

INTRODUCTION TO NAD83(CSRS)

Introduction	This fact sheet reviews the status of the NAD83 (CSRS) readjustment in Alberta. The intended audience for this fact sheet includes all users of Alberta survey control information. CSRS is an acronym for the Canadian Spatial Referencing System.
NAD83(CSRS)	With the proliferation of high precision GPS surveys, a more rigorous definition of NAD83 in terms of network scale, ellipsoidal heights and crustal motions is required. Consequently, Canada and the U.S. have implemented a more unified realization of the North American Datum of 1983.
NAD83 (Adopted) Datum Parameters	The original 1986 realisation of this datum was defined to be compatible with the Bureau International de l'Heure (BIH) Terrestrial System BTS84 (which was the best available global reference frame at the time). NAD83 (Adopted) was intended to be a geocentric system. NAD83 (Adopted) was "adopted" within Alberta in June 1994.
NAD83(CSRS) Reference Frame	Due to the use of more accurate techniques, it is now known that NAD83 (Adopted) is offset by about 2m from the true geocenter. The best geocentric reference frame currently available is the International Terrestrial Reference Frame (ITRF). Ties between ITRF and NAD83 (Adopted) were made via the VLBI stations allowing for the accurate determination of a conformal 3D similarity transformation between the two. In Canada, the improved realization of NAD83 (Adopted) is referred to as NAD83 (CSRS).
Canadian Readjustment	In Canada, taking advantage of advances in high-end GPS processing techniques, new layers of control survey networks have been established, namely, the continuously operated GPS sites of the Canadian Active Control System (CACS) and the federal high accuracy Canadian Base Network (CBN). Each layer is tied to the one above it, CACS being tied to the VLBI stations. Also included in this Canadian readjustment were the high accuracy GPS on BM observations. Consequently, the Canadian readjustment established NAD83 (CSRS) on a national basis.
Alberta CSRS Readjustment	Based on the weighted VLBI stations and including all observations from CACS, CBN and provincial High Precision Networks (HPN) and all geodetic survey data, including GPS-based projects, an Alberta CSRS readjustment was performed and completed in April 1999 with a subset of the ASCMs published in August 1999. In April 2004, a second NAD83 (CSRS) Alberta readjustment was completed with new NAD83 (CSRS) referenced coordinates being formally published in October 2005.
More Information	This fact sheet is one of a series published by Lands Division, Geodetic Control Unit. For more information, please visit our web site at: Geodetic Control Unit or contact us at (780) 422-1291 or fax (780) 427-1493.