

BIOTECHNICAL AND ECONOMIC ANALYSES OF
WASTE-HEAT AQUACULTURE IN NORTH DAKOTA

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By

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ABSTRACT

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Biotechnical and Economic Analyses of Waste-Heat Aquaculture in North Dakota

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Potential power plant, waste-heat aquaculture sites in North Dakota were identified and characterized. The Leland Olds Station located near Stanton, North Dakota, was selected as the site best suited for aquacultural development.

A review of candidate species revealed that rainbow trout (Salmo gairdneri) and channel catfish (Ictalurus punctatus) were the species best suited for aquacultural use at the Leland Olds site.

A hypothetical aquaculture facility with two production scenarios was developed. Total investment required for a 100,000 pound/year facility was \$117,460. Estimates of total production costs per pound of harvested fish, using a diseasonal production scenario, were \$1.53 and \$1.17 for rainbow trout and channel catfish, respectively. Total production cost for year-round trout production was \$1.26 per pound. Changes in costs of the three largest cost components comprising total annual costs (management, fingerlings, and feed) had only a minor effect on total per-pound costs of production.