

# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison  
Oil Time Exposure

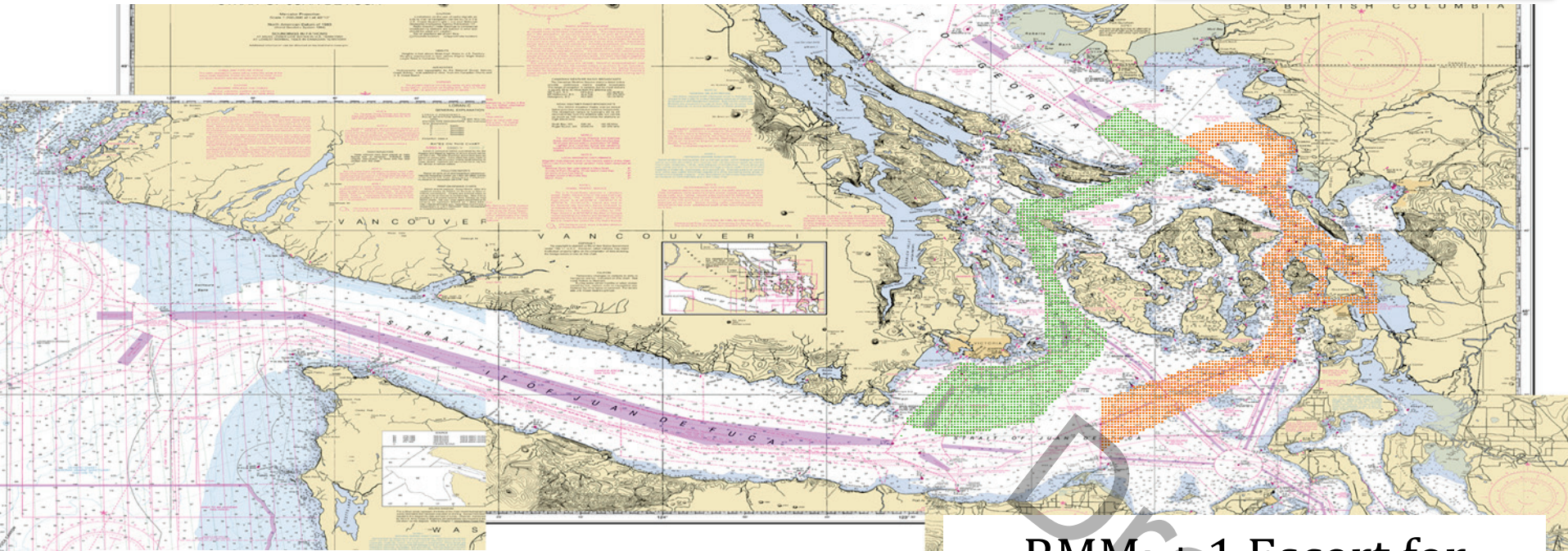
**CASE T: GW – KM – DP & +1 Escort Rosario – Laden  
Tankers, Chem. Carrier, ATB & Cape Size Bulker**

**Dr. J. Rene van Dorp and Dr. Jason R.W Merrick**

**November 2013**



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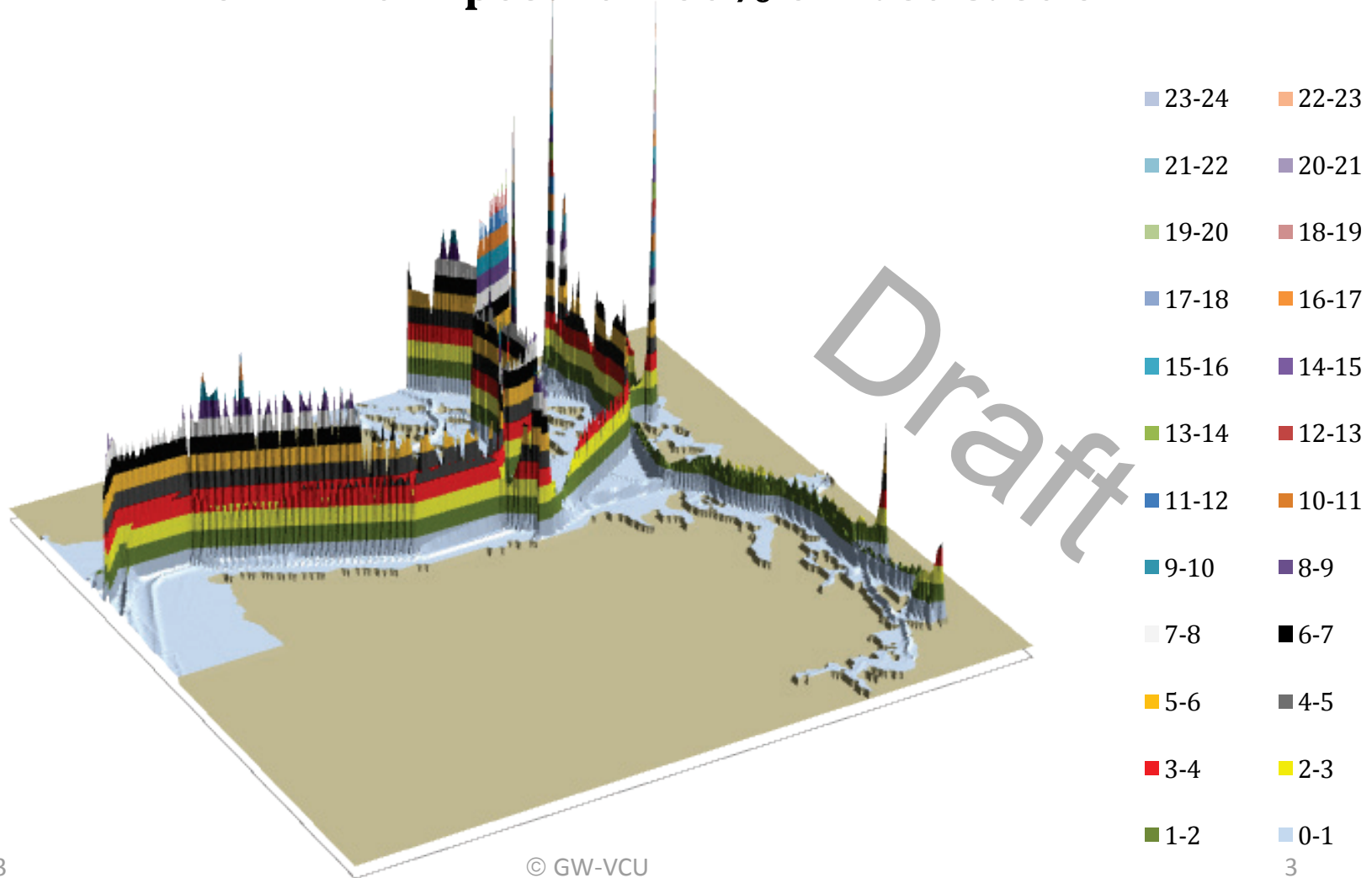


**DEFINITION OF ASSUMED LOCATIONS  
FOR ADDED ESCORT VESSEL  
FOR HARO-BOUNDARY ROUTES (GREEN)  
AND  
FOR ROSARIO ROUTES (ORANGE)**

RMM: + 1 Escort for  
Laden Tankers, Chem.  
Carrier, ATB & Cape Size  
Bulkler on Rosario Routes  
(Orange)

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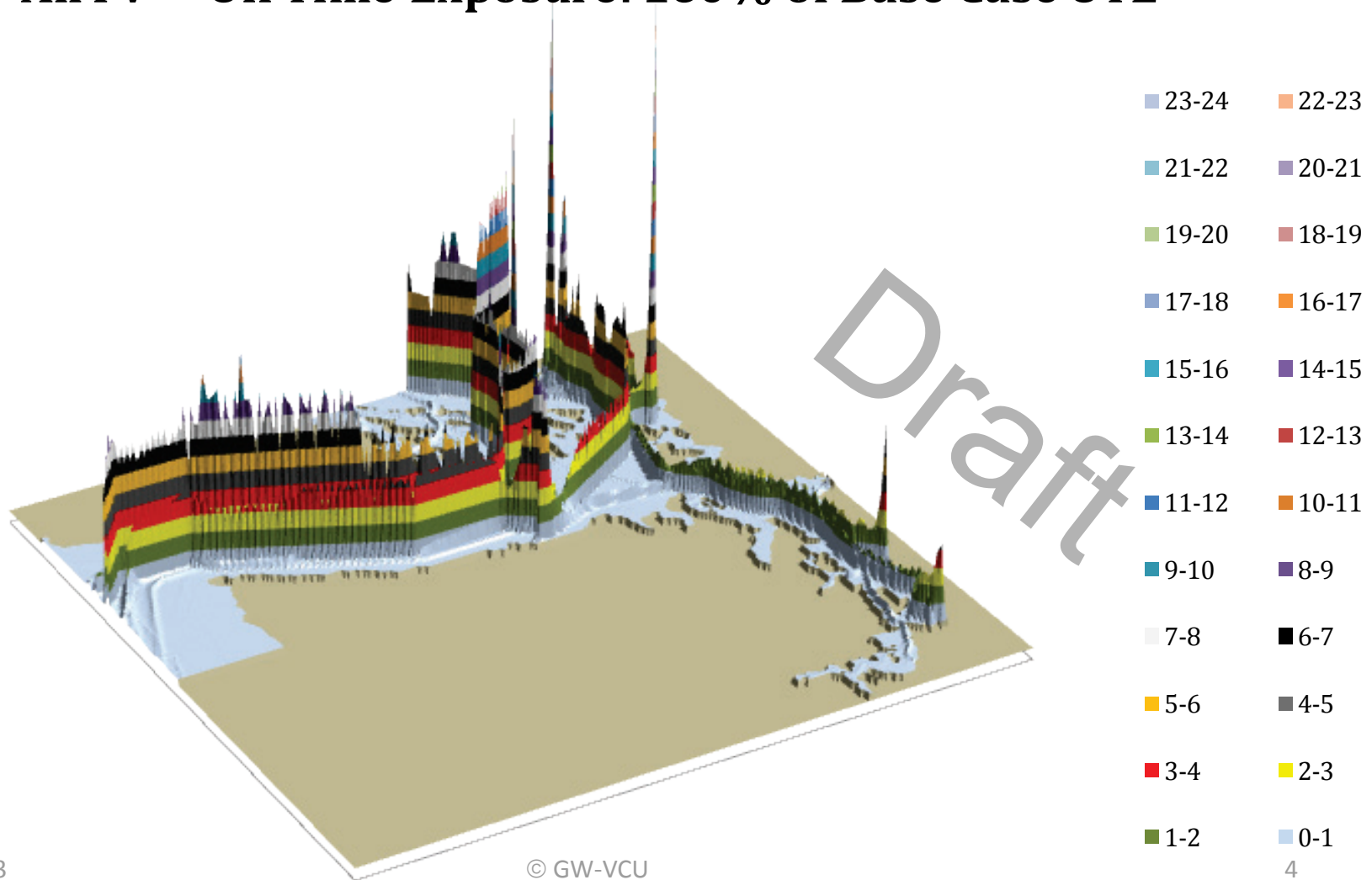
## T: GW - KM - DP & EH 3D Risk Profile All FV - Oil Time Exposure: 160% of Base Case OTE





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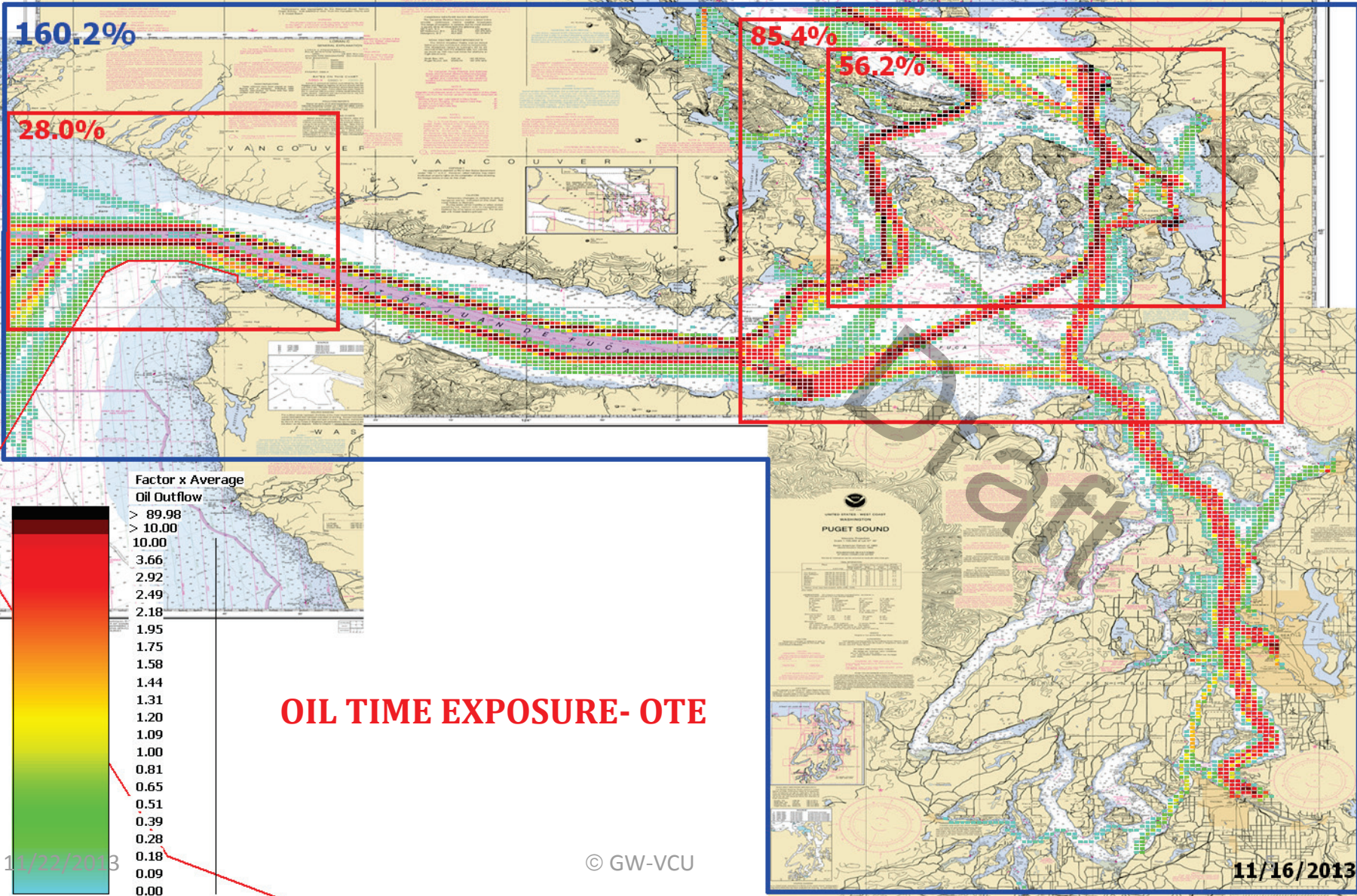
## T: GW - KM - DP & ER 3D Risk Profile All FV - Oil Time Exposure: 160% of Base Case OTE





# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW - KM - DP & +1 ESCORT HARO-BOUNDARY - All FV



OIL TIME EXPOSURE- OTE

11/22/2013

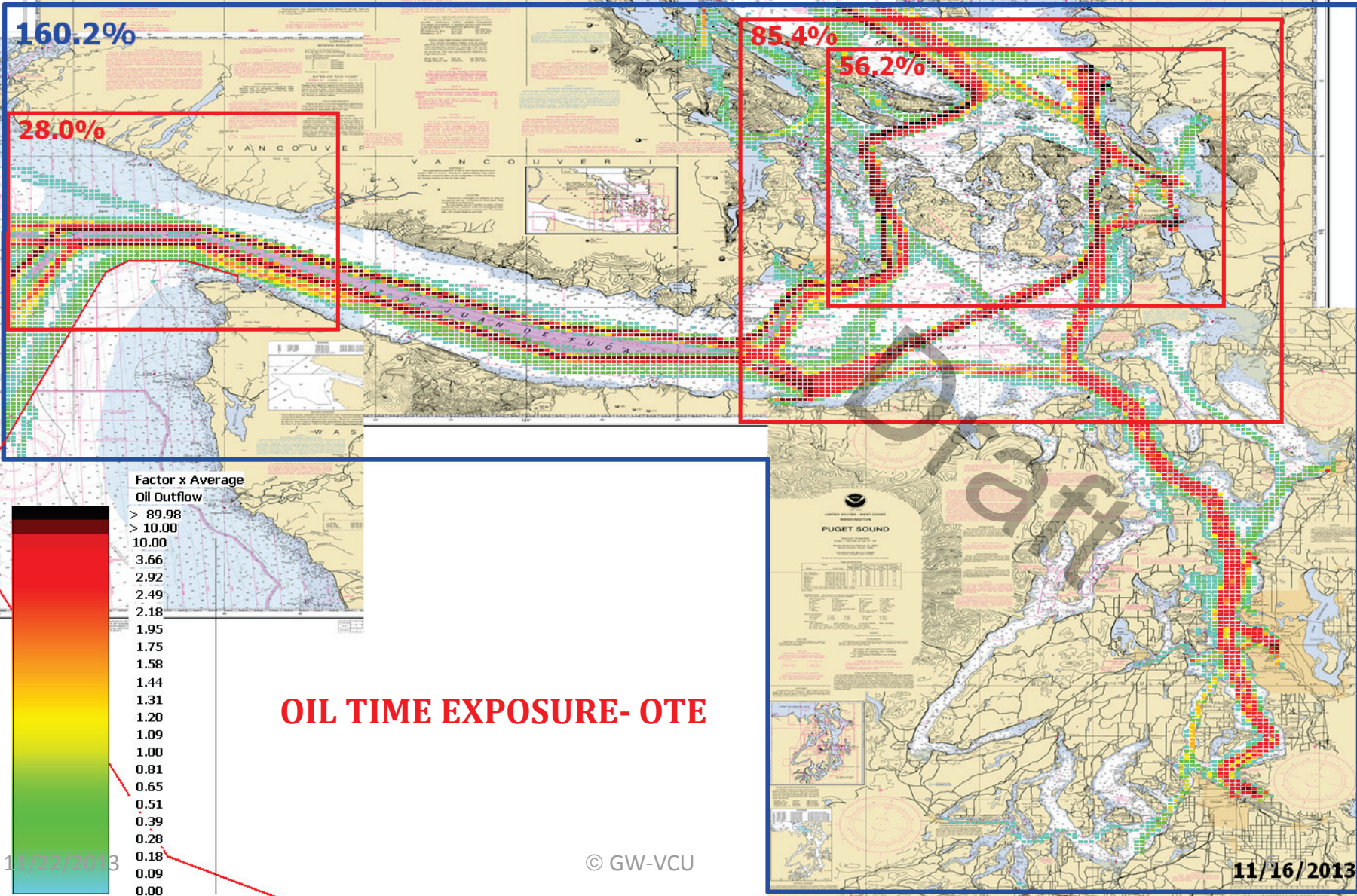
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# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW - KM - DP & +1 ESCORT ROSARIO - All FV



OIL TIME EXPOSURE- OTE

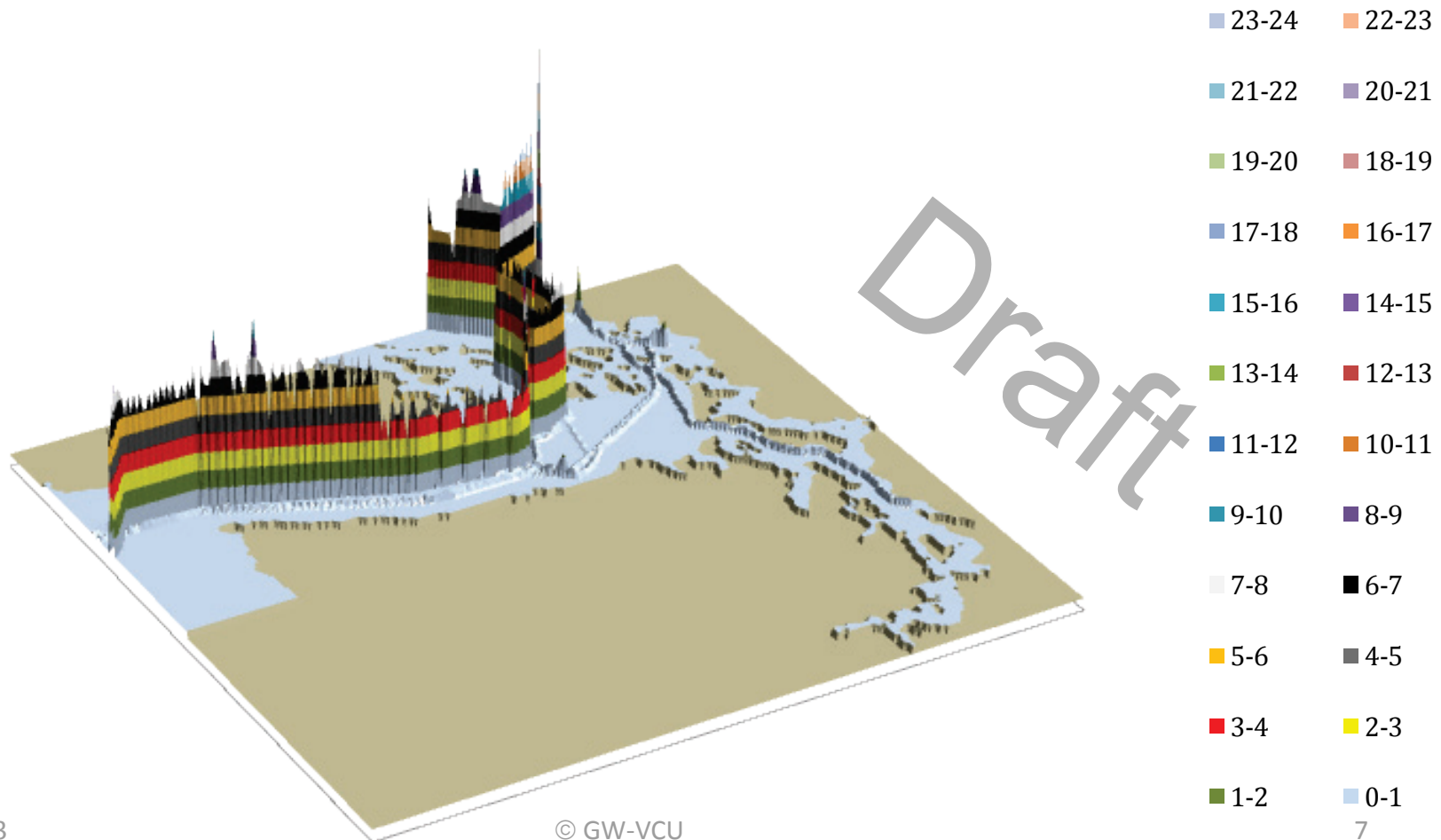
11/22/2013

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# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

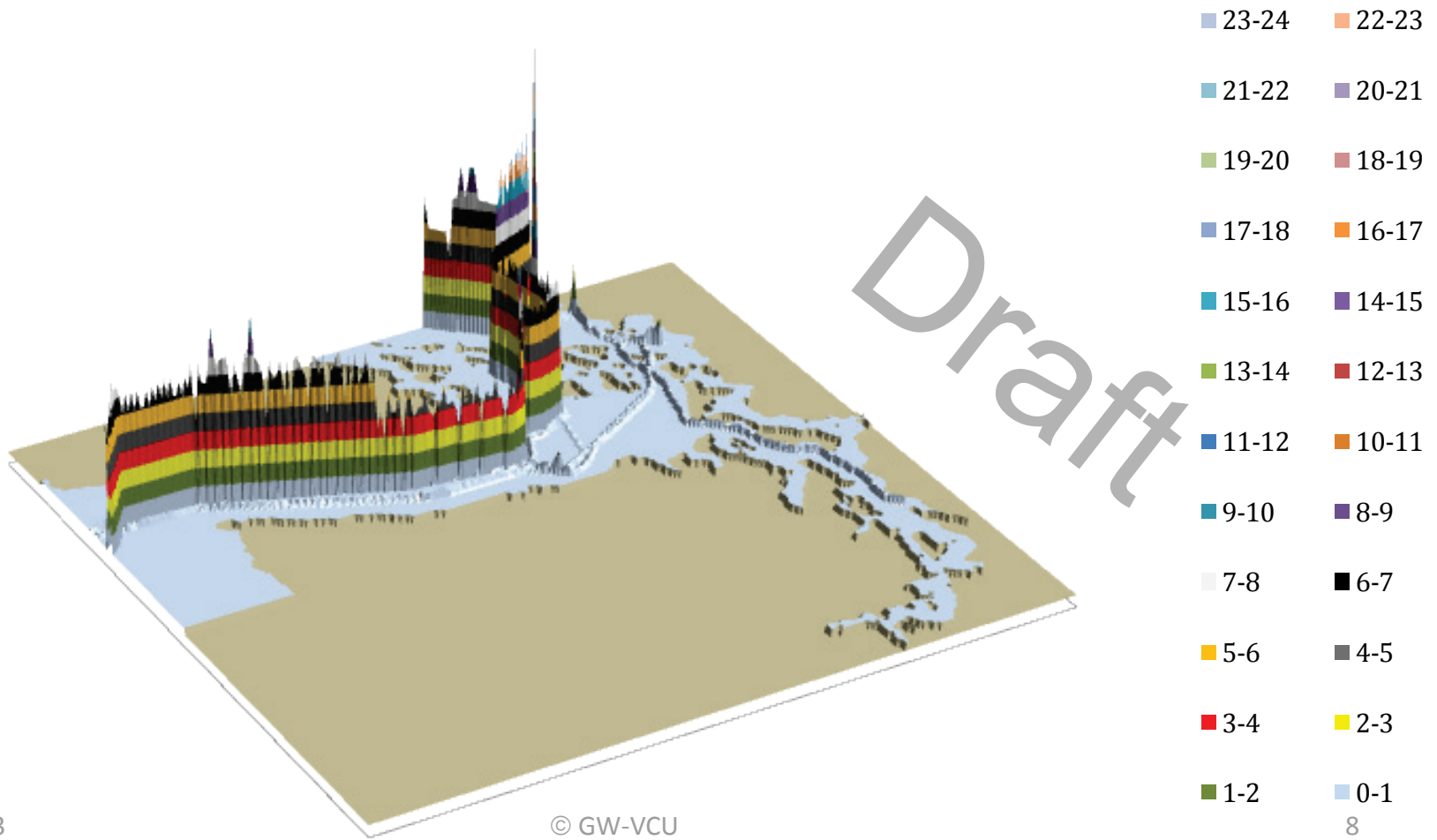
## T: GW - KM - DP & EH 3D Risk Profile What-If FV - Oil Time Exposure: 60% of Base Case OTE





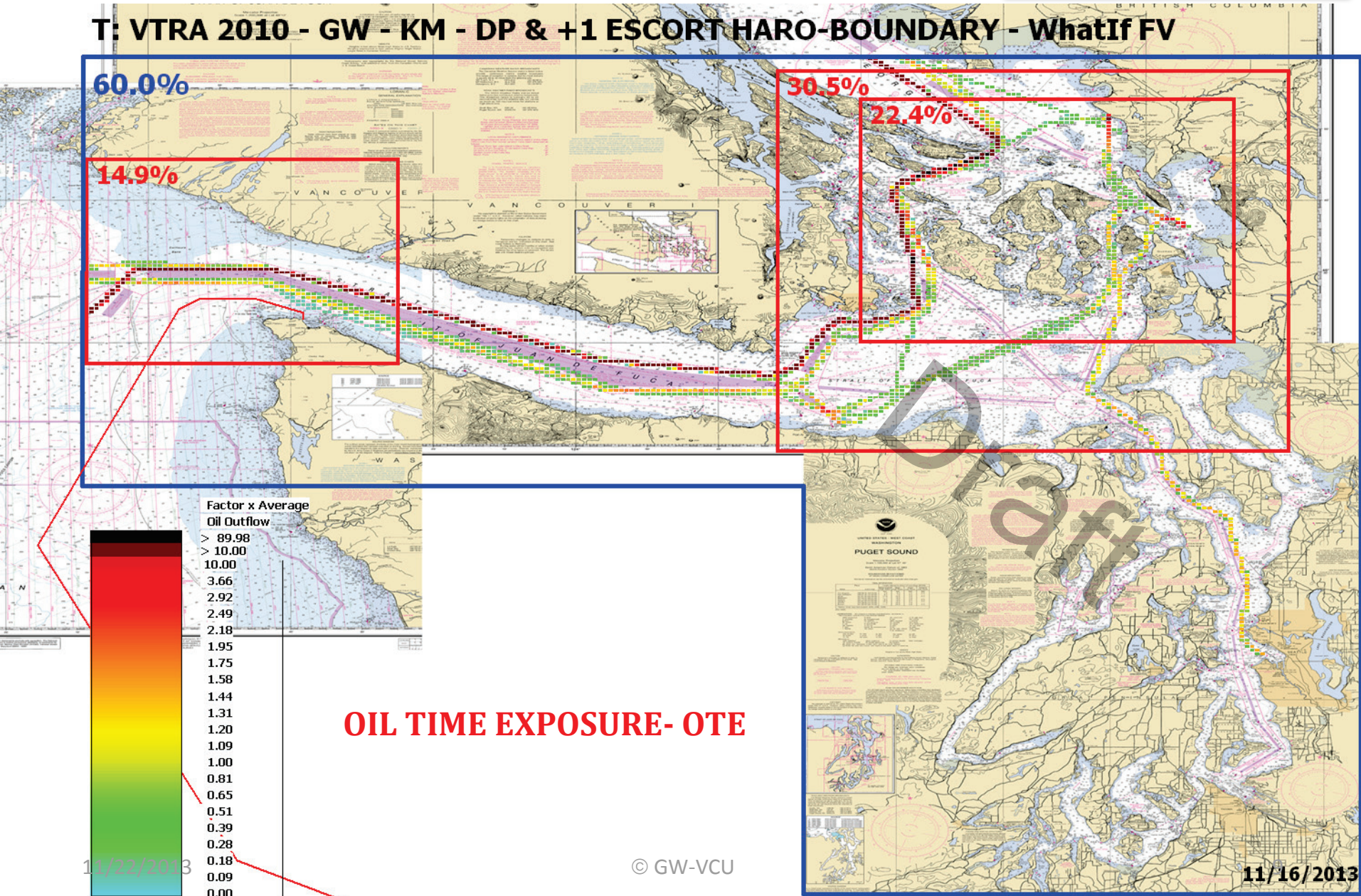
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## T: GW - KM - DP & ER 3D Risk Profile What-If FV - Oil Time Exposure: 60% of Base Case OTE



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW - KM - DP & +1 ESCORT HARO-BOUNDARY - WhatIf FV



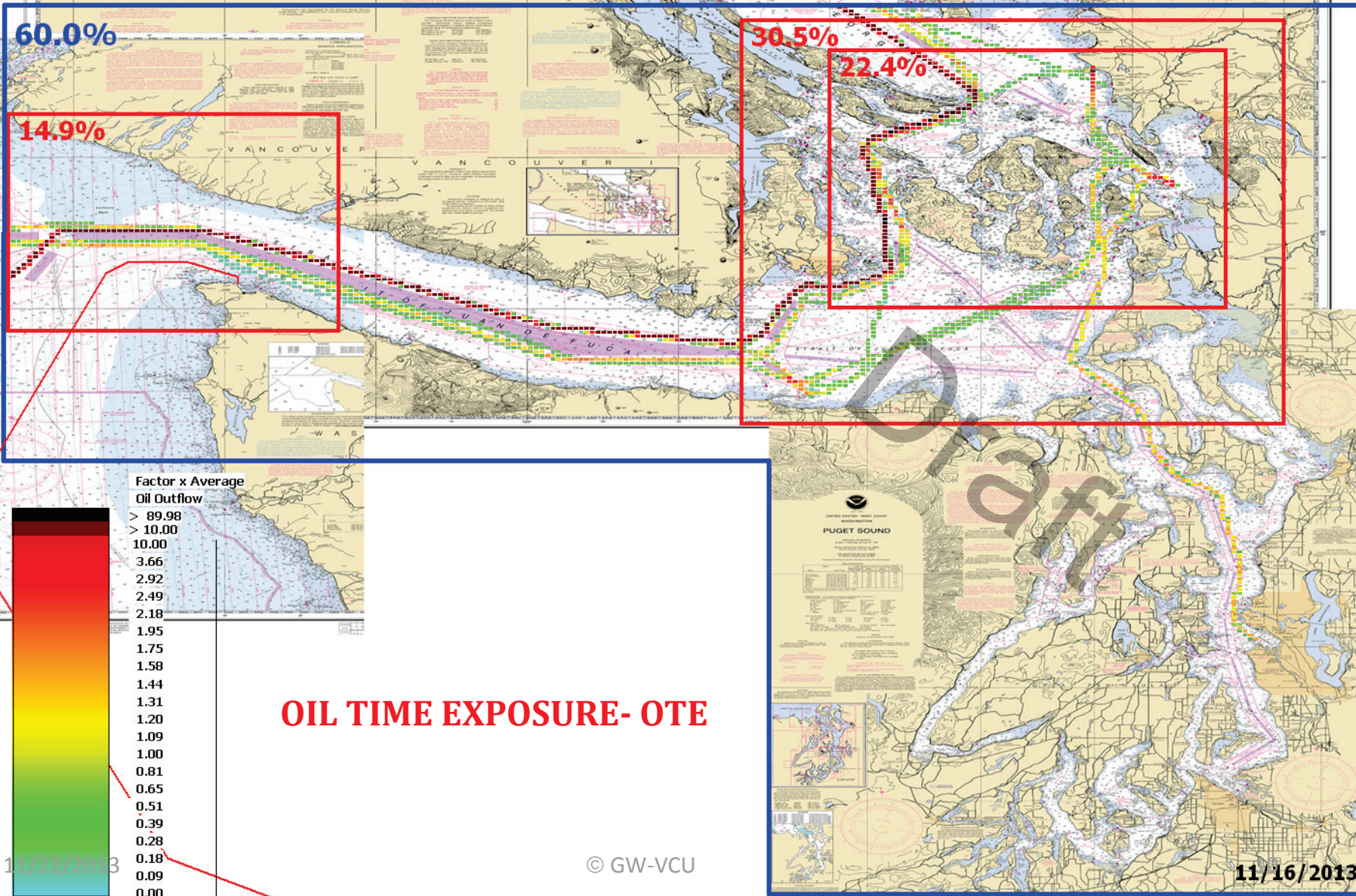
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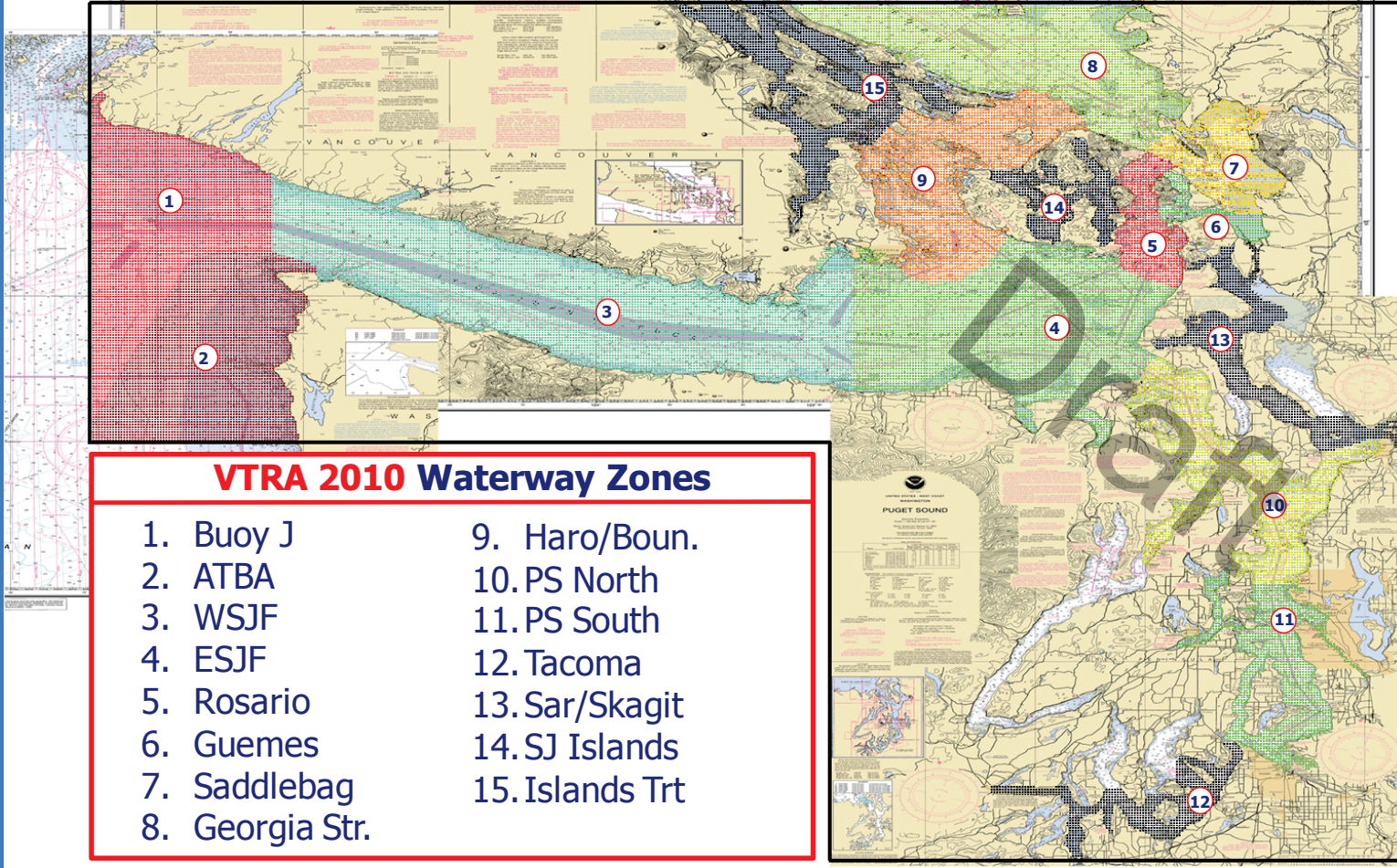
T: VTRA 2010 - GW - KM - DP & +1 ESCORT ROSARIO - WhatIf FV





# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

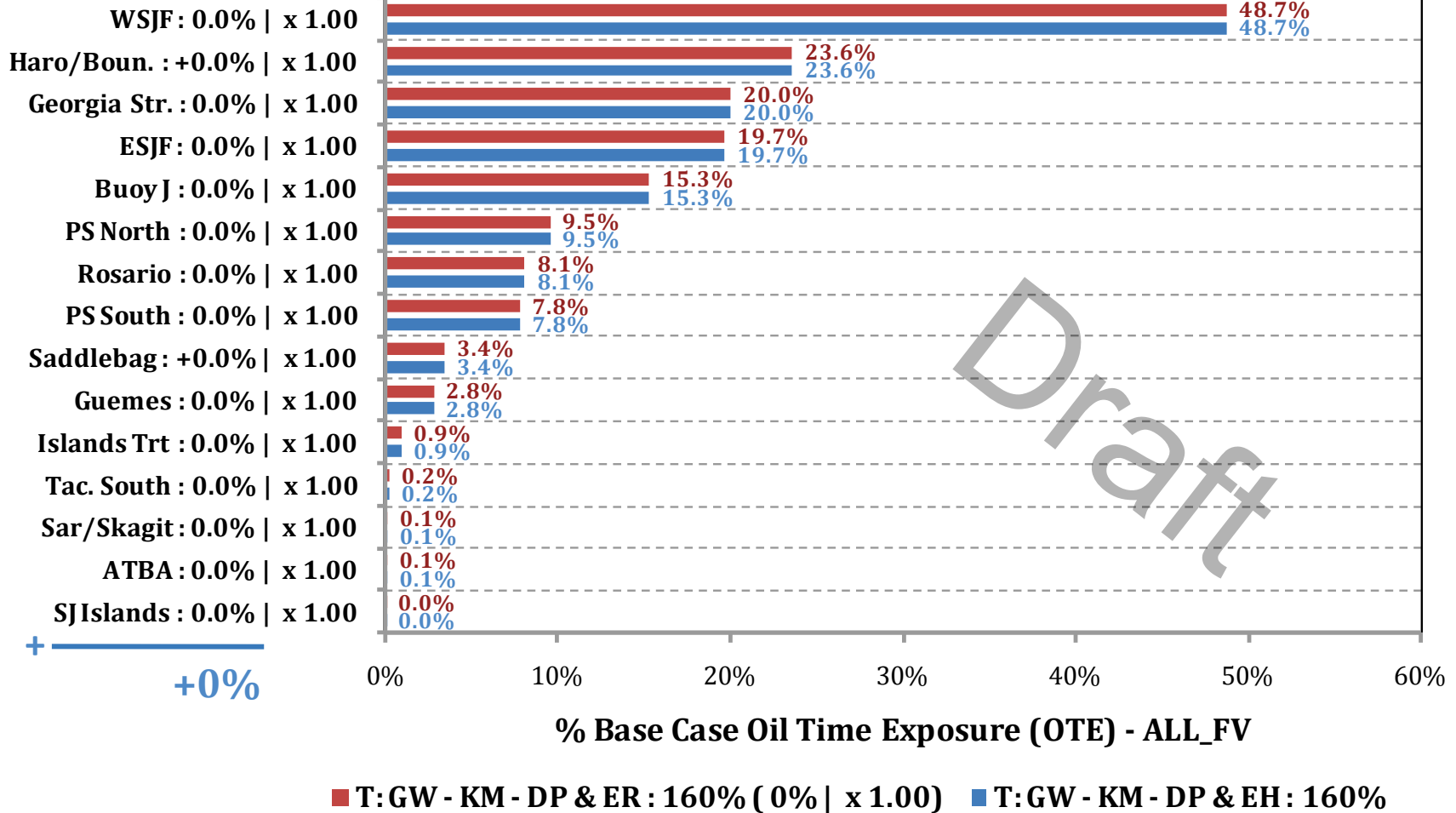
## DEFINITION OF 15 WATERWAY ZONES



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## % Base Case Oil Time Exposure - ALL\_FV

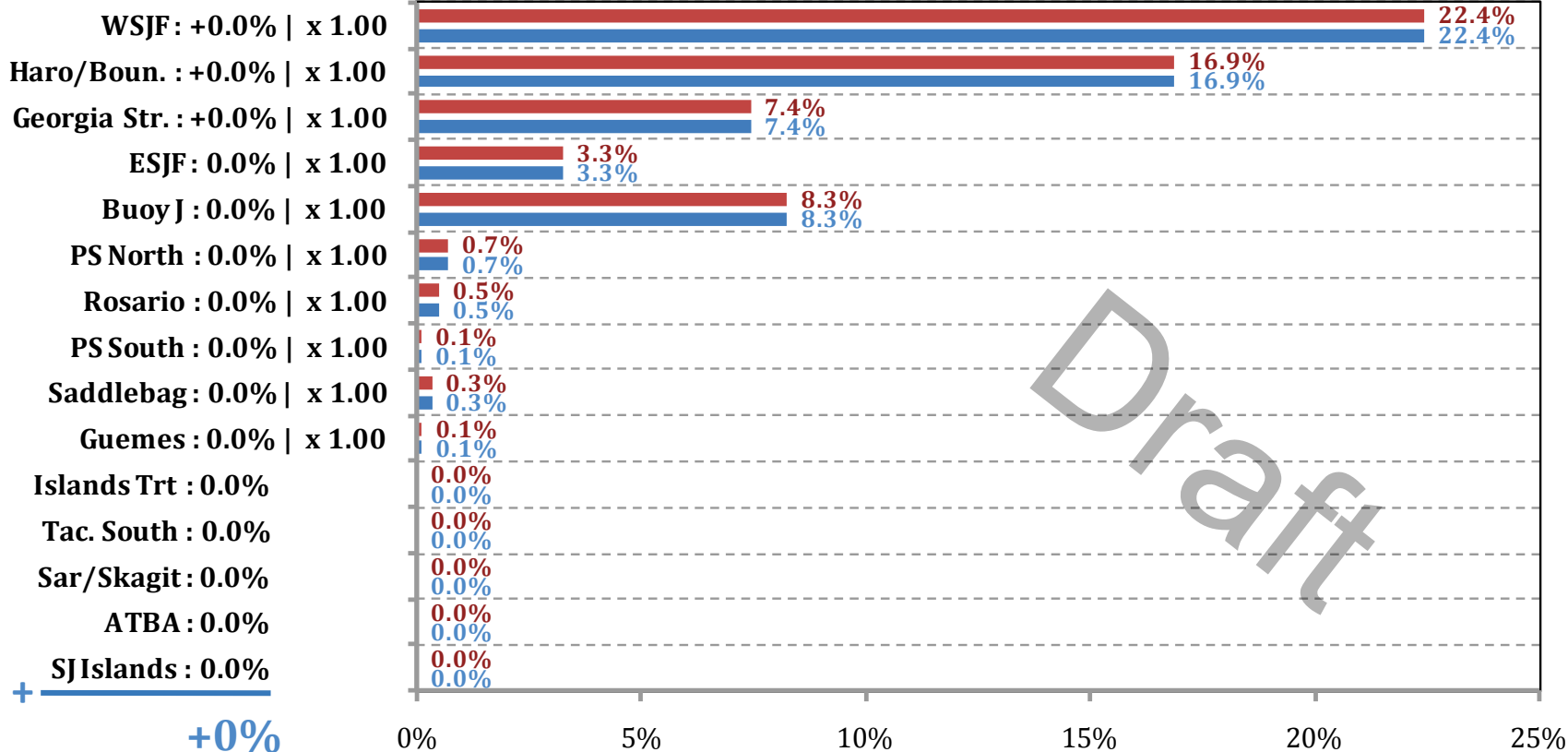
### Waterway Zone:



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## % Base Case Oil Time Exposure - WhatIf

### Waterway Zone:



## % Base Case Oil Time Exposure (OTE) - WhatIf

■ T:GW - KM - DP & ER : 60% (+0% | x 1.00) ■ T:GW - KM - DP & EH : 60%