler shall survey the site to identify the conditions under which the Usable Marijuana is being kept, as this will determine the sampling plan. In cases where Usable Marijuana will be sold or transferred to a processor or processing site, analysis may occur prior to the drying and curing steps. All sampling must be performed by personnel employed by an ORELAP accredited laboratory and must be in accordance with OAR 333-007-0360 and OAR 333-064-0100.

The testing requirements for Usable Marijuana are in OAR 333-007-0320. The requirements for sampling and minimum sample size are in OAR 333-007-0360 and Appendix 2. Per Authority or Commission request or client request, additional analyses may be required and must be considered in the planning process.

To ensure representativeness, the sampling plan must be designed such that each flower bud, leaf, or other portion in the batch has an equal chance of being selected. **The sample size must be sufficient to complete all analyses required but shall in no case be less than 0.5% of the weight of the batch. The maximum batch size is 50.0 lbs or 22.68kg.**

V. Sampling Design and Plans

1. Sampling plans shall address factors to be controlled to ensure the subsequent laboratory test results accurately reflect the composition of the batch. Standardized Sampling Plans can be included in the SOP however specialized client requests or products may require additional information. Any deviation from or addition to the sampling plan must be documented in detail and shall be included in the final report.
2. Sampling plans shall be designed to meet specified sample quality criteria. This includes using a sampling plan that meets a 95% confidence level for representative sampling and limits the fundamental sampling error. The most common way to achieve this is by increasing the number of sample increments from the minimum required to compensate for normal batch heterogeneity.
3. Sampling plans must ensure that adequate sample mass is collected for all analyses requested by the producer. This must include adequate sample mass for re-testing in the event a sample fails a criterion as well as adequate sample mass for any quality control samples required by the laboratory, such as duplicates or matrix spikes.
4. A sampling plan must include at a minimum:
 - a. Shape, size, and number of container(s) holding the batch from which sample increments will be collected;
 - b. Number of sample increments to be collected;
 - c. Minimum weight or mass of each sample increment;
 - d. Location of where sample increments will be taken within each container holding the

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batch. See Appendix 2 for information on random selection of locations.

5. The laboratory must have details in its SOP or a sampling plan, from appropriate industry reference where possible, on how it will achieve random sampling in an unclear decision unit.

VI. Sampling Equipment and Supplies

1. A laboratory should, at a minimum, have the following equipment and supplies for sampling:
 - a. Sampling equipment such as spoons, spatulas, transfer pipettes, or other matrix specific tools
 - b. Tongs
 - c. Corers
 - d. Teri-wipes or equivalent
 - e. Field balance (capable of 0.01 g measurements)
 - f. Calibrated verification weights appropriate to verify accuracy of field balance
 - g. Cleaning supplies – solvent, bleach, 70% Ethanol
 - h. Gloves (powder-free, nitrile, sterile)
 - i. Mylar bags (for final sample transport and storage) or amber glass jars (for final sample transport and storage)
2. Cleaning of Field Sampling Equipment
 - a. Field sampling equipment shall be certified clean prior to use by the laboratory.
 - b. Cleaning techniques will vary depending upon the desired analysis.
 - c. In general, sampling equipment must be sterile for microbiology samples and clean for chemistry samples.
 - d. The laboratory shall perform cleanliness checks on each batch of sampling equipment prior to taking that equipment into the field.
 - e. Results from cleaning procedure tests must be below the reporting limit of the target analyte(s) for the associated analyses.
 - f. If cleanliness checks fail, the sampling equipment must be re-cleaned, sterilized and tested.
3. Field balance calibration verification
 - a. The laboratory sampling technician shall verify the calibration of the field balance at the sampling location.
 - b. When multiple sampling events occur on the same day, the balance calibration shall be verified at each sampling location.
 - c. Balance calibration verifications shall be documented.

VII. Procedures for Sampling Usable Marijuana

1. Locate the batch to be sampled. The sampler **must** have access to entire batch.
2. Check for any signs of non-uniformity within the batch and document the same.
 - a. Some obvious indicators may be different types or sizes of containers, variations in marks and labels, or mixed batch numbers.
 - b. During sampling, the sampler shall look for differences in the usable marijuana being sampled such as color, shape, size, and treatment.

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- c. By definition, the batch must be uniform for all factors that appear on the label; hence, variations in the product may indicate non-uniformity in the batch and that any sample drawn may not be representative for testing.
- d. The sampler shall note these anomalies in the sample collection report.
- e. Some batches may include more than one Metrc package associated with different strains or different types of material from the same strain where allowed in OAR 333-007-0360 (1) (c).
 - i. In the situation described in (e) above, sampling occurs by each Metrc package number composed of material that appears to be substantially similar in appearance and quality. Examples of materials that are not substantially similar include but are not limited to flower buds versus leafy stem material or “A buds” versus “B buds”.
 - ii. Combining multiple Metrc packages shall occur in the laboratory AFTER sample homogenization steps are completed as required by OAR 333-064-0100 (2) (f).
3. Review the container label information for harvest lot number, producer, and other pertinent information. Each harvest lot must be separated into batches of 50.0 lbs. or less and must be assigned a unique batch number by the grower. Do not sample if a unique batch number is not available.
 - a. The batch shall be presented for sampling in containers holding no greater than 15.0lbs.
4. Determine the number of containers in the batch and the batch size. Visually verify the batch size for each container and confirm batch weight with client. Do not sample if the batch size is unavailable or exceeds 50.0 lbs.
5. Determine the number of containers from which sample increments must be collected (Appendix 2).
6. Select the appropriate sampling tool to ensure that it reaches all portions of the container.
7. Sampling tool and other instruments like field balance must be clean prior to use to prevent cross-contamination of sample increments. Sampling tools which appear to be dirty or otherwise compromised shall not be used.
 - a. To prevent contamination, sampling tools may be cleaned and sealed at the laboratory prior to use or may be cleaned in the field between batches using an appropriate solvent and decontaminant to prevent cross contamination of batches during sampling.
8. Results from cleaning procedure tests must be below the reporting limit of the target analyte(s) for the associated analyses.
9. Decontamination waste must be collected and properly disposed of if not used for analysis.
 - a. Samplers must take extreme care if sampling from multiple sites in one day to ensure contaminants, pathogens, or organisms are not transferred between facilities. The sampler may clean sampling equipment in the field between samplings at a single facility. However, the sampler shall bring enough sets of sampling equipment to use a new set at each facility visited.
 - b. All field equipment shall be returned to the laboratory following sampling and cleaned according to the laboratory’s procedures or discarded.
 - c. Where aseptic technique is required, samplers shall observe best practices to prevent microbiological contamination of samples. For an example of aseptic technique, see the FDA Aseptic Sample guidelines (Investigations Operations Manual Subchapter 4.3.6).
10. Visually inspect each test sample increment to assess uniformity. If non-uniformity is identified, record observation in the sampling report.

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11. When collecting sample increments, approximately equal amounts of product are to be taken with each probing and from each container. Care must be taken by the sampler to not damage the portion of the product which is not being collected. Laboratory should refrain from sampling a batch from containers that because of their shape make it impossible to collect sample increments from all locations within the container. This includes subsurface or internal layers.
12. Weigh each sample increment, document weight on sampling report form, along with location sample increment was taken.
13. Combine all sample increments to form the composite sample.
14. Ensure sufficient sample increments are taken to meet sample size requirements for all analytical method(s) being performed.
15. Seal and label the composite sample with the following minimum requirements:
 - a. Laboratory license number
 - b. Unique identifier for sampling event
 - c. Sampling date and name of sampler
 - d. Producer's license or registration number
 - e. Harvest lot and batch numbers
 - f. Label "PRODUCT NOT TESTED" in bold capital letters in minimum 12-point font.
16. Apply a custody seal to the sample container in a manner which prevents the product from being tampered with or transferred prior to testing. This seal may contain the laboratory sample identification number.
17. Complete the sampling report while at the sampling location as well as an appropriate chain of custody form as outlined in the standards of accreditation.
18. Forward the sample and sampling report to the laboratory or other designated location using packaging appropriate for secure and timely transport.
19. Record the sampling event in the OLCC seed to sale system under the licensee number for recreational marijuana or record in the laboratory's records the registrant number for tracking medical marijuana.

VIII. Sampling Records/Field Data

1. At the time samples are collected the sampler must complete a sampling report form for each batch sampled. Sample report forms must include at a minimum the following information:
 - a. Name and address of producer including licensee or registrant number;
 - b. Product type.
 - c. Total weight of batch.
 - d. Unique laboratory batch ID#, Metrc batch ID #, and/or OHA batch ID#.
 - e. Total number of containers sampled.
 - f. Number of sample increments taken from each container.
 - g. Number of sample containers collected.
 - h. Weight and location of each sample increment.
 - i. Total weight sampled.
 - j. Sampling plan ID and revision date.
 - k. Sampling Procedure ID and revision date.
 - l. Description of equipment and tools used.
 - m. Address where sampled.
 - n. Date sampled.
 - o. ORELAP Laboratory Identification number.

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- p. Lab License Number.
 - q. Sampler's identification and/or signature.
 - r. Name of responsible party for the batch and transport information.
 - s. Receiving laboratory and types of tests required or requested.
2. A chain of custody form must be used unless the laboratory is sampling for a client that is required to use Metrc. A chain of custody form must include at least the following information:
 - a. Sampler's name
 - b. Sample Identification (Lab ID number) if assigned before arrival at laboratory
 - c. Sampling Date/Time
 - d. Weight and location of increment samples
 - e. Final weight of composite sample
 - f. Custody transfer signatures
 - g. Custody Transfer Dates/Times
 3. If any of the above information requested on the sampling report form is unavailable, indicate "N/A" in the appropriate space with an explanation as to why the information is not available.
 4. All sampling report forms must be signed by the sampler.

IX. Transportation and Handling of Samples

1. Samples must be transported to the laboratory performing the analysis by the most expedient, secure, and legal means to ensure that the sample continues to be representative of the harvest lot sampled and the chain of custody form continues to document sample integrity. Transportation must be done in compliance with OAR 845-025-5060. Note: The existing regulation does not permit shipping in any form such as USPS or FedEx.
2. Containers for sample transport must be designed to protect the sample from moisture and temperature extremes and to prevent damage, contamination, spillage, or commingling of the sample during transport. The required container for sampling is a glass, amber jar with a PTFE-lined lid or a Mylar bag. A tamper-proof seal is required and must be marked with the sampler's name, date, and sample number.
3. The laboratory must have detailed procedures on maintaining custody and sample integrity during transport. These procedures should take into consideration controlling temperature and other environmental factors.
4. Submit the composite sample to the laboratory in its entirety. In a situation where the composite sample must be split for analysis by two different laboratories, for example when pesticide analysis is subcontracted to another laboratory, the composite sample shall be homogenized by the primary laboratory using the laboratory's approved sample homogenization process prior to subsampling. This shall be reflected on the chain of custody.
5. Composite samples must always be identified by labeling or marking the sample container to associate them with the batch from which they originated and with the sampling report.

X. Quality Assurance and Quality Control

X.1 Sampler Qualifications

1. Basic qualifications for samplers of usable marijuana are:

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- a. Physically able to perform the duties of a sampler;
 - b. No conflict of interest;
 - c. Employed by an ORELAP accredited laboratory
 - d. Pass initial and ongoing demonstrations of capability as defined by the laboratory (see below);
 - e. Licensed under state law to transport the required quantity of usable marijuana items
2. Education and training for samplers:
 - a. Initial training: training shall include principles, procedures, and policies of sampling; Initial training must be performed by an Instructor that has demonstrated competency in performing the sampling methods referenced or equivalent. After personnel goes through initial training, they are qualified to train others in their organization.
 - b. Field or on-the-job training: 8-hours of training on various sampling techniques;
 - c. Continuing education: periodic refresher training shall be done annually.

X.2 Demonstration of Capability

Prior to acceptance and institution of any accredited method, a satisfactory initial demonstration of capability (IDOC) is required. The laboratory shall have a documented procedure for performing the IDOC. The IDOC will be repeated: 1) every time there is a change in personnel or method, and, 2) when the method has not been performed by the laboratory or sampler within a 12-month period.

This procedure shall employ one of the following approaches to demonstrating capability:

1. Comparison of replicate samples within a defined Relative Standard Deviation (%RSD)¹.
2. Comparison of a sample collected to that of one collected by personnel with an existing IDOC within a defined RPD.

Thereafter, ongoing continuing demonstration of capability (CDOC) is required annually. The laboratory shall have a documented procedure for performing the CDOC. The laboratory shall retain documentation verifying CDOC for each sampler and make this documentation available to ORELAP upon request.

X.3 Field QC Samples

1. Duplicates
 - a. Duplicates are recommended for any Usable Marijuana sampling event, but not required. The Duplicate must be collected using the same procedure and contain the same number of sample increments as the Primary Sample. The lab must have documentation of the client request for a Duplicate with any client specified Quality objectives and precision limits must meet the client's need.
2. Equipment Blanks
 - a. Equipment rinse blank samples provide a QC check on the potential for cross contamination by measuring the effectiveness of the decontamination procedures on the sampling equipment. An equipment blank is required to validate equipment cleaning procedures for all required analyses. It is recommended but not required that an

¹ Standard Methods 20th Edition; 1020 B Quality Control, 11. QC Calculations, a. Initial Calibration.

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equipment blank is collected upon each sampling event to demonstrate the equipment was not introduced to contamination after cleaning.

- b. The equipment rinse blank samples consist of analyte-free matrix, as applicable, rinsed across sample collection and processing equipment. If the analytes of interest are detected in the equipment rinse blank samples, the detected concentrations will be compared to the associated sample results to evaluate the potential for contamination.
- c. The Equipment Blank must pass the required analysis at <LOQ for cleaning validation.
- d. If the Equipment Blank is collected at the sampling event, the lab must have detail in the sampling plan or procedures as to how to evaluate it and what actions to take if the evaluation demonstrates unacceptable results.

X.4 Field Audits

1. The laboratory shall adopt an ongoing system for performing audits of field activities. Field audits must be conducted periodically and in accordance with a predetermined schedule and procedure. The goal of the field audit is to verify that the sampling operation continues to comply with the requirements of the regulations and is being performed according to the laboratory's sampling SOP. Audits are to be carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited. The field audit shall address all elements of the sampling activities and shall be documented.
2. When field audit findings cast doubt on the effectiveness of the operations or on the correctness or validity of the field sampling activities, the associated laboratory shall take timely corrective action, and shall notify customers in writing if investigations show that test results may have been affected. Laboratory management shall have a policy that specifies the time frame for notifying clients of events that cast doubt on the validity of the results. Follow up audit activities shall verify and document the implementation and effectiveness of any corrective actions taken as a result of the field audit.
3. Required components of the Field Audit program:
 - a. Review sampling and performance records from the preceding year for deficiencies in the application of sampling protocol;
 - b. Observe the sampler conducting sampling procedures;
 - c. Record any deficiencies and initiate corrective action.

XI. References

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Oregon Administrative Rules, *General Requirements Applicable to all Marijuana Licensees*, Chapter 845, Division 25.

Standard Methods 20th Edition (1998); 1020 Quality Assurance

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Appendix 1 Definitions

**** If there are any inconsistencies between the definitions below and the definitions in OAR 333, Divisions 7 and 64, the definitions in the rules take precedence.**

Authority means Oregon Health Authority

Batch means a quantity, not to exceed 50.0 pounds or 22.68 kilograms, of marijuana or usable marijuana from a harvest lot.

Chain of Custody Form means a form completed by laboratory personnel that documents the collection, transport, and receipt of samples by the laboratory. (Sample tracking document)

Commission means the Oregon Liquor Control Commission.

Composite sample means a sample containing all sample increments taken from a batch.

Container means a sealable, hard- or soft-bodied receptacle in which a marijuana item is placed during sampling, transport, and storage; or a physical division into which a marijuana batch is placed for random and representative sampling.

Decision Unit (DU) means the material from which the primary sample(s) is collected and to which the inference(s) is made.

Duplicate Sample means sample increments taken in an identical manner to sample increments taken for the primary sample and representative of the same marijuana item being sampled that is prepared and analyzed separately from the primary sample.

Equipment Blank means a sample of analyte-free media, collected after decontamination and prior to sampling, which has been used to rinse the sampling equipment after cleaning to validate the cleaning procedure or between sampling batches to demonstrate lack of contamination.

Fundamental Sampling Error (FSE) means a measure of the compositional heterogeneity of the batch, which is controlled through the collection of sufficient sample mass (mass is inversely proportional to error).

Harvest Lot means a specifically identified quantity of marijuana that is cultivated utilizing the same growing practices, harvested within a 7 calendar day period at the same location, and cured under uniform conditions.

Heterogeneity means the state or quality of being heterogeneous.

Heterogeneous means non-uniform or consisting of dissimilar parts or components.

Homogeneous means of a uniform composition and with similar properties throughout a batch of useable marijuana; means a cannabinoid product, concentrate, or extract has uniform composition and properties throughout each process lot.

Label means a tag or other device attached to or written, stamped, or printed on any container or accompanying any batch in bulk stating all required batch information.

Laboratory means a laboratory that is accredited under ORS 438.605 to 438.620 to sample or conduct tests on marijuana items and licensed by the Oregon Liquor Control Commission under ORS 475B.560.

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Marijuana means the plant Cannabis family Cannabaceae, any part of the plant Cannabis family Cannabaceae and the seeds of the plant Cannabis family Cannabaceae. This does not include industrial hemp, as defined in ORS 571.300.

Marijuana item means marijuana, usable marijuana, a cannabinoid product or a cannabinoid concentrate or extract.

Metrc means the state-administered cannabis tracking system (CTS).

ORELAP means the Oregon Environmental Laboratory Accreditation Program administered by the Authority pursuant to ORS 438.605 to 438.620.

Primary Sample means a composite sample composed of sample increments and tested for the required analysis methods.

Producer means a person licensed by the Commission under ORS 475B.070 or a grower registered by the Authority under ORS 475B.810.

Registrant means a grower, marijuana processing site, or a medical marijuana dispensary registered with the Authority under ORS 475B.810, 475B.840, or ORS 475B.858.

Relative Percent Difference means comparing two quantities while taking into account the size of what is being compared. If the final result (i.e. Total THC) is <LOQ in either sample, the absolute value of the LOQ is used in the equation.

$$\%RPD = \frac{|(sample - duplicate)|}{(sample + duplicate)/2} \times 100$$

Relative Standard Deviation means the standard deviation expressed as a percentage of the mean recovery, i.e., the coefficient of variation multiplied by 100. If the final result (i.e. Total THC) is <LOQ in either sample, the absolute value of the LOQ is used in the equation.

Standard Deviation

$$S = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{(n - 1)}}$$

Relative Standard Deviation

$$\%RSD = \frac{S}{\bar{x}} \times 100$$

S = standard deviation.

n = total number of values.

x_i = each individual value used to calculate mean.

\bar{x} = mean of n values.

Representative Sample means a sample obtained according to an incremental sampling procedure designed to ensure that the different parts of a batch or lot or the different properties of a batch or lot are proportionally represented.

Sample means an amount of a marijuana item collected by laboratory personnel from a registrant or

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licensee and provided to a laboratory for testing.

Sample Increment means an amount of a marijuana item collected by laboratory personnel from a registrant or licensee that is combined into a sample for purposes of testing.

Sample Quality Criteria (SQC) means a series of statements that clarify a sampling program's technical and quality needs to support defensible decisions, including statement of the question to be answered, definition of the decision unit, and the desired confidence in the inference.

Sealed means secured in such a way as to prove authenticity or integrity of the sample.

Sterilization means the removal of all microorganisms and other pathogens from a marijuana item by treating it with approved chemicals or subjecting it to high heat.

TNI Standard: TNI Environmental Laboratory Standard as defined in 333-064-0025.

Usable Marijuana means the dried leaves and flowers of marijuana. Usable Marijuana does not include the seeds, stalks and roots of marijuana or waste material that is a by-product of producing or processing marijuana.

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Appendix 2 Sampling Requirements

I. Random Sampling

As specified in the sampling plan, select random sample increments from different locations within a container or set of containers. Laboratories must develop procedures describing how to:

1. Assign location numbers within containers and among a set of containers;
2. Use a random number generator to determine which locations to sample; and
3. Document where each sample increment was sampled from and the volume collected from each increment.

Assign divisions based on the type of container in the site-specific sampling plan. For container types that are greater than four (4) inches deep, divisions must also include a layer or layers beneath the accessible portion of the batch. Use a random number generator with the higher number equal to the number of divisions for the container. When there are multiple containers use existing or arbitrary order of containers to assign numbers to the total of “divisions multiplied by total number of containers” (divisions x # containers = total number of random increments) and record in the sampling report.

The laboratory must have details in its SOP or Sampling Plan, from appropriate industry reference where possible, on how it will achieve random sampling in an unclear decision unit.

II. Sample size

Per OAR 333-007-0360, the sample size must be sufficient to complete all analyses required but shall in no case be less than 0.5% of the weight of the batch. The batch shall be presented for sampling in containers holding no greater than 15.0lbs. Per OAR 333-007-0350, the maximum batch size is 50.0 lbs.

The required sample size for a given batch size based on OAR 333-007-0360 varies depending upon the size of the batch. Example batch sizes and the corresponding sample mass are presented in Table . The laboratory shall calculate the actual minimum required sample size based on the actual batch weight. Taking more sample than the minimum required mass or more increments than the required number of increments is encouraged and will improve representativeness of the sample in relation to the batch.

Table 1 – Examples of required sample size based on size of batch.

Batch size		Required sample size	
Pounds	Kilograms	Pounds (lbs)	Grams (g)
1.0	0.45	0.005	2.3
2.0	0.90	0.010	4.5
3.0	1.36	0.015	6.8
5.0	2.27	0.025	11.4
10.0	4.54	0.050	22.7

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Batch size		Required sample size	
Pounds	Kilograms	Pounds (lbs)	Grams (g)
15.0	6.80	0.075	34.0
20.0	9.07	0.100	45.4
30.0	13.61	0.150	68.1
40.0	18.14	0.200	90.7
50.0	22.68	0.250	113.4

III. Sampling a batch

1. When collecting a primary sample from a batch, a minimum of seven (7) sample increments shall be collected. Collect the sample increments according to the sampling plan or the procedure described in the laboratory's SOP. The procedure used shall ensure that any part or portion of the batch has equal odds of being selected in order to provide a representative sample.
2. As the batch increases in size, it is necessary to collect additional sample increments to make up the primary sample (Table 2).

Table 2 - Minimum number of sample increments for the primary sample based on batch size.

Size of batch (lbs)	≤ 4.0	≤ 8.0	≤ 12.0	≤ 16.0	≤ 20.0
No. of increments	7	8	9	10	12

Size of batch (lbs)	≤ 24.0	≤ 28.0	≤ 32.0	≤ 36.0	≤ 40.0
No. of increments	14	16	18	20	24

Size of batch (lbs)	≤ 44.0	≤ 48.0	≤ 50.0
No. of increments	28	32	36

Table 3 - Revision history of this SOP.

Revision	Date	Summary of changes made, and initials of editor
4.0	7/20/2020	Major updates and re-formatting, with input from Scott Hoatson and Department of Justice. Updated: OSPHL address; executive board and ORELAP staff names as needed; definitions in order to match OARs and ORS and arranged in alphabetical order. Added: this table (Revision history); subsection VI.3; additional information about subsampling for subcontracted analyses; mention of assigning layers for sampling deep containers; required calibration verification of field balances. Combined: information in section IX with information from former section X (Forwarding samples to the Primary and/or Retesting Laboratory) and deleted

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		<p>former section X and combined former section X.5 with section X.4. Minor updates for consistency and typo fixes. Includes fixing reference to minimum number of sample increments in Table 2. STJ 7/20/2020</p>
4.1		<p>Minor formatting updates, removed historical authorship captured in previous versions. Added to Section I that the protocol also applies to post-harvest cured hemp. Clarification in section IV that the samples must be representative and that increased sampled material improves representativeness. Addition to section VII on how to sample for pooled sampling, explanation on what batch material homogeneity means with descriptions of dissimilar materials, and requirement that batch be presented for sampling in containers holding no more than 15.0 lbs. Removed reference to “field” when discussing duplicate samples in section X.3. Updated definitions of “batch” and “field duplicate” and “harvest lot”. Updated Table 1 and Table 2 to reflect increased batch size. STJ 11/17/2021</p>