Workshop Notes

SAGEEP

DOWN IN THE DUMPS

LANDFILL CHARACTERIZATION WITH AN EXTREMELY FAST IP METHOD

March 15,1999

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This workbook was created as part of a short course conducted at S.A.G.E.E.P. 99 in Oakland California. It is not a stand-alone document. The text following the figures are only figure captions and not complete descriptions of the data. Any question regarding the contents should be addressed to Zonge Engineering.

S.A.G.E.E.P. 1999

Down in the Dumps:
Landfill Characterization with an Extremely Fast IP Method

Workshop Notes

Monday, March 15, 1999

Oakland, California

Presented by
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Contents

Equipment

- ZETA Setup
- Acquisition System (text)
- MX-30 spec sheet
- GDP-32 spec sheet
- ZT-30 spec sheet

Modeling Software

- Two-dimensional Inversion of Resistivity and IP Data with Topography

Bibliography

From Proceedings of the IV Meeting of the Environmental and Engineering Geophysical Society (European Section), Barcelona, Spain, September 14-17, 1998

"Electrical Tomography Survey of a Landfill Site", by Pokar and Lohke.

"Spectral Characteristics at a Former Industrial Site using Complex Resistivity", by Binley, Eriksen, Gascoyne, Nguyen, and Kemna.

"DC Resistivity and Time-Domain Induced Polarization survey for the Study of Groundwater Contamination in Bahia, Brasil", by Ruhlow, Tezkan, and de Lima.

"Significance of Magnetic and Induced Polarization Responses over Municipal Solid Waste Facilities", by Abu-Zeid, Marcheti, Santarato, and Paiola.

"Non-Invasive Geophysical mapping of Chemical Waste Deposits and Flow-Paths", by Ogilvy, Beamish, Meldrum, and Moss.

"Three- Dimensional Inversion of Induced Polarization Data from Simulated Waste", by Weller, Seichter, and Frangos.

From Proceedings of the Symposium on the Applications of Geophysics to Engineering and Environmental Problems, Chicago, Illinois, March 22-26, 1998

"The Influence of Pore Fluid Chemistry on the Induced Polarization Response of Rocks and Soils", Frye, Lesmes, and Morgan.

From Proceedings of the Symposium on the Applications of Geophysics to Engineering and Environmental Problems, Keystone, Colorado, April 28-May 2, 1996

"A Unique Data Acquisition System for Electrical Resistance Tomography", by Daily, Ramirez, and Zonge.

"Complex Electrical Resistance Tomography of a Subsurface PCE Plume", by Ramirez, Daily, and LaBrecque.

"Tank Leak Detection Using Electrical Resistance Methods", by Ramirez, Daily, Binley, and LaBrecque.

Other

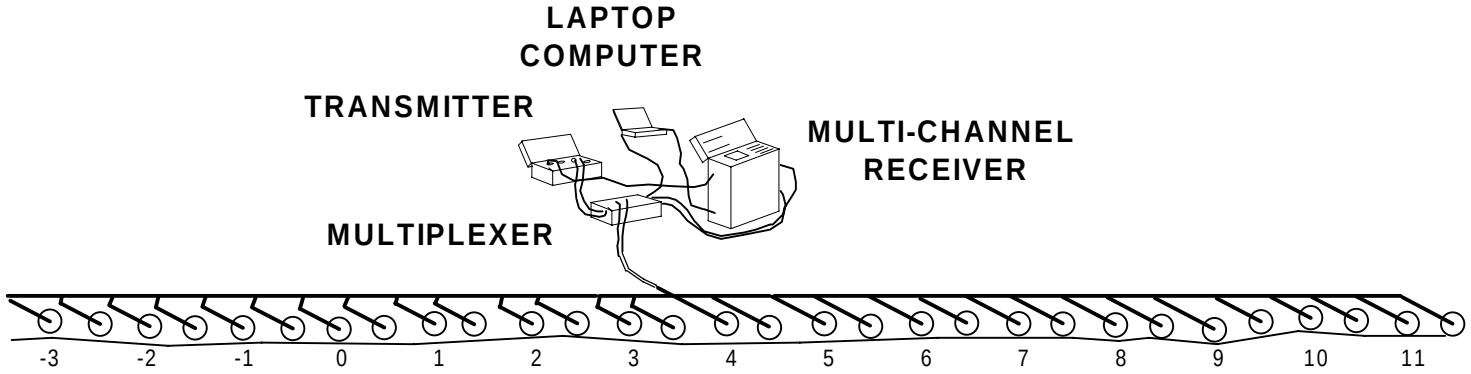
Carlson, N. and K.L. Zonge, 1996, Induced polarization effects associated with hydrocarbon accumulations: minimization and evaluation of cultural influences, in D. Schumacher and M.A. Abrams, eds., Hydrocarbon migration and its near-surface expression: AAPG Memoir 66, p. 127-137.

Carlson, N. R., C. M. Mayerle, and D. D. Snyder, "Shallow, High Resolution IP Surveys: An Extremely Fast, Economic Acquisition Method," NWMA, 104th Annual Meeting, 1998.

Green, A., E. Lanz, H. Maurer, and D. Boerner, 1999, "A template for geophysical investigations of small landfills", The Leading Edge, Society of Exploration Geophysicists, vol. 18, no. 2.

Zeta Setup

30 Electrode Spread Shown



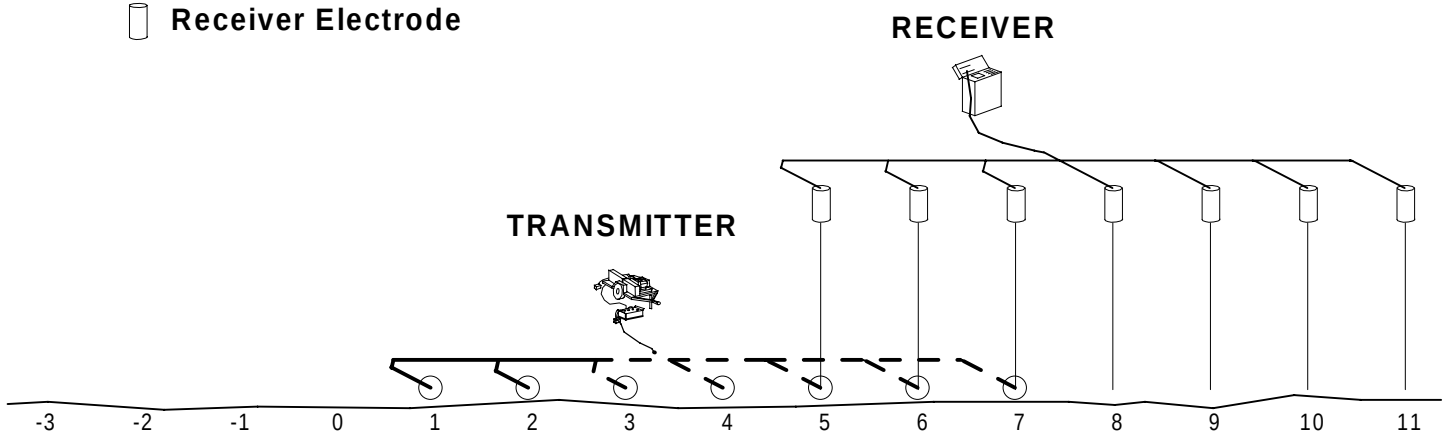
Electrodes: 30
Station Spacing: 1/2 Dipole
N-spacings: 12 per diagonal (n=0.5, 1, 1.5, 2, ...)
Data points per Spread: 234

Dipole-Dipole Setup

CRIP 7-spread shown

○ **Transmitter Electrode**

Receiver Electrode



Electrodes: 7 (transmitter), 14 (receiver)
Station Spacing: 1 Dipole
N-spacings: 6 per diagonal (n=1,2,3...)
Data points per Spread: 52