

# Oregon Real-time GNSS Network Changes in 2023



- **2024 – PLSO/ OGUG**
- **Randy Oberg, PLS**
- **Eric Zimmerman, PLS**
- **January 2024**



Dome Replacement  
New Antenna  
Calibration  
TRM115000.00+S SCIT



- Yoncalla-YONC
- Seaside-SEAS
- Ona Beach-ONAB
- Reedsport-REED
- Roseburg-RSBG
- Grants Pass-GTPS





## *2023 Upgrades to Full GNSS*

- **MTCL** - Mitchell
- **GRAS** - Grass Valley
- **WAMC** - Wamic
- **UKIA** - Ukiah
- **SPRA** - Spray
- **COND** - Condon
- **FWBD** - Farewell Bend





## Full GNSS Upgrades Needed

### ODOT

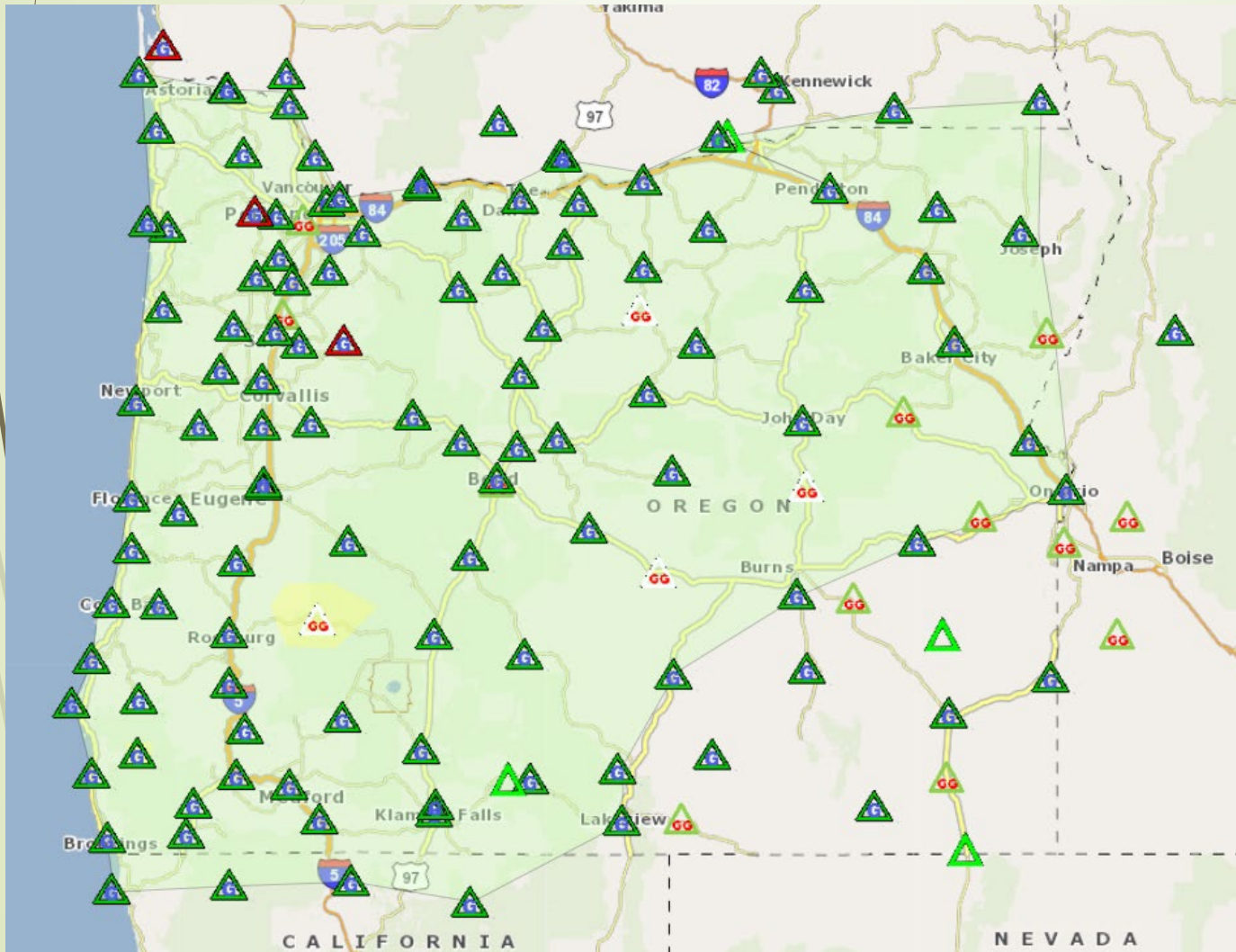
- ▶ ADEL – Adel
- ▶ BASQ – Basque
- ▶ BEND – City of Bend??
- ▶ BRNT – Burnt River School
- ▶ COBO – City of Beaverton
- ▶ ~~COND – Condon~~
- ▶ CRAN – Crane
- ▶ ~~FWBD – Farewell Bend~~
- ▶ ~~GRAS – Grass Valley~~
- ▶ HALF – Halfway
- ▶ HRPR – Harper School
- ▶ JIME – Upgraded by Washington County 2023
- ▶ MCSO – Salem
- ▶ ~~MTCL – Mitchell~~
- ▶ ~~SPRA – Spray~~
- ▶ ~~UKIA – Ukiah~~
- ▶ ~~WAMC – Wamic~~

### PBO

- ▶ MDMT – Medicine Mountain
- ▶ P393 – Barren Valley



## Oregon Real-time GNSS Network



### ORGN Stations Legend

#### Ground Station Status

- GNSS Active
- GNSS Alert
- GNSS Inactive
- GLONASS Active
- GLONASS Alert
- GLONASS Inactive
- GLONASS Planned
- GPS Active
- GPS Alert
- GPS Inactive
- GPS Planned

#### Coverage Area

- No Coverage
- Coverage





## All Stations List+

(Coordinates & Links to Station Pages, Partners, RINEX data and Site Logs)

All Stations List							
December 29, 2023							
GNSS Legend GPS=GPSonly, GG= GPS+GLONASS, GNSS=GPS+GLONASS+Galileo							
Station ID	Ref ID	Location	Latitude	Longitude	Ellipsoid Height (meters) @ ARP	Site Logs	GNSS
<a href="#">ADEL</a>	206	Adel	42 10 35.41966	-119 53 45.06314	1386.0970	<a href="#">ADEL</a>	GG
<a href="#">AGNS</a>	292	Agness	42 33 09.94155	-124 03 32.74455	51.763	<a href="#">AGNS</a>	GNSS
<a href="#">ANAT</a>	201	Anatone, WA	46 07 58.29503	-117 08 07.48104	1087.765	<a href="#">ANAT</a>	GNSS
<a href="#">ARLN</a>	202	Arlington	45 42 29.52532	-120 10 59.71154	120.812	<a href="#">ARLN</a>	GNSS
<a href="#">ASHL</a>	203	Ashland	42 10 50.47299	-122 40 12.55241	609.147	<a href="#">ASHL</a>	GNSS
<a href="#">BASQ</a>	270	Yard	42 24 41.76354	-117 51 46.84978	1349.14	<a href="#">BASQ</a>	GG
<a href="#">BEND</a>	205	Bend, City of	44 03 25.75727	-121 18 54.61222	1096.257	<a href="#">BEND</a>	GG
<a href="#">BLY1</a>	204	Bly	42 24 24.62755	-121 02 56.57650	1313.889	<a href="#">BLY1</a>	GNSS
<a href="#">BNDM</a>	278	Maintenance)	44 05 21.80729	-121 18 27.07883	1070.737	<a href="#">BNDM</a>	GNSS
<a href="#">BRNT</a>	222	Burnt River School (Unity)	44 26 24.77044	-118 11 28.69155	1213.195	<a href="#">BRNT</a>	GG
<a href="#">BURN</a>	271	Burns Jct	42 46 46.18843	-117 50 36.65278	1181.437	<a href="#">BURN</a>	GNSS
<a href="#">CABL</a>	206	Cape Blanco	42 50 09.94322	-124 33 47.98644	38.291	<a href="#">CABL</a>	GNSS
<a href="#">CATH</a>	207	Cathlamet, WA	46 11 50.27547	-123 22 02.11302	56.670	<a href="#">CATH</a>	GNSS
<a href="#">CHEM</a>	208	Chemult	43 13 27.68494	-121 47 08.94043	1440.413	<a href="#">CHEM</a>	GNSS
<a href="#">CHZZ</a>	256	Tillamook	45 29 11.44035	-123 58 41.18384	51.145	<a href="#">CHZZ</a>	GNSS
<a href="#">COBO</a>	209	Beaverton, City of	45 29 08.88914	-122 47 50.56291	47.207	<a href="#">COBO</a>	GG
<a href="#">COND</a>	210	Condon	45 14 16.44868	-120 10 52.90279	865.844	<a href="#">COND</a>	GNSS
New Septentrio Receiver (PolarX5) and Antenna (SEPCHOKE B3E6 SPKE) Sept 27, 2023							
<a href="#">CRAN</a>	213	CRAN-Crane	43 24 56.80137	-118 34 29.70705	1248.78	<a href="#">CRAN</a>	GG
<a href="#">CROK</a>	211	Castle Rock, WA	46 16 28.54446	-122 54 45.09357	1.470	<a href="#">CROK</a>	GNSS
<a href="#">CTPT</a>	212	Central Point	42 22 36.08473	-122 53 38.19500	370.975	<a href="#">CTPT</a>	GNSS
<a href="#">DANP</a>	247	Richland WA	46 16 48.13634	-119 16 34.52974	104.176	<a href="#">DANP</a>	GNSS
<a href="#">DOWL</a>	237	Eugene	44 03 57.45920	-123 05 53.27962	112.197	<a href="#">DOWL</a>	GNSS
<a href="#">ELG2</a>	341	Elgin	45 33 53.49145	-117 55 42.27526	816.489	<a href="#">ELG2</a>	GNSS
<a href="#">ENTR</a>	214	Enterprise	45 25 52.50655	-117 17 17.03741	1127.055	<a href="#">ENTR</a>	GNSS
<a href="#">FWBD</a>	215	Farewell Bend POE	44 17 30.78145	-117 13 17.85372	631.934	<a href="#">FWBD</a>	GNSS
New Septentrio Receiver (PolarX5) and Antenna (SEPCHOKE B3E6 SPKE) Sept 28, 2023							
<a href="#">GLWD</a>	217	Glenwood WA	46 01 11.36775	-121 17 18.92579	561.420	<a href="#">GLWD</a>	GNSS



## Station Pages (ODOT only)

Go To

### Station - BNDM



Looking North



Looking South



Looking West



Looking East

### Station Information

**Site ID:** BNDM  
**Location:** Bend  
**PID:** 205

### Position

**Antenna Ref Point:** NAD83 (2011) epoch 2010.00  
**Latitude:** 44° 05' 21.80729"N  
**Longitude:** 121° 18' 27.07883"W  
**Ellip. Hgt.:** 1070.737m

### Tracking GPS and GLONASS

**Location Address:** 63055 N Highway 97  
Bend OR, 97703  
**Organization:** Oregon Department of  
Transportation

### Equipment Specifications

**Manufacturer:** Leica Geosystems / Septentrio  
**Receiver Model:** Septentrio PolaRx5  
**Antenna:** Leica AR20 (LEIAR20 LEIM)  
**Elevation Mask:** 0 Degrees

### File Logging

**File Type:** RINEX  
**Logging Interval:** 5 Seconds  
**Operation Time:** 24x7 log files  
**Rollover:** Hourly

### Important Links

- [Site Log](#):
- [RINEX Data](#):
- [Alerts/Advisories](#):
- [Superseded coordinates NAD83 \(CORS96\) epoch 2002](#):



## File Products (aka Correctors)

- ▶ Would a products list by Port be helpful on our website?
- ▶ What should we do with our ORGN products?
  - ▶ Do we still need RTCM 2.3?
- ▶ File Products/ Correctors are split into 3 ports
  - ▶ **9879** – All single-base correctors by name: **GPS-only**, **GG** and **GNSS**.
  - ▶ **9881**- Network (multi-base) & nearest-single-base correctors:  
all are **GPS-Only**.
  - ▶ **9882** – Network (multi-base) & nearest-single-base correctors:  
all are **GG** (with several newly created **GNSS** ones)





## Single Base Corrector

Port 9879

January 19, 2024

Single Base Corrector	Location	Format	Port	Constellations
ANAT_Single_GG3x	ANATONE, WA	RTCM 3.x (Extended)	9879	G/R/-/-/-
ANAT_Single_GNSS	ANATONE, WA	RTCM 3.x (MSM4)	9879	G/R/E/C/J
ARLN_Single_GG3x	Arlington	RTCM 3.x (Extended)	9879	G/R/-/-/-
ARLN_Single_GNSS	Arlington	RTCM 3.x (MSM4)	9879	G/R/E/C/J
ASHL_Single_GG3x	Ashland	RTCM 3.x (Extended)	9879	G/R/-/-/-
ASHL_Single_GNSS	Ashland	RTCM 3.x (MSM4)	9879	G/R/E/C/J
BNDM_Single_GG3x	Bend Maintenance	RTCM 3.x (Extended)	9879	G/R/-/-/-
BNDM_Single_GNSS	Bend Maintenance	RTCM 3.x (MSM4)	9879	G/R/E/C/J
BRNT_Single_GG3x	Unity	RTCM 3.x (Extended)	9879	G/R/-/-/-
CABL_Single_GG3x	Cape Blanco	RTCM 3.x (Extended)	9879	G/R/-/-/-
CATH_GNSS	Cathlamet	RTCM 3.x (MSM4)	9879	G/R/E/-/-
CATH_Single_GG3x	Cathlamet	RTCM 3.x (Extended)	9879	G/R/-/-/-
COBO_Single_GG3x	City of Beaverton	RTCM 3.x (Extended)	9879	G/R/-/-/-
CRAN_Single_GG3x	Crane	RTCM 3.x (Extended)	9879	G/R/-/-/-
CRLA_Single_GG3x	Crater Lake	RTCM 3.x (Extended)	9879	G/R/-/-/-
CROK_Single_3x	Castle Rock WA	RTCM 3.x (Extended)		
CROK_Single_GG3x	Castle Rock WA	RTCM 3.x (Extended)		
CTPT_Single_GG3x	Central Point	RTCM 3.x (Extended)		
DANP_Single	RICHLAND WA	RTCM 2.x (Type 1;2)		
DANP_Single_GNSS	RICHLAND WA	RTCM 3.x (MSM4)		
ENTR_Single	Enterprise	RTCM 2.x (Type 1;2)		
ENTR_Single_GG3x	Enterprise	RTCM 3.x (Extended)		
GLWD_Single_GG3x	Glenwood WA	RTCM 3.x (Extended)		
GOLY_Single_GG3x	GOLDENDALE WA	RTCM 3.x (Extended)		
GTPS_Single_GG3x	Grants Pass	RTCM 3.x (Extended)		
HALF_Single_GG3x	Halfway	RTCM 3.x (Extended)		
HRPR_Single_GG3x	Harper	RTCM 3.x (Extended)		
JIME_Single_GG3x	Washington County	RTCM 3.x (Extended)		
JUNT_Single_GG3x	Juntura	RTCM 3.x (Extended)		
KENI_Single_GG3x	Kennewick WA	RTCM 3.x (Extended)		
LCS1_GNSS	Albany	RTCM 3.x (MSM4)		
LCS1_Single	Albany	RTCM 3.x (Extended)		
LCS1_Single_GG3x	Albany	RTCM 3.x (Extended)		

## GPS Only Network Corrector

Port 9881

January 19, 2024

Network Corrector	Format	Port
IMAX_CMV_AG	i-MAX CMR+	9881
IMAX_CMV+	i-MAX CMR+	9881
IMAX_RTCM3	i-MAX RTCM 3.x (Extended)	9881
IMAX_RTCM3_AG	i-MAX RTCM 3.x (Extended)	9881
MAX_RTCM3	MAX RTCM 3.x (Extended;1015;1016)	9881
Nearest_Single_RTCM3	RTCM 3.x (Extended)	9881

## GNSS Network Corrector

Port 9882

January 19, 2024

Network Corrector	Format	Port	Constellations
GIS_Nearest	RTCM 3.x (Extended)	9882	G/R/-/-/-
IMAX_GG_CMV	i-MAX CMR+	9882	G/R/-/-/-
IMAX_GG_CMV_AG	i-MAX CMR+	9882	G/R/-/-/-
IMAX_GG_RTCM3	i-MAX RTCM 3.x (Extended)	9882	G/R/-/-/-
IMAX_GG_RTCM3_AG	i-MAX RTCM 3.x (Extended)	9882	G/R/-/-/-
IMAX_GNSS	i-MAX RTCM 3.x (MSM4)	9882	G/R/E/-/-
IMAX_GNSS_AG	i-MAX RTCM 3.x (MSM4)	9882	G/R/E/-/-
IMAX_GNSS5	i-MAX RTCM 3.x (MSM5)	9882	G/R/E/-/-
MAX_GG_RTCM3	MAX RTCM 3.x (Extended;1015;1016)	9882	G/R/-/-/-
MAX_GG_RTCM3_AG	MAX RTCM 3.x (Extended;1015;1016)	9882	G/R/-/-/-
Nearest_Single_GG_RTCM3	RTCM 3.x (Extended)	9882	G/R/-/-/-
Nearest_Single_GNSS	RTCM 3.x (MSM4)	9882	G/R/E/-/-



# Questions?



**Randy Oberg, Lead Geodetic Surveyor**  
(503.881.2889)

[Randy.D.Oberg@odot.Oregon.gov](mailto:Randy.D.Oberg@odot.Oregon.gov)

**Eric Zimmerman, Geodetic Associate**  
(503.779.5069)

[Eric.P.Zimmerman@odot.Oregon.gov](mailto:Eric.P.Zimmerman@odot.Oregon.gov)

**Oregon Real-time GNSS Network**

<https://www.oregon.gov/odot/orgn/pages/index.aspx>