

Technical Direction for Contract No. EP-C-13-022

Task 3

Task Order Information	
Date of Request	11/28/17
TOCOR	Ann Vega
Task Order #	0098, Task B
Technical Directive #	3
Completion of Technical Directive due on or before:	12/12/17

To: Neptune & Co., Inc.
 1435 Garrison St., Suite 110
 Lakewood, CO 80215

Copy: COR: Shaun House (513) 569-7209

Technical Directive, Details	
Please assist the named individual below with the support described.	
Name	Naomi Detenbeck
Phone #	401-782-3162
Email address	Detenbeck.naomi@epa.gov
Physical location (city, state)	Narragansett, RI
Describe the support you need.	Combine TITAN2 R package with permute R package to generate empirical distributions of differences in changepoints for decreasing species and for increasing species among multiple "treatments" to enable testing for paired differences. Permute package contains a ShuffleSet function which will generate a series of observation permutations with or without restrictions. Standard restrictions (e.g., blocks, plots) in permute do not fill needs so a restriction will need to be applied after the fact to remove sets in which a site This is part of EPA contract, appears more than once in a "treatment". Changepoint differences will need to be saved to allow comparison of observed differences with percentiles in generated distributions. If possible, test with Microsoft Open R to take advantage of multithreaded processing.
Explain the type of deliverable you require (e.g., script files, results document, none)	Annotated script file(s) with documentation
Will you need to send additional information (e.g., data)? If yes, please describe.	Example dataset will be provided for testing.
Are you willing to share any resulting code with the R user group (yes/no)?	Yes