[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)

Technology Information	
Area	6
Title	Understanding the groundwater flow
Submitted by	Geocomp Corporation in collaboration with Moretrench America and Mueser Rutledge Consulting Engineers

1. Overview of Technologies (features, specification, functions, owners, etc.)

Reducing the quantity of underground water flow into the Daiichi Nuclear Site requires a thorough understanding of the regional groundwater flow conditions. This can be achieved by developing a robust computational flow model of the subsurface geological and geotechnical conditions. FLAC-3D is one of the most robust computational models available in the world to model the coupling of complex groundwater flow and heat flow; however its effective use requires an experienced team of professionals to interpret available information, establish a working model and calibrate that numerical model to site conditions. Our team offers to provide groundwater modeling expertise to develop a comprehensive computational model using FLAC-3D with which to evaluate existing groundwater flow conditions and proposed actions to modify such flow to reduce inflow to the Daiichi Site. Our proposed effort includes developing a GIS model of the subsurface geological and geotechnical conditions that can be utilized to organize all relevant information in a database and present it in a visual format to help experts extract as much useful knowledge from the information as possible.

Calibration of a numerical model is essential to obtaining a tool that can reliably evaluate options. Calibration requires site information and performance measurements. Our team is highly skilled in the use of the most current methods of site exploration, geophysical exploration and performance measurements to facilitate the development of realistic and reliable numerical models. For example, we suggest strong consideration be given to installing strings of pressure sensors in grouted boreholes that are used to establish the piezometric heads with depth at each location. This method greatly reduces the cost and shortens the time required to install multiple piezometers to help establish where flow is occurring and how flow will change with time and construction of flow control measures. We also noted that current practice in Japan requires a large amount of manpower to create

borings. We believe there are available techniques that our team uses that can reduce this time by 50% or more.

2. Notes (Please provide following information if possible.)

- **Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)**
  Ready for immediate deployment. Low risk. No limitations on applications

- **Challenges**
  A calibrated numerical model can be extremely valuable to help assess the potential benefits of proposed remedial measures. However, a reliable model requires experience and expertise to test and calibrate that model against field conditions and known information so that its results are reliable. Our team has that experience and expertise.

- **Others (referential information on patent if any)**
  Intellectual knowledge and experience only. No patent involved.

【Areas of Technologies Requested】

(1) Accumulation of contaminated water (Storage Tanks, etc.)
(2) Treatment of contaminated water (Tritium, etc.)
(3) Removal of radioactive materials from the seawater in the harbor
(4) Management of contaminated water inside the buildings
(5) Management measures to block groundwater from flowing into the site
(6) Understanding the groundwater flow