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***Via e-mail to ghenrikson@clatsopcounty.gov***

Clatsop County Community Development Department
c/o Ms. Gail Henrikson, Director
800 Exchange Street, Suite 100
Astoria, OR 97103

September 21, 2023

Re: Appeal of Jason Palmberg
Clatsop County Land Use File No. CUP #186-23-000089-PLNG
Our File No. 4090.002

Dear Ms. Henrikson:

I'm submitting this letter on behalf of Jason Palmberg, the applicant and appellant in this matter, as additional explanation of my letter of August 7 and to respond to several points in the staff report. Please include this letter in the record for the hearings officer.

The staff report disagrees with two important parts of Mr. Palmberg's appeal. First is whether the county's proposed template or Mr. Palmberg's proposed template aligns with the river "to the maximum extent possible," which is the state and county standard. Second is whether three dwellings that are within one-quarter mile of Mr. Palmberg's tract but outside the county's template count toward the required number of dwellings under LAWDUC § 3.9190(3)(G)(1)(b).

The county proposes to use a measurement called Linear Directional Mean, or LDM, to determine the direction in which Mr. Palmberg must orient his template. As this letter explains, the LDM is nearly certain **not** to produce the orientation that aligns with the river to the maximum extent possible, because the LDM is based solely on two measuring points and is not connected to the path of the river.

## I. The county has never found that the Linear Directional Mean (LDM) tool produces a template that is aligned with a specific stream "to the maximum extent possible," and in fact the LDM does not.

The linear directional mean (LDM) is a mathematical construct that ESRI provides in its popular ArcGIS software. ESRI describes the LDM in several places on its website. ESRI states that the LDM function "identifies the general

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(mean) direction for a set of lines."[1] ESRI states that "the input feature class must be a line or polyline feature class." "Polyline" means a line that consists of a series of connected straight line segments, such as an approximation of the course of a river or road.

An LDM includes a host of statistics. For our purpose the only important one is the orientation or direction.

ESRI discloses one limitation of the LDM, and explains why its LDM is useless for determining whether the template aligns with the river:

> When measuring direction, the tool only considers the first and last points in a line. The tool does not consider all of the vertices along a line.

That statement means that the orientation of the LDM for a series of connected line segments is simply the direction from the first point of the first line to the last point of the last line. According to ESRI, its creator, the orientation of the LDM takes no account of where the line wanders as it proceeds from its initial point to its ending point. Draw a straight line from the first point to the last point, and you have the orientation that ArcGIS and the LDM will give you.

And in fact the county's proposed template based on the LDM is exactly parallel with a straight line from the first point to the last point. I've connected the two ends of the county's chosen line with a straight gray line and attached it as Exhibit 2. The alignment of the template follows exactly the direction of the line between the two ends of the line.

Put simply, the LDM calculation ignores the rest of the river. You can draw any path from the starting point to the ending point, and the LDM will give you the same orientation. Under the LDM method, as long as the starting and ending points remain constant, the orientation of the template will remain constant, whether the river follows a straight line from start to end or whether the river meanders off to Clatskanie before turning around and coming back to Astoria.

The staff report disparages Mr. Palmberg's proposed alignment with these three sentences:

> The applicant found that the total length of east-west segments was greater than the total length of north-south segments, and therefore determined the template should be aligned generally east-west. The methodology used by the applicant is flawed because it completely

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[1] https://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=Linear_Directional_Mean_(Spatial_Statistics) A copy is attached as Exhibit 1.

> discards the north-south segments, which account for nearly half of the subject property's stream frontage. By only considering a portion of the stream's alignment, the applicant's methodology does not align the template with the stream 'to the maximum extent possible;' therefore, staff was not able to use the applicant's proposed alignment and instead determined the LDM result was more appropriate.
>
> Staff report, pages 4-5.

Actually, the situation is the opposite. Mr. Palmberg's template considers **all** of the river frontage and follows the general alignment of the greater part. The county's LDM-based template considers **none** of the river frontage and reduces the calculation to finding the direction between two points on the river, neither one of which adjoins the property. Because the LDM considers none of the river frontage, the county cannot use the LDM calculation to support a finding that its proposed template is aligned with the river "to the maximum extent possible."

Mr. Palmberg has proposed a template that aligns with more than half of his river frontage. The county has proposed a template that is not based on any of Mr. Palmberg's river frontage – its creator says as much. You should reject the county's template and adopt Mr. Palmberg's template. I suggest the following finding for your consideration:

> The applicant's river frontage runs in three general directions. First it runs generally northeast, then northwest, then southwest. The northwest course is the longest of the three courses but it is less than half of the total frontage. The northeast and southwest courses are roughly parallel to each other and together account for more than half the property's river frontage. State law and county code require that the forest dwelling template be aligned with the river "to the maximum extent possible." I find that the applicant's proposed template aligns with more than half of the river frontage and therefore aligns with the river to the maximum extent possible. Any other alignment would align with less of the river than the proposed alignment does, and I therefore accept and apply the applicant's proposed alignment and template.

## II. The staff report incorrectly construes LAWDUC 3.9190(3) and the location of the qualifying dwellings.

Because Mr. Palmberg qualifies for a forest dwelling under the only template before you that is based on the river's course and that complies with state law and county code, you may not need to reach Mr. Palmberg's second point. In case it's necessary to do so, I'll elaborate on this point. The staff report incorrectly

declines to count dwellings toward the quota of 3 that the code requires to be counted.

The code requires the county to make two separate determinations when it applies the template. First, the county determines which tracts are wholly or partly within the template. Second, the county determines which of those tracts have dwellings that existed on January 1, 1993. For some purposes, but not all purposes, the county must determine whether the dwellings are within the template.

Let's break the code apart into pieces. I'll use the most restrictive standard of LAWDUC § 3.9190(3) (the one that applies to soils that can produce more than 85 cubic feet of wood fiber per acre per year), but the analysis is basically the same under the less restrictive standards.

This standard has two parts. In place of the 160-acre square we use a 160-acre rectangle in accordance with subsections (F) and (G), which doesn't change this analysis:

> 1. All or part of at least 11 other lots or parcels that existed on January 1, 1993, are within a 160 acre square centered on the center of the subject tract; and
> 2. At least three dwellings existed on January 1, 1993 and continue to exist on the other lots or parcels.

Subsection 1 states that all or part of at least 11 other parcels that existed on January 1, 1993 must be within the template. A parcel counts toward the quota of 11 if even a bit of the parcel is within the template. If a parcel did not exist on January 1, 1993 then it does not count toward the quota of 11 parcels.

Subsection 2 states that at least three of those parcels must include dwellings that existed on January 1, 1993 and continue to exist today.

Note what subsection 2 does **not** say: Subsection 2 does **not** say that those dwellings must be within the template; it says only that they must be somewhere on the parcels that qualify under subsection 1. The location of the dwelling unit on the qualifying parcel does not matter as long as part of the qualifying parcel is within the template.

Subsection (G) adds one requirement to the location of the three qualifying dwellings, which is that one of them must be on the same side of the stream as the applicant's tract, and that dwelling must either:

> a) Be located within a 160-acre rectangle that is one mile long and one-quarter mile wide centered on the center of the subject tract and that is, to the maximum extent possible aligned with the road or stream; **or**

b) be within one-quarter mile from the edge of the subject tract but not outside the length of the 160 acre rectangle, and on the same side of the road or stream as the tract.

The dwelling that is on the same side of the stream as the applicant's tract qualifies under subsection (a) if it is inside the template. Subsection (b) provides an alternate way for the dwelling to qualify even if it is outside the template. Think of the ends of the template rectangle as the goal lines on a football field. Extend the goal lines out from the field in both directions. If the dwelling is within a quarter-mile of the applicant's tract, it can be outside the template and still qualify, as long as it is inside the goal lines – that is, inside the length of the template rectangle.

Our proposed interpretation makes sense. The staff report suggests that subsection G(b) requires dwellings that qualify under subsection G(b) to be within the template, but if that were so, then subsection (b) doesn't add anything to subsection G(a). Subsection G(a) allows every dwelling within the template that existed before 1993 on a parcel that also existed before 1993 to count toward the quota of 3. If subsection G(b) required dwellings to be within the template, then every dwelling that qualified under subsection G(b) would also qualify under subsection G(a). The only way that subsection G(b) adds anything to Subsection G(a) is if it allows some dwellings outside the template to count toward the quota.

My earlier letter identifies the dwellings that are "within the goal lines" and must be counted toward the quota of 3. Even under the staff report's proposed template, Mr. Palmberg qualifies for a forest dwelling permit.

## III. Conclusion

ESRI, the publisher of ArcGIS, acknowledges that its LDM tool produces an orientation that disregards the course of the river. The county cannot use the LDM tool to determine the orientation of a template without violating state law and its own code. Mr. Palmberg has proposed a logical template that aligns with more than half of the adjoining river. You should adopt his template.

Even if you were to align the template to follow the LDM result, Mr. Palmberg would still qualify because at least three dwellings are on parcels that are wholly or partly within the template, one of which is on the same side of the river as his parcel.

Whether the county applies its own template or Mr. Palmberg's template, Mr. Palmberg meets the criteria for the conditional use permit. You should grant his appeal and approve the permit.

Very truly yours,

ALTERMAN LAW GROUP PC

*Dean N. Alterman*

Dean N. Alterman

Exhibit 1 ESRI's explanation of how LDM defines orientation
Exhibit 2 LDM-generated template, with superimposed line to show that its orientation is simply the direction from start to end

Print Topic

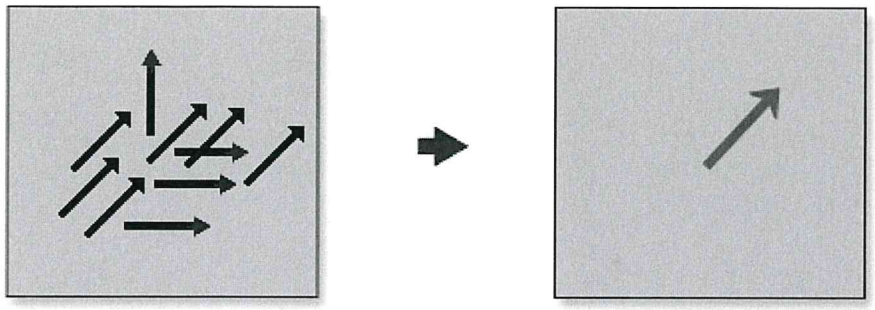
# Linear Directional Mean (Spatial Statistics)

Release 9.2
Last modified January 9, 2009

Identifies the general (mean) direction for a set of lines.

Learn about how Linear Directional Mean works

## Illustration




## Usage tips

- The input feature class must be a line or polyline feature class.
- If a case field is specified, the input features are grouped according to case field values, and a directional mean is calculated for each group.
- Attribute values for the new line features include Compass Angle (clockwise from due North), Directional Mean (counterclockwise from due East), Circular Variance (an indication of how much directions or orientations deviate from directional mean), Mean Center X and Y Coordinates, and Mean Length.
- Analogous to a standard deviation measure, the circular variance tells how well the directional mean vector represents the set of input vectors. Circular variance ranges from 0 to 1. If all the input vectors have the exact same (or very similar) directions, the circular variance is small (near 0). When input vector directions span the entire compass, the circular variance is large (near 1).
- Calculations are based on either Euclidean or Manhattan distance and require projected data to accurately measure distances.
- When measuring direction, the tool only considers the first and last points in a line. The tool does not consider all of the verticies along a line.
- Current map layers may be used to define the input feature class. When using layers, only the currently selected features are used in the Linear Directional Mean operation.
- Learn more about working with layers and table views
- The following environment settings affect this tool: Cluster Tolerance, Extent, M Domain, Configuration Keyword, Coordinate System, Output has M Values, Output Spatial Grid, Output has Z Values, Default Z Value, Output XY Domain, and Output Z Domain.

## Command line syntax

An overview of the Command Line window

DirectionalMean_stats <Input_Feature_Class> <Output_Feature_Class> <Orientation_Only> {Case_Field}

| Parameter | Explanation | Data Type |
|---|---|---|

| | | |
|---|---|---|
| <Input_Feature_Class> | The feature class containing vectors for which the mean direction will be calculated. | Feature Layer |
| <Output_Feature_Class> | A line feature class that will contain the features representing the mean directions of the input feature class. | Feature Class |
| <Orientation_Only> | Specifies whether to include direction (From and To nodes) information in the analysis.<br>• Trueâ€" The From and To node information is ignored.<br>• Falseâ€" The From and To nodes are utilized in calculating the mean. | Boolean |
| {Case_Field} | Field used to group features for separate directional mean calculations. The case field can be of numeric, date, or string type. | Field |

Data types for geoprocessing tool parameters

**Command line example**
workspace c:\data\yosemite.mdbDirectionalMean water\streams c:\temp\streams_dm.shp false NAME

## Scripting syntax

About getting started with writing geoprocessing scripts

DirectionalMean_stats (Input_Feature_Class, Output_Feature_Class, Orientation_Only, Case_Field)

| Parameter | Explanation | Data Type |
|---|---|---|
| Input_Feature_Class (Required) | The feature class containing vectors for which the mean direction will be calculated. | Feature Layer |
| Output_Feature_Class (Required) | A line feature class that will contain the features representing the mean directions of the input feature class. | Feature Class |
| Orientation_Only (Required) | Specifies whether to include direction (From and To nodes) information in the analysis.<br>• Trueâ€" The From and To node information is ignored.<br>• Falseâ€" The From and To nodes are utilized in calculating the mean. | Boolean |
| Case_Field (Optional) | Field used to group features for separate directional mean calculations. The case field can be of numeric, date, or string type. | Field |

Data types for geoprocessing tool parameters

**Script example**

```
# Measure the geographic distribution of auto thefts
# Import system modules
import arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Local variables...
workspace = "c:/data"
auto_theft_locations = "AutoTheft.shp"
auto_theft_links = "AutoTheft_links.shp"
auto_theft_sd = "auto_theft_SD.shp"
auto_theft_se = "auto_theft_SE.shp"
auto_theft_ldm = "auto_theft_LDM.shp"

try:
```

```
    # Set the workspace (to avoid having to type in the full path to the data every time)
    gp.Workspace = workspace

    # Process: Standard Distance of auto theft locations...
    gp.StandardDistance_stats(auto_theft_locations, auto_theft_sd, "1 Standard Deviation", "#", "#")

    # Process: Directional Distribution (Standard Deviational Ellipse) of auto theft locations...
    gp.DirectionalDistribution_stats(auto_theft_locations, auto_theft_se, "1 Standard Deviation", "#", "#")

    # Process: Linear Directional Mean of auto thefts...
    gp.DirectionalMean_stats(auto_theft_links, auto_theft_ldm, "false", "#")

except:
    # If an error occurred while running a tool, print the messages
    print gp.GetMessages()
```

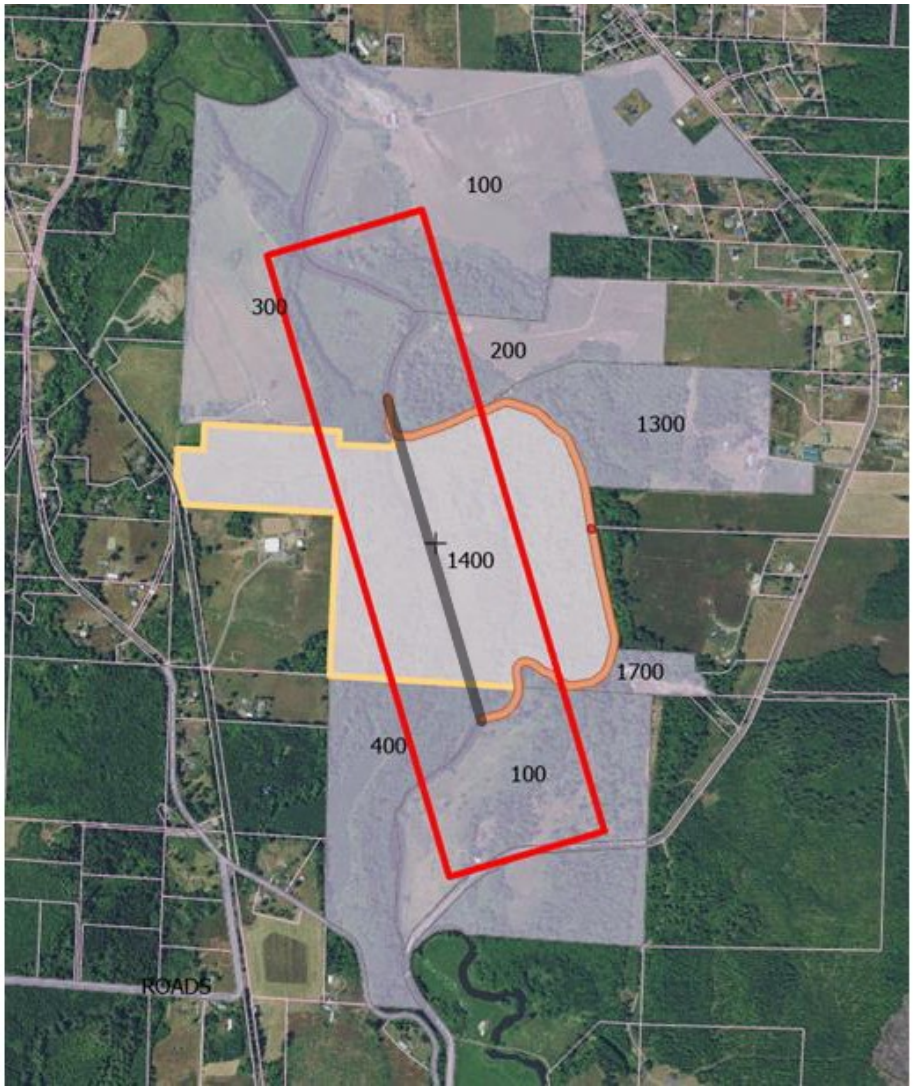



Exhibit 2 - LDM template, marked to show that it is simply the direction from starting point to ending point