Debris Management

Where do we put all this crap......?

Plan
Sac and Fox Nation of Missouri in Kansas and Nebraska
Standard Operating Procedure
for
Debris Management

SOP: TRP 11|

Tribal Response Program
Environmental Department
Sac and Fox Nation of Missouri in Kansas and Nebraska

This document may be revised at any time by the Department Director as the need arises. No part of this document will override any tribal policy, ordinance, code or procedure.

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You Do Not Choose the Site...

The Site Chooses You
Q = H(C)(V)(B)(S)
Q=H(C)(V)(B)(S)

Q= The Quantity of Debris

H=Population/3  (3 persons per household)

C= Category of Storm Factor (See table below)

V = Veg. Multiplier- (See table below)

B = Commercial Density Multiplier= (See table below)

S = Precipitation Multiplier= (See table below)
Looking for Q

Find the Population

H is easy maybe? Google Earth, Census, Windshield Survey

Find the number of homes
### Category of the Storm

<table>
<thead>
<tr>
<th>Storm Category</th>
<th>Value of “C” Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 Yd³</td>
</tr>
<tr>
<td>2</td>
<td>8 Yd³</td>
</tr>
<tr>
<td>3</td>
<td>26 Yd³</td>
</tr>
<tr>
<td>4</td>
<td>50 Yd³</td>
</tr>
<tr>
<td>5</td>
<td>80 Yd³</td>
</tr>
</tbody>
</table>

Why not choose Cat 5?
Reserve, Kan., May 19. -- This town of 300 people, 97 miles from Kansas City, two miles south of the Nebraska State line, was wiped out of existence by a cyclone which passed over Northeast Kansas Sunday evening. Four persons were killed. 23 were injured. Not a store or other business or house remains. Most of them, with their contents, are scattered to the four winds of heaven. Of the 40-odd residences, probably 10 stand, although they are so dilapidated and disfigured as to be scarcely habitable. The school house, which is being used for a temporary hospital, is 25 feet off its foundation, and is tilted up to an angle of 75 degrees. The cyclone was particularly hard on churches, and the only two in the town, Methodist and Christian, and a Dunkard church two miles to the west, were smashed like cardboard. The total loss will reach $60,000
VEGETATIVE MULTIPLIER

Light 1.1
Medium 1.3
Heavy 1.5

THERE MAY BE SOME ISSUES....
Commercial Density

<table>
<thead>
<tr>
<th>Commercial Density</th>
<th>Value of “B” Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>1.0</td>
</tr>
<tr>
<td>Medium</td>
<td>1.2</td>
</tr>
<tr>
<td>Heavy</td>
<td>1.3</td>
</tr>
<tr>
<td>Precipitation</td>
<td>Value of “S” Multiplier</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>None to Light</td>
<td>1.0</td>
</tr>
<tr>
<td>Medium to Heavy</td>
<td>1.3</td>
</tr>
</tbody>
</table>
WE HAVE SOME NUMBERS....

\[ Q = H(C)(V)(B)(S) \]

\[ H = 35 \]
\[ C = 5 \]
\[ V = 1.1 \]
\[ B = 1.0 \]
\[ S = 1.3 \]

250.25 cubic yards
WE HAVE SOME NUMBERS....

250.25 cubic yards

OK. WHAT IS A CUBIC YARD
Once the debris has been estimated, storage can be determined based on these factors:

The pile can be stacked to 10’ max.
60% of the area is for roads, buffers, burn pits, household hazardous waste, etc.,
10 foot stack height = 3.33 yards
1 acre = 4,840 square yards (sy)
TOT volume/acre = 4.840 sy/ac x 3.33y = 16,133 Yd$^3$/ac.
WE HAVE SOME NUMBERS....

250.25 cubic yards

10 foot stack height = 3.33 yards

75.15 cubic yards

This is our Pile
WE HAVE SOME NUMBERS....

75.15 cubic yards

This is our Pile

60% of our site space

Roads, Turnarounds, Fencing
The estimate of total debris will be within ±30% of the actual amount of debris. Under the worst scenario, a Cat.5 storm, heavy vegetation cover, medium commercial density, & heavy precip, the acres needed for a temporary landfill is 3,352 acres. The calculation (assuming 500 house holds) is as follows:
Q = H(C)(V)(B)(S)
Q = 500 x 80 x 1.5 x 1.2 x 1.3
Q = 93,600 Yd³ of debris.
93,600 (Yd³ of debris / 16,133 (Yd³/ac) = 5.8 acres of debris.
5.8 acres x 1.66 (60% more area needed for roads, etc.,,)= 9.6 acres.
USE SOME GOOGLE EARTH

<table>
<thead>
<tr>
<th>Description</th>
<th>Style, Color</th>
<th>View</th>
<th>Altitude</th>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter:</td>
<td>0.16</td>
<td>Miles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area:</td>
<td>0.98</td>
<td>Acres</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
USE SOME GOOGLE EARTH
SKODEN

Work the Formula
Distance Matters
Own Your Plan